ADITYA ENGINEERING COLLEGE

An Autonomous Institutuion

Approved by AICTE • Permanently Affiliated to JNTUK • Accredited by NAAC with 'A' Grade

Recognised by UGC under sections 2(f) and 12(B) of UGC Act, 1956

Aditya Nagar, ADB Road, Surampalem - 533437, Near Kakinada, E.G.Dt., Ph:99498 76662

Program Name : B.Tech. in Civil Engineering

Syllabus Revision for the Academic Year 2017-2018				
S.No	**Semester**	**Course Code**	**Course Name**	**% of content revised for the existing year**
1	I	171HS1T01	English – I	65
2	I	171BS1T01	Mathematics – I	40
3	I	171HS1T02	Environmental Studies	20
4	I	171BS1T03	Engineering Chemistry	25
5	I	171ES1T02	Engineering Mechanics	0
6	I	171ES1T01	Computer Programming	0
7	I	171HS1L01	English Communication Skills Lab - I	0
8	I	171BS1L01	Engineering Chemistry Lab	20
9	I	171ES1L01	Computer Programming Lab	40
10	II	171HS2T03	English – II	55
11	II	171BS2T02	Mathematics – II	10
12	II	171BS2T06	Mathematics – III	40
13	II	171BS2T07	Engineering Physics	25
14	II	171ES2T03	Engineering Drawing	5
15	II	171ES2T04	Basic Mechanical Engineering	0
16	II	171HS2L02	English Communication Skills Lab - II	40
17	II	171BS2L02	Engineering Physics Lab	0
18	II	171ES2L02	Engineering Workshop and IT Workshop	0

19	III	R1621011	Probability & Statistics	0
20	III	R1621012	Basic Electrical & Electronics Engineering	0
21	III	R1621013	Strength of Materials-I	0
22	III	R1621014	Building Materials & Construction	0
23	III	R1621015	Surveying	0
24	III	R1621016	Fluid Mechanics	0
25	III	R1621017	Survey Field Work – I	0
26	III	R1621018	Strength of Materials Lab	0
27	IV	R1621019	Professional Ethics & Human Values	0
28	IV	R1622011	Building Planning & Drawing	0
29	IV	R1622012	Strength of Materials - II	0
30	IV	R1622013	Hydraulics & Hydraulic Machinery	0
31	IV	R1622014	Concrete Technology	0
32	IV	R1622015	Structural Analysis – I	0
33	IV	R1622016	Transportation Engineering - I	0
34	IV	R1622017	FM & HM Lab	0
35	IV	R1622018	Survey Field Work – II	0
36	IV	R1622019	Managerial Economics & Financial Analysis	0
37	V	RT31014	Engineering Geology	0
38	V	RT31012	Structural Analysis – II	0
39	V	RT31013	Design and Drawing of Reinforced Concrete Structures	0
40	V	RT31011	Geotechnical Engineering – I	0
41	V	RT31015	Transportation Engineering – I	0
42	V	RT31016	IPR & Patents	0

43	V	RT31017	Geotechnical Engineering Lab	0
44	V	RT31018	Engineering Geology Lab	0
45	VI	1RT32013	Design and Drawing of Steel Structures	0
46	VI	1RT32012	Geotechnical Engineering – II	0
47	VI	1RT32014	Water Resources Engineering–I	0
48	VI	1RT32011	Environmental Engineering – I	0
49	VI	1RT32015	Transportation Engineering – II	0
50	VI	PT41011	Environmental Pollution and Control	0
51	VI	RT32016A	Disaster Management	0
52	VI	RT32016C	Industrial Water & Waste Water Management	0
53	VI	RT32016B	Architecture and Town Planning	0
54	VI	RT32016D	Finite Element Method	0
55	VI	RT32016E	Green Technologies	0
56	VI	RT32017	Computer Aided Engineering Drawing	0
57	VI	RT32018	Transportation Engineering Lab	0
58	VII	RT41011	Environmental Engineering – II	0
59	VII	RT41012	Prestressed Concrete	0
60	VII	RT41013	Construction Technology and Management	0
61	VII	RT41014	Water Resources Engineering–II	0
62	VII	RT41015	Remote Sensing and GIS Applications	0
63	VII	RT41016	(ELECTIVE - I) Ground Improvement Techniques	0
64	VII	RT41017	Air Pollution and Control	0
65	VII	RT41018	Matrix methods of Structural Analysis	0
66	VII	RT41019	Urban Hydrology	0

67	VII	RT4101A	Advanced Surveying	0
68	VII	RT4101B	Interior Designs and Decorations	0
69	VII	RT4101L	Environmental Engineering Lab	0
70	VII	RT4101M	GIS & CAD Lab	0
71	VIII	RT42011	Estimation, Specifications & Contracts	0
72	VIII	RT42012A	Engineering with Geo-synthetics	0
73	VIII	RT42012B	Environmental Impact Assessment and Management	0
74	VIII	RT42012C	Advanced Structural Engineering	0
75	VIII	RT42012D	Ground Water Development and Management	0
76	VIII	RT42012E	Traffic Engineering	0
77	VIII	RT42012F	Infrastructure Management	0
78	VIII	RT42013A	Advanced foundation Engineering	0
79	VIII	RT42013B	Solid waste Management	0
80	VIII	RT42013C	Earthquake Resistant Design	0
81	VIII	RT42013D	Water Shed Management	0
82	VIII	RT42013E	Pavement Analysis and Design	0
83	VIII	RT42013F	Green Buildings	0
84	VIII	RT42014A	Soil Dynamics and Machine Foundations	0
85	VIII	RT42014B	Environmental and Industrial Hygiene	0
86	VIII	RT42014C	Repair and Rehabilitation of Structures	0
87	VIII	RT42014D	Water Resources System Planning and Management	0
88	VIII	RT42014E	Urban Transportation Planning Safety Engineering	0
89	VIII	RT42014G	Bridge Engineering	0
90	VIII	RT42015	Project Work	0

Total number of courses in the academic year 2017-2018				= 90
Number of courses having revision in syllabus content >/= 20% in the academic year 2017-2018				= 10
Percentage of syllabus revision carried out in the academic year 2017-2018 = (10/90)*100				= 11.11%

Program Coordinator

Head of the Department

Head of the Department
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AR-17

2017-18

PROGRAM STRUCTURE

I SEMESTER

Course Code	Name of the Course	Course Component	Total Number of contact hours				Credits (C)
			Lecture (L)	Tutorial (T)	Practice (P)	Total Hours	
171HS1T01	English - I	HSS	3	1	0	4	3
171BS1T01	Mathematics - I	BS	3	1	2	6	3
171HS1T02	Environmental Studies	HSS	2	1	0	3	2
171BS1T03	Engineering Chemistry	BS	3	1	0	4	3
171ES1T02	Engineering Mechanics	ES	3	1	0	4	3
171ES1T01	Computer Programming	ES	3	1	0	4	3
171HS1L01	English Communication Skills Lab - I	HSS	0	0	3	3	2
171BS1L01	Engineering Chemistry Lab	BS	0	0	3	3	2
171ES1L01	Computer Programming Lab	ES	0	0	3	3	2
		TOTAL	**17**	**6**	**11**	**34**	**23**

II SEMESTER

Course Code	Name of the Course	Course Component	Total Number of contact hours				Credits (C)
			Lecture (L)	Tutorial (T)	Practice (P)	Total Hours	
171HS2T03	English - II	HSS	3	1	0	4	3
171BS2T02	Mathematics - II	BS	3	1	0	4	3
171BS2T06	Mathematics - III	BS	3	1	2	6	3
171BS2T07	Engineering Physics	BS	3	1	0	4	3
171ES2T03	Engineering Drawing	ES	3	1	0	4	3
171ES2T04	Basic Mechanical Engineering	ES	3	1	0	4	3
171HS2L02	English Communication Skills Lab - II	HS	0	0	3	3	2
171BS2L02	Engineering Physics Lab	BS	0	0	3	3	2
171ES2L02	Engineering Workshop and IT Workshop	ES	0	0	3	3	2
		TOTAL	**18**	**6**	**11**	**35**	**24**

BS: Basic Sciences; HSS: Humanities and Social Sciences; ES: Engineering Sciences; PC: Professional Core;PE: Professional Elective; OE: Open Elective; SS: Self Study Course; PR: Project.

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II Year - I Semester

S. No.	Subjects	L	T	P	Credits
1	Probability & Statistics	4	--	--	3
2	Basic Electrical & Electronics Engineering	4	--	--	3
3	Strength of Materials-I	4	--	--	3
4	Building Materials & Construction	4	--	--	3
5	Surveying	4	--	--	3
6	Fluid Mechanics	4	--	--	3
7	Survey Field Work - I	--	--	3	2
8	Strength of Materials Lab	--	--	3	2
MC	Professional Ethics & Human Values	--	3	--	--
	Total Credits				**22**

II Year - II Semester

S. No.	Subjects	L	T	P	Credits
1	Building Planning & Drawing	4	--	--	3
2	Strength of Materials - II	4	--	--	3
3	Hydraulics & Hydraulic Machinery	4	--	--	3
4	Concrete Technology	4	--	--	3
5	Structural Analysis - I	4	--	--	3
6	Transportation Engineering - I	4	--	--	3
7	FM & HM Lab	--	--	3	2
8	Survey Field Work - II	--	--	3	2
MC	Managerial Economics & Financial Analysis	2	--	--	--
	Total Credits				**22**

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II Year – II SEMESTER

S. No.	Subject	T	P	Credits
1	Building Planning & Drawing	3+1*	--	3
2	Managerial Economics and Financial Analysis	3+1*	--	3
3	Strength of Materials- II	3+1*	--	3
4	Hydraulics and Hydraulic Machinery	3+1*	--	3
5	Concrete Technology	3+1*	--	3
6	Structural Analysis - I	3+1*	--	3
7	Fluid Mechanics and Hydraulic Machinery Lab	--	3	2
8	Concrete Technology Lab	--	3	2
9	Surveying Field work-II	--	3	2
	Total Credits			**24**

III Year – I SEMESTER

S. No.	Subject	T	P	Credits
1	Engineering Geology	3+1*	--	3
2	Structural Analysis – II	3+1*	--	3
3	Design and Drawing of Reinforced Concrete Structures	3+1*	--	3
4	Geotechnical Engineering – I	3+1*	--	3
5	Transportation Engineering – I	3+1*	--	3
6	IPR & Patents	3+1*	--	2
7	Geotechnical Engineering Lab	--	3	2
8	Engineering Geology Lab	--	3	2
	Total Credits			**21**

III Year – II SEMESTER

S. No.	Subject	T	P	Credits
1	Design and Drawing of Steel Structures	3+1*	--	3
2	Geotechnical Engineering – II	3+1*	--	3
3	Water Resources Engineering–I	3+1*	--	3
4	Environmental Engineering – I	3+1*	--	3
5	Transportation Engineering – II	3+1*	--	3
6	**OPEN ELECTIVE**	3+1*	--	3
7	Computer Aided Engineering Drawing	--	3	2
8	Transportation Engineering Lab	--	3	2
	Total Credits			**22**

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IV Year – I SEMESTER

S. No.	Subject	T	P	Credits
1	Environmental Engineering – II	3+1*	--	3
2	Prestressed Concrete	3+1*	--	3
3	Construction Technology and Management	3+1*	--	3
4	Water Resources Engineering–II	3+1*	--	3
5	Remote Sensing and GIS Applications	3+1*	--	3
6	**ELECTIVE - I**	3+1*	--	3
7	Environmental Engineering Lab	--	3	2
8	GIS & CAD Lab	--	3	2
Total Credits				**22**

IV Year – II SEMESTER

S. No.	Subject	T	P	Credits
1	Estimating, Specifications & Contracts	3+1*	--	3
2	**ELECTIVE –II**	3+1*	--	3
3	**ELECTIVE – III**	3+1*	--	3
4	**ELECTIVE – IV**	3+1*	--	3
5	Project Work			9
Total Credits				**21**

OPEN ELECTIVE:

a) Environmental Pollution and Control
b) Disaster Management
c) Industrial Water & Waste Water Management
d) Architecture and Town Planning
e) Finite Element Method
f) Green Technologies

Elective-I:

a) Ground Improvement Techniques
b) Air Pollution and Control
c) Matrix methods of Structural Analysis
d) Urban Hydrology
e) Advanced Surveying
f) Interior Designs and Decorations

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Elective-II:

a. Engineering with Geo-synthetics
b. Environmental Impact Assessment and Management
c. Advanced Structural Engineering
d. Ground Water Development and Management
e. Traffic Engineering
f. Infrastructure Management

Elective-III:

a) Advanced foundation Engineering
b) Solid waste Management
c) Earthquake Resistant Design
d) Water Shed Management
e) Pavement Analysis and Design
f) Green Buildings

Elective-IV:

a) Soil Dynamics and Machine Foundations
b) Environmental and Industrial Hygiene
c) Repair and Rehabilitation of Structures
d) Water Resources System Planning and Management
e) Urban Transportation Planning
f) Safety Engineering
g) Bridge Engineering

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ENGLISH – I

(Common to all branches)

I Semester	L	T	P	C
Course Code: 171HS1T01	3	1	0	3

Introduction:

In view of the growing importance of English as a tool for global communication and the consequent emphasis on training the students to acquire communicative competence, the syllabus has been designed to develop linguistic and communicative competence of the students of Engineering.As far as the detailed textbooks are concerned, the focus should be on the skills of Listening, Speaking, Reading and Writing. The non-detailed textbooks are meant for extensive reading both to instruct and delight. Hence the focus in the syllabus is primarily on the development of communicative skills and fostering of ideas about the essence of English Communication.

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Summarize how Gandhi grew in introspection and the conditions to achieve a higher quality of life, strength and sovereignty of a developed nation.

CO 2: Identify that all men can come together and avert the peril.

CO 3: Comprehend texts from a literary perspective and familiarise the students with Figures of Speech.

CO 4: Explain the characteristic traits of renowned scientists who contributed enormously to the scientific advancement of India.

CO 5: Demonstrate Writing and basic concepts of Grammar skills.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	-	-	-	-	-	-	-	-	-	3	-	-
CO2	-	-	-	-	-	-	-	-	-	3	-	-
CO3	-	-	-	-	-	-	-	-	-	3	-	-
CO4	-	-	-	-	-	-	-	-	-	3	-	-
CO5	-	-	-	-	-	-	-	-	-	3	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2	PSO 3
CO1	-	-	-
CO2	-	-	-
CO3	-	-	-
CO4	-	-	-
CO5	-	-	-

Methodology:

1. The class is to be learner-centred where the learners are to read the texts to get a comprehensive idea of those texts on their own with the help of the peer group and the teacher.

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2. Integrated skill development methodology has to be adopted with focus on individual language skills as per the tasks/exercise.
3. The tasks/exercises at the end of each unit should be completed by the learners only and the teacher intervention is permitted as per the complexity of the task/exercise.
4. The teacher is expected to use supplementary material wherever necessary and also generate activities/tasks as per the requirement.
5. The teacher is permitted to use lecture method when a completely new concept is introduced in the class.

Recommended Topics:

UNIT-I:
1. IN LONDQN: M.K.GANDHI (Detailed)
2. G.D. NAIDU (Non-Detailed)

UNIT-II:
1. THE KNOWLEDGE SOCIETY- APJ ABDUL KALAM (Detailed)
2. G.R. GOPINATH (Non-Detailed)

UNIT-III:
1. THE SCIENTIFIC POINT OF VIEW- J.B.S. HALDANE (Detailed)
2. J.C. BOSE (Non-Detailed)

UNIT-IV:
1. MAN'S PERIL-BERTRAND RUSSELL (Detailed)
2. HOMI JEHANGIR BHABHA (Non-Detailed)

UNIT-V:
1. LUCK—MARK TWAIN (Detailed)
2. A SHADOW (Non-Detailed)

Textbooks:
Detailed Text Book: 'English Essentials' by Ravindra Publications.

Non Detailed Text Book: 'Modern Trail Blazers' by Orient Black Swan Pvt. Ltd. Publishers.

Web Links:
1. https://en.wikipedia.org/wiki/Gopalswamy_Doraiswamy_Naidu
2. https://englishforundergraduates.wordpress.com/2016/09/25/the-knowledge-society-from-ignited-minds-a-p-j-abdul-kalam/
3. http://btechenglish.blogspot.in/2014/01/the-scientific-point-of-view-j-b-s.html
4. https://www.famousscientists.org/jagadish-chandra-bose/
5. https://www.thebetterindia.com/37339/homi-jehangir-bhabha/

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MATHEMATICS-I
(Common to all branches)

I Semester	**L**	**T**	**P**	**C**
Course Code: 171BS1T01	**3**	**1**	**2**	**3**

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Associate linear differential equations of first order to solve various physical problems involving differential equations of first order

CO 2: Solve linear differential equations of higher order.

CO 3: Solve linear systems of equations using the concept of rank, Gauss elimination, Gauss Seidal method.

CO 4: Find the eigen values and eigen vectors of matrices.

CO 5: Associate the concepts of Partial Differentiation to maxima and minima of functions of several variables and to solve Partial differential equations.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	-
CO5	3	2	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes:

CO / PSO	PSO 1	PSO 2	PSO 3
CO1	-	-	-
CO2	-	-	-
CO3	-	-	-
CO4	-	-	-
CO5	-	-	-

UNIT I:

Differential equations of first order and first degree:

Linear differential equations - Bernoulli differential equation - Exact differential equations-Equations reducible to exact (Type-1, Type-2, Type-3, Type-4)

Applications:

Newton's Law of cooling-Law of natural growth and decay-Orthogonal trajectories.

UNIT II:

Linear differential equations of higher order:

Linear differential equations of higher order with constant coefficients with RHS term of the type e^{ax}, sin ax, cos ax, polynomials in x, e^{ax} V(x), xV(x)- Method of Variation of parameters, Method of undetermined coefficients.

*(MATLAB Exercise: Introduction to MAT LAB commands and Solution of Initial Value Problems using the command 'dsolve')

Applications:

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Electric circuits, simple harmonic motion.

UNIT III:

Linear systems of equations:

Rank of a matrix - Echelon form-Normal form – Solution of linear systems – Gauss elimination method - Gauss Seidal method.

Applications:

Finding the current in electrical circuits.

UNIT IV:

Eigen values - Eigen vectors and Quadratic forms:

Eigen values - Eigen vectors– Properties of eigen values (without proof) – Cayley -Hamilton theorem (without proof) - Inverse and powers of a matrix by using Cayley -Hamilton theorem- Diagonalization- Quadratic forms- Reduction of quadratic form to canonical form using orthogonal transformation– Nature of the quadratic form.

*(MATLAB Exercise: All Basic Operations on matrices are to be implemented using MATLAB including computation of rank, computation of eigen values and eigen vectors)

UNIT V:

Partial differentiation and Partial differential equations:

Homogeneous function-Euler's theorem-Total derivative-Chain rule-Taylor's and Maclaurin's series expansion of functions of two variables– Functional dependence-Jacobian.

Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions –solutions of first order linear (Lagrange) equation, nonlinear (standard types) equations.

Applications: Maxima and Minima of functions of two variables without constraints and Lagrange's method (with constraints).

*(MATLAB Exercise: To Plot graphs of various single and multivariable functions using MATLAB and analyze their maxima and minima graphically).

Text Books:

1. B.S.Grewal, Higher Engineering Mathematics, 43rdEdition, Khann Publishers.
2. Dr.T.K.V. Iyengar, Engineering Mathematics, S. Chand publications.

Reference Books:

1. Erwin Kreyszig, Advanced Engineering Mathematics, 10thEdition, Wiley- India.
2. D.G.Zill, MICHAIL R CULTER, Advanced Engineering Mathematics Third Edition Norosa Publications 2009.
3. Dean G. Duffy, Advanced engineering mathematics with MATLAB, CRC Press.
4. Peter O'neil, Advanced Engineering Mathematics, Cengage Learning.
5. Glyn James, Advanced modern engineering mathematics, Pearson education.
6. MATLAB by Rudra Pratap, Getting started with MATLAB, Oxford Publication.

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Web Links:

1. https://en.wikipedia.org/wiki/Portal:Mathematics
2. http://mathworld.wolfram.com
3. https://www.khanacademy.org
4. http://nptel.ac.in/courses/122104017

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ENVIRONMENTAL STUDIES
(Common to CE, EEE, ME, Min.E, PT & Ag.E)

I Semester	L	T	P	C
Course Code: 171HS1T02	2	1	0	2

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Identifytheneedforprotectingtheproducersandconsumersinvariousecosystemsand their rolein thefoodweb.
CO 2: Outlinethenaturalresourcesandtheirimportanceforthesustenanceofthelife.
CO 3: Listoutthebiodiversityof India,threats anditsconservationmethods.
CO 4: Explain the different types of pollutions and their control technologies, Waste water treatment, Bio medical waste management etc.
CO 5: Explain EIA- Environmental Impact Assessment, Sustainable developmental activities, environmental policies and regulations.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	-	-	-	-	-	1	3	-	-	-	-	-
CO2	-	-	-	-	-	2	3	-	-	-	-	-
CO3	-	-	-	-	-	1	3	-	-	-	-	-
CO4	-	-	2	-	-	2	3	-	-	-	-	-
CO5	-	-	2	-	-	2	3	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2	PSO 3
CO1	-	-	-
CO2	-	-	-
CO3	-	-	-
CO4	-	-	-
CO5	-	-	-

UNIT –I:
Ecosystems:
Scope of environmental studies, Structure- Producers, consumers and decomposers Function – Food chain, Food web, Tropic structure and Energy flow in the ecosystem Ecological pyramids, nutrient recycling, primary and secondary production, ecosystem regulation. Ecological succession Terrestrial ecosystem and aquatic ecosystem - Introduction, types, characteristic features.

UNIT – II:
Natural Resources:
Natural resources and associated problems Forest resources – Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people
Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems

Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources
Food resources: World food problems, changes caused by non-agriculture activities-effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity
Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources vs oil and natural gas extraction.
Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

UNIT – III:
Biodiversity and its conservation:
Definition: genetic, species and ecosystem diversity classification Value of biodiversity: consumptive use, productive use, social-Biodiversity at national and local levels. India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts - Endangered and endemic species of India – Conservation of biodiversity.

UNIT – IV:
Environmental Pollution:
Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies, Sustainable Life Style.
Solid Waste Management: Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.

UNIT – V:
Social Issues and the Environment
Urban problems related to energy -Water conservation, rain water harvesting-Resettlement and rehabilitation of people; its problems and concerns. Global challenges
Environmental ethics: Issues and possible solutions. Environmental Protection Act - Air (Prevention and Control of Pollution) Act. –Water (Prevention and control of Pollution) Act -Wildlife Protection Act - Forest Conservation Act-Issues involved in enforcement of environmental legislation. - Public awareness and Environmental management.

Text Books:

1. Environmental Studies, K.V. S. G. Murali Krishna, VGS Publishers, Vijayawada
2. Environmental Studies, R. Rajagopalan, 2nd Edition, 2011, Oxford University Press.
3. Environmental Studies, P.N. Palanisamy, P. Manikandan, A. Geetha, and K. Manjula Rani; Pearson Education, Chennai

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Reference Books:

1. Text Book of Environmental Studies, Deeshita Dave & P. Udaya Bhaskar, Cengage Learning.
2. A Textbook of Environmental Studies, Shaashi Chawla, TMH, New Delhi.
3. Environmental Studies, Benny Joseph, Tata McGraw Hill Co, New Delhi.
4. "Perspectives in Environment Studies" Anubha Kaushik, C P Kaushik, New Age International Publishers, 2014.

Web Links:

1. https://www.youtube.com/watch?v=7G3eXI_DPn8
2. www.nptel.ac.in/courses/122102006/
3. www.nptel.ac.in/courses/120108002/
4. https://www.youtube.com/watch?v=4AuwG2G_ERU
5. www.nptelvideos.in/2012/12/fundamentals-of-environmental-pollution.html
6. www.nptel.ac.in/courses/120108004/

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ENGINEERING CHEMISTRY

(Common to CE, ME, Min.E, PT & Ag.E)

I Semester	L	T	P	C
Course Code: 171BS1T03	3	1	0	3

Course Outcomes

At the end of the Course, Student will be able to:

CO 1: Explain polymeric materials their uses and moulding techniques of plastics.

CO 2: Analyse fuel characteristics using Calorific value, knocking characteristics and flue gas analysis.

CO 3: Explain the working principle of Electro chemical cells and corrosion characteristics.

CO 4: Explain the properties and applications of Nano, Superconductors, Semiconductors, Liquid crystals and fuel cells.

CO 5: Summarize water purification techniques and boiler troubles.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	2	-	-	-	-	-	-	-	-	-	-	-
CO2	2	-	-	-	-	-	-	-	-	-	-	-
CO3	3	-	-	-	-	-	-	-	-	-	-	-
CO4	3	-	-	-	-	-	-	-	-	-	-	-
CO5	2	-	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes:

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT- I:

High Polymers and Plastics:

Polymerization: Introduction- Mechanism of polymerization - Stereo regular polymers - Physical and mechanical properties – Plastics as engineering materials: advantages and limitations – Thermoplastics and Thermosetting plastics – Compounding and fabrication (compression moulding, injection moulding, extrusion moulding and transfer moulding techniques) - Preparation, properties and applications of polyethene, PVC, Bakelite and polycarbonates. Elastomers – Natural rubber- compounding and vulcanization – Synthetic rubbers: Buna S, Buna N, Thiokol – Applications of elastomers. Biodegradable polymers.

UNIT - II:

Fuel Technology:

Fuels:- Introduction – Classification – Calorific value - HCV and LCV – Dulong's formula – Coal — Proximate and ultimate analysis – Significance of the analyses – Liquid fuels – Petroleum- Refining – Cracking – Synthetic petrol –Petrol knocking – Diesel knocking -

Octane and Cetane ratings – Anti-knock agents – Power alcohol – Bio-diesel – Gaseous fuels – Natural gas. LPG and CNG – Combustion – Calculation of air for the combustion of a fuel – Flue gas analysis – Orsat apparatus.

UNIT - III:

Electrochemical Cells and Corrosion:

Galvanic cells - Reversible and irreversible cells – Single electrode potential- Electro chemical series and uses of this series- Standard electrodes (Hydrogen and Calomel electrodes) - Concentration Cells – Batteries: Dry Cell - Li cells - Zinc – air cells.

Corrosion:- Definition – Theories of Corrosion (electrochemical) – Formation of galvanic cells by different metals, by concentration cells, by differential aeration and waterline corrosion – Passivity of metals – Pitting corrosion - Galvanic series – Factors which influence the rate of corrosion - Protection from corrosion – Cathodic protection - Protective coatings: – Metallic (cathodic and anodic) coatings - Methods of application on metals (Galvanizing, Tinning, Electroplating, Electroless plating).

UNIT - IV:

Chemistry of Advanced Materials:

Nano materials:-Introduction – Sol-gel method - Carbon nano tubes and fullerenes: Types, preparation, properties and applications.

Super conductors:-Type –I, Type II – Characteristics and applications

Semi conductors: - Preparation of semiconductors, working of diodes and transistors.

Green synthesis:-Principles

Liquid crystals:-Introduction – Types – Applications

Fuel cells: - Introduction - cell representation, H_2-O_2fuel cell: Design and working, advantages and Limitations. Types of fuel cells: methanol-oxygen fuel cells.

UNIT - V:

Water Technology

Hard water:-Reasons for hardness – units of hardness - determination of hardness andalkalinity - Water for steam generation - Boiler troubles – Priming and Foaming, Scale formation, Boiler corrosion, Caustic embrittlement - Internal treatments - Softening of Hard water : Lime – Soda process, Zeolite process and numerical problems based on these processes and Ion Exchange process - Water for drinking purposes- Purification – Sterilization and disinfection : Chlorination, Break point chlorination and other methods – Reverse Osmosis and Electro Dialysis.

Text Books:

1. Engineering Chemistry by Jain and Jain; Dhanpat Rai Publicating Co.
2. A Text books of Applied Chemistry by Dr. Bharathi kumari Yalamananchili, VGS publications.
3. Engineering Chemistry by Shikha Agarwal; Cambridge University Press, 2015 edition.

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Reference Books:

1. Engineering Chemistry by PrasanthRath, Cengage Learning, 2015 edition.
2. A text book of engineering Chemistry by S. S. Dara; S. Chand & Co Ltd., Latest Edition.
3. Applied Chemistry by H.D. Gesser, Springer Publishers.
4. Text book of Nano-science and nanotechnology by B.S. Murthy, P. Shankar and others, University Press, IIM.

Web Links:

1. http://www.nptelvideos.in/2012/11/chemistry-of-materials
2. http://www.nptelvideos.com/lecture.php?id=2946
3. http://www.nptelvideos.com/lecture.php?id=2922
4. http://www.nptelvideos.com/lecture.php?id=2954

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COMPUTER PROGRAMMING LAB
(Common to all branches)

I Semester	L	T	P	C
Course Code: 171ES1L01	0	0	3	2

Course Outcomes:
At the end of the Course, Student will be able to:

CO 1: Implement basic programs in C.
CO 2: Use Conditional and Iterative statements to solve real time scenarios in C.
CO 3: Implement the concept of Arrays and Modularity.
CO 4: Apply the Dynamic Memory Allocation functions using pointers.
CO 5: Develop programs using structures, and Files.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	-	2	-	-	2	-	-	-	-	-	-	-
CO2	-	2	2	3	2	-	-	-	-	-	-	-
CO3	-	3	2	2	2	-	-	-	-	-	-	-
CO4	-	2	2	3	2	-	-	-	-	-	-	-
CO5	-	2	2	2	2	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes:

CO / PSO	PSO 1	PSO 2	PSO 3
CO1	2	-	-
CO2	2	-	-
CO3	2	-	-
CO4	2	-	-
CO5	2	-	-

Exercise – 1:
Introduction to C Programming
1.1) Introduction about Editors –Turbo, vi, Emacs
1.2) C Program to Perform Addition, Subtraction, Multiplication and Division of two numbers from Command line
1.3) Write a C Program to Calculate area of a Triangle using Heron's formula.

Exercise – 2:
Basic Math
2.1) Write a C Program to Find Whether the Given Year is a Leap Year or not.
2.2) Write a C Program to convert Celsius to Fahrenheit and vice versa.
2.3) Write a C Program to find largest of three numbers using ternary operator.

Exercise – 3:
Control Flow - I
3.1) Write a C program to find the roots of a Quadratic Equation.

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3.2) Write a C Program to make a simple Calculator to Add, Subtract, Multiply or Divide Using switch…case.
3.3) Scenario - 1 ATM PIN GENERATION:
Aditya purchased a credit card. He has to generate a PIN number to access the ATM and Net banking for which OTP was sent to his registered mobile number. Using this OTP number he has to generate ATM PIN number. After generating PIN number, he can use it for further transactions. Maximum login he can make is 3 times.
Sample Input:
OTP: 6732
If valid
Enter PIN: 8858
Confirm your PIN: 8858
Sample output:
valid/Invalid
PIN generated successfully.
Note: OTP is hard coded.
3.4) Scenario - 2 RESET PASSWORD:
Sindhuja was using Syndicate Bank's Online Account. She wanted to pay her bills through Online. But she forget her password. Now she has to reset the password. For resetting the password, she has to select reset option from the Menu.
NOTE: using switch case.
Sample input:
1. Fast withdrawal
2. Mini Statement.
3. Balance Enquiry
4. Reset Password
Enter your choice: 4
Sample Output: Reset password: New password: ***** Confirm password: *****

Exercise –4:
Control Flow - II
4.1) Write a C Program to Find Whether the Given Number is
i) Prime Number
ii) Armstrong Number
4.2) Write a C program to print Floyd Triangle
4.3) Write a C Program to print Pascal Triangle

Exercise – 5:
Control Flow – III
5.1) Write a C program to find the sum of individual digits of a positive integer.
5.2) Write a C program to check whether given number is palindrome or not.
5.3) Write a C program to read two numbers, x and n, and then compute the sum of the geometric progression $1+x+x^2+x^3+\ldots\ldots\ldots\ldots+x^n$.
5.4) Scenario - 3 Student Attendance report Generation:
Some of the school staff had failed to maintain the attendance of the students, causing lack of essential records related to students attendance that should be submitted in a parents meet. The school management has decided to automate the process in order to maintain the attendance of every student effectively. You are asked to write a program to the above scenario and display whether the student is allowed to write the Exam or not.

percentage<65	detained
>=65 and <75	should pay condonation to appear for Exams
>=75	allowed for Exams

Sample Input:
Enter no of students: 5
Enter Students Details:

Rno:1	Name: Kalyan	attendance(%):67	Should pay condonation to appear for Exams
Rno:2	Name: laxman	attendance(%):56	
Rno:3	Name: Yamini	attendance(%):79	
Rno:4	Name: Aryan	attendance(%):60	
Rno:5	Name: Raghav	attendance(%):88	

Sample Output:

Rno	Name	Attendance (%)	Remarks
1	Kalyan	67	should pay condonation to appear for Exams
2	Laxman	56	detained
3	Yamini	79	allowed for Exams
4	Aryan	60	detained
5	Raghav	88	allowed for Exams

Exercise 6:

Arrays

Demonstration of arrays
6.1) Linear Search.
6.2) Bubble Sort.
6.3) Operations on Matrix.
6.4) Scenario – 4 Celebrity of the Week:

Red FM has launched a program called Celebrity of the week in their channel. Listeners are given a toll free number where they can listen to list of celebrities. Listeners can choose their favourite celebrity from the list and vote for him/her. The votes are validated from Monday to Saturday. The one with highest votes is called as "Celebrity of the Week" and his/her songs are played in the program, which is aired on Sundays. Now write a program to find the celebrity of the week.

Sample Input:
1. Nagachaithanya
2. Nithin
3. Prabhas
4. Ram
5. Thamanna
6. Samantha
7. Regina

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8. Sruthihasan
Enter no of listeners: 10
Enter your favourite: 3
Enter your favourite: 8
Enter your favourite: 4
Enter your favourite: 3
Enter your favourite: 4
Enter your favourite: 2
Enter your favourite: 7
Enter your favourite: 3
Enter your favourite: 1
Enter your favourite: 5
Sample Output:
"Celebrity of the Week" is PRABHAS

Exercise – 7:
Functions
7.1) Write a C Program to demonstrate of parameter passing in Functions and returning values.
7.2) Write a C Program to find Fibonacci, Factorial of a number with Recursion and without Recursion.
7.3) Scenario – 5 SELF DRIVE RENTAL
Sadiq and his friends are going to Banglore. But they don't have a vehicle in Banglore. For that they go to rental cars to take car for rent. You have find out what is total amount of car's rent. The car's rentals and rules are as follows.
i) Minimum booking is 4.
ii) There are 3 types of cars
A) SWIFT
B) SCORPIO
C) INNOVA
iii) There are 3 categories in cars rental

A) LTTE
B) CLASS
C) XL
FOR SWIFT,

- In LTTE 5 kms are free for one hour and Rs.70 per one hour, if they exceed 5kmph, then Rs.12 per km.
- In CLASS, 10 kms are free for one hour and Rs.90 per one hour, if they exceed 10kmph, then Rs.12 per km.
- In XL, 15 kms are free for one hour and Rs.110 per one hour, if they exceed 15kmph, then Rs.12 per km.

FOR SCORPIO,

- In LTTE, 5 kms are free for one hour and Rs.90 per one hour, if they exceed 5kmph, then Rs.15 per km.
- In CLASS, 10 kms are free for one hour and Rs.110 per one hour, if they exceed 10kmph, then Rs.15 per km.

- In XL, 15 kms are free for one hour and Rs.130 per one hour, if they exceed 15kmph, then Rs.15 per km.

FOR INNOVA

- In LTTE, 5 kms are free for one hour and Rs.110 per one hour, if they exceed 5kmph, then Rs.18 per km.
- In CLASS, 10 kms are free for one hour and Rs.130 per one hour, if they exceed 10kmph, then Rs.18 per km.
- In XL, 15 kms are free for one hour and Rs.150 per one hour, if they exceed 15kmph, then Rs.18 per km.

SAMPLE INPUT:
ENTER NO.OF DAYS AND HOURS FOR CAR: 01 02 (I.E 1 DAY 2 HOURS = 26 HOURS)
1. SWIFT
2. SCORPIO
3. INNOVA
SELECT A CAR: 2
1. LTTE
2. CLASS
3. XL
SELECT RENTAL TYPE: 2
TOTAL KMS COVERED: 300

SAMPLE OUTPUT:

TOTAL HOURS:	26
CAR NAME:	SCORPIO
RENTAL TYPE:	CLASS
AMOUNT:	2860
EXCEED AMOUNT (40KM *15):	600
GRAND TOTAL:	3460

Exercise – 8:
Strings
8.1) Implementation of string manipulation operations with library function.
i) copy
ii) concatenate
iii) length
iv) compare
8.2) Implementation of string manipulation operations without library function.
i) copy
ii) concatenate
iii) length
iv) compare
8.3) Verify whether the given string is a palindrome or not
8.4) Scenario – 6 Word with Obesity:
Jeeth is a fun loving and active boy. He likes to play with words and numbers. One day Jeeth and his friends attended a seminar, which was conducted in his school. The Seminar was

about "Causes of obesity in children and its effects". Jeeth and his friend Ram are not interested in listening to the seminar, so he thought of giving a puzzle to Ram. Jeeth gave some words to Ram and wanted him to find the word with Obesity. Ram was confused and asking your help. Write a program to find the weights of the words and display the word with highest weight (word with obesity).

Sample Input:
Enter no of words: 3
Enter 3 words: apple banana carrot

Sample Output:
Word with Obesity is carrot

Exercise – 9:
Arrays and Pointers
9.1) Write a C Program to Access Elements of an Array Using Pointer
9.2) Write a C Program to find the sum of numbers with arrays and pointers.

Exercise – 10:
Dynamic Memory Allocations

10.1) Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using malloc () function.
10.2)Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using calloc () function. Understand the difference between the above two programs

Exercises – 11:
Structures
11.1) Write a C Program to Store Information of a book Using Structure
11.2) Write a C Program to Store Information Using Structures with Dynamically Memory Allocation
11.3) Write a C Program to Add Two Complex Numbers by Passing Structure to a Function
11.4) Scenario – 7 Library Management
Shilpa student of PGEC got the Library Card. She wants to lend the books from the Library. The college gave two cards to each and every student. The students can lend only two books at a time and it has to be returned back after 15 days. If the books are not returned late fee will be collected for no. of days the books were returned after the due date. Late fee per day is Rs.50/-
Sample Input.
Enter the name of student, Roll No. Branch, Section, Year, DOL, DOR,
Sample output
No. of days returned after the due date = 5
Late fee per day = Rs. 50
Fine paid by the student is 5 * 50 =250.

Exercise -12:
Files
12.1) Write a C program to open a file and to print the contents of the file on screen.

12.2) Write a C program to copy content of one file to another file.
12.3) Write a C program to merge two files and store content in another file.
12.4) Scenario – 8 Student Information System Using Files:
Lakshya International school was recently established and having large no of admissions. The school management wanted the Student information to be computerized and wanted to maintain in a simple and in effective manner. You are asked to develop Student Information System using Files to perform the following tasks
1. Add New Student
2. Update Existing Student
3. Delete Existing Student
4. Retrieve A Particular/All Students
Sample Input:
Choose the task you want to perform:
1. Add
2. Update
3. Delete
4. Retrieve
Your choice: 1
Enter student details:
Name: Akhil
Age: 5
Class: 1
Sample Output:
Student details added

Reference Books:

1. Let Us C by Yashwanth Kanetkar.
2. Programming in C A-Practial Approach by Ajay Mittal.
3. The C programming Language, Dennis Richie and Brian Kernighan, Pearson Education.

Web Links:

1. https://www.hackerrank.com/
2. https://www.codechef.com/
3. https://www.topcoder.com/
4. https://code-cracker.github.io/

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ENGINEERING CHEMISTRY LAB
(Common to CE, ME, Min.E, PT & Ag.E)

I Semester	L	T	P	C
Course Code: 171BS1L01	0	0	3	2

Course Outcomes:
At the end of the Course, Student will be able to:

- CO 1: Demonstrate Acid –Base, Complexometric titrations by volumetric analysis.
- CO 2: Demonstrate Acid – Base titrations by instrumental analysis.
- CO 3: Estimate Vitamin C using volumetric analysis
- CO 4: Prepare polymer like Bakelite.
- CO5: Prepare alternative fuel like Bio-Diesel.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	2	-	-	-	-	-	-	-	-	-	-	-
CO2	2	-	-	-	-	-	-	-	-	-	-	-
CO3	2	-	-	-	-	-	-	-	-	-	-	-
CO4	2	-	-	-	-	-	-	-	-	-	-	-
CO5	2	-	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

Exercise 1:
Introduction to Chemistry laboratory – Molarity, Normality, Primary, secondary standard solutions, Volumetric titrations, Quantitative analysis, Qualitative analysis, etc.

Exercise 2:
Trial experiment - Determination of HCl using standard Na_2CO_3 solution.

Exercise 3:
Preparation of Phenol - Formaldehyde resin (Bakelite).

Exercise 4:
Determination of $KMnO_4$ using standard Oxalic acid solution.

Exercise 5:
Determination of ferrous iron using standard $K_2Cr_2O_7$ solution.

Exercise 6:
Preparation of Bio-Diesel.

Exercise 7:

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Determination of temporary and permanent hardness of water using standard EDTA solution.

Exercise 8:
Determination of Copper using standard EDTA solution.

Exercise 9:
Determination of Iron by a Colorimetric method using thiocynate as reagent.

Exercise 10:
Determination of pH of the given sample solution using pH meter.

Exercise 11:
Conduct metric titration between strong acid and strong base.

Exercise 12:
Conduct metric titration between strong acid and weak base.

Exercise 13:
Potentiometric titration between strong acid and strong base.

Exercise 14:
Potentiometric titration between strong acid and weak base.

Exercise 15:
Determination of Zinc using standard EDTA solution.

Exercise 16:
Determination of Vitamin – C.

Reference Books:

1. A Textbook of Quantitative Analysis, Arthur J. Vogel.
2. Dr. Jyotsna Cherukuri (2012) Laboratory Manual of engineering chemistry - II, VGS Techno Series.
3. Chemistry Practical Manual, Lorven Publications K. Mukkanti (2009). Practical Engineering Chemistry, B.S.Publication.

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ENGLISH – II
(Common to all branches)

	L	T	P	C
II Semester				
Course Code: 171HS2T03	3	1	0	3

Introduction:

In view of the growing importance of English as a tool for global communication and the consequent emphasis on training the students to acquire communicative competence, the syllabus has been designed to develop linguistic and communicative competence of the students of Engineering. As far as the detailed textbooks are concerned, the focus should be on the skills of Listening, Speaking, Reading and Writing. The non-detailed textbooks are meant for extensive reading both to instruct and delight. Hence the focus in the syllabus is primarily on the development of communicative skills and fostering of ideas about the essence of English Communication.

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Compare the difference between traditional and modern technologies.

CO 2: Identify the causes for climate change.

CO 3: Infer professional work habits, necessary for effective collaboration and cooperation.

CO 4: Develop competency in writing for political, social and religious documents.

CO 5: Demonstrate writing and basic concepts of grammar skills.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	-	-	-	-	1	-	-	-	-	3	-	-
CO2	-	-	-	-	-	-	-	-	-	3	-	-
CO3	-	-	-	-	-	-	1	-	-	3	-	-
CO4	-	-	-	-	-	-	1	-	-	3	-	-
CO5	-	-	-	-	-	-	-	-	-	3	-	-

Mapping of Course Outcomes with Program Specific Outcomes:

CO / PSO	PSO 1	PSO 2	PSO 3
CO1	-	-	-
CO2	-	-	-
CO3	-	-	-
CO4	-	-	-
CO5	-	-	-

Methodology:

1 The class is to be learner-centred where the learners are to read the texts to get a comprehensive idea of those texts on their own with the help of the peer group and the

teacher.

2 Integrated skill development methodology has to be adopted with focus on individual language skills as per the tasks/exercise.
3 The tasks/exercises at the end of each unit should be completed by the learners only and the teacher intervention is permitted as per the complexity of the task/exercise.
4 The teacher is expected to use supplementary material wherever necessary and also generate activities/tasks as per the requirement.
5 The teacher is permitted to use lecture method when a completely new concept is introduced in the class.

Recommended Topics:

UNIT-I:
1. TECHNOLOGY WITH A HUMAN FACE (Detailed)
2. AN IDEAL FAMILY (Non-Detailed)

UNIT-II:
1. CLIMATE CHANGE AND HUMAN STRATEGY (Detailed)
2. WAR (Non-Detailed)

UNIT-III:
1. EMERGING TECHNOLOGIES (Detailed)
2. THE VERGER (Non-Detailed)

UNIT-IV:
1. THE SECRET OF WORK (Detailed)
2. THE SCARECROW (Non-Detailed)

UNIT-V:
1. WORK BRINGS SOLACE (Detailed)
2. A VILLAGE LOST TO THE NATION (Non-Detailed)

Prescribed Text Books:
Detailed Text Book: 'Sure Outcomes' by Orient Black Swan Pvt. Ltd. Publishers.

Non Detailed Text Book: Panorama- A course on Reading by Oxford University Press Pvt. Ltd. Publishers.

Web Links:
1. http://www.cooperative-individualism.org/schumacher-e-f_technology-with-a-human-face-1973.htm
2. http://www.sinden.org/verger.html
3. http://btechenglish.blogspot.in/2015/05/work-brings-solace-sure-out-comes-b.html
4. http://www.ramakrishnavivekananda.info/vivekananda/volume_1/karma-yoga/secret_of_work.htm
5. https://en.wikipedia.org/wiki/Solar_power_in_Spain

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MATHEMATICS-III
(Common to all branches)

	L	T	P	C
II Semester				
Course Code: 171BS2T06	3	1	2	3

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Compute Laplace transform of various functions.

CO 2: Apply Laplace transform to solve initial value problems.

CO 3: Discuss about beta and gamma function, double integral over a region and triple integral over a volume.

CO 4: Find the gradient of a scalar function, divergence and curl of a vector function.

CO 5: Apply line, surface and volume integrals to find work done by a force, flux.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	-
CO5	3	2	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes:

CO / PSO	PSO 1	PSO 2	PSO 3
CO1	-	-	-
CO2	-	-	-
CO3	-	-	-
CO4	-	-	-
CO5	-	-	-

UNIT - I:

Laplace transforms:

Laplace transforms of standard functions-First Shifting theorem, Change of scale, Multiplication with t, Division by t - Transforms of derivatives and integrals – Unit step function –Dirac's delta function, Periodic functions.

UNIT- II:

Inverse Laplace transforms:

Inverse Laplace transforms – Convolution theorem (without proof), Second shifting theorem. *(MATLAB Exercise: Computing Laplace transform off (t) using symbolic toolbox, Solving initial value problems using 'dsolve')

Applications:

Evaluating improper integrals, solving initial value problems using Laplace transforms.

UNIT - III:

Multiple integrals and Beta, Gamma functions:

Multiple integrals: Double and triple integrals – Change of variables – Change of order of integration, Beta and Gamma functions- Properties - Relation between Beta and Gamma functions-

Applications:

Finding Areas and Volumes.

UNIT - IV:

Vector Differentiation:

Gradient - Directional Derivatives - Divergence- Curl - Laplacian operator - Vector identities.

Applications:

Equation of continuity, potential surfaces

UNIT - V:

Vector Integration:

Line integral – Work done - Surface and volume integrals, Green's Theorem, Stokes Theorem and Gauss Divergence theorem (without proof) and related problems.

Text Books:

1. B.S.Grewal, Higher Engineering Mathematics, 43rdEdition, Khanna Publishers.
2. Dr. T K V Iyengar, Engineering Mathematics, S. Chand Publications.

Reference Books:

1. George B. Thomas, D, Weir and J. Hass. Thomas Calculus, 12th edition, 2010 Pearson Education.
2. Greenberg, Advanced Engineering Mathematics, 2ndedition, Pearson Education.
3. Erwin Kreyszig, Advanced Engineering Mathematics, 10thEdition, Wiley-India.
4. W. Jordan and T. Smith, Mathematical Techniques, Oxford University Press.

Web Links:

1. https://en.wikipedia.org/wiki/Portal:Mathematics
2. http://mathworld.wolfram.com
3. https://www.khanacademy.org
4. http://nptel.ac.in/courses/122104017

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ENGINEERING PHYSICS
(Common to CE, ME, Min.E, PT & Ag.E)

II Semester	L	T	P	C
Course Code: 171BS2T07	3	1	0	3

Course Outcomes:
At the end of the Course, Student will be able to:

CO 1: Make use of the basic concepts of interference and relate to the principle of interferometer.
CO 2: Relate the basic concepts of diffraction to illustrate the principle of optical instruments like Telescope & microscope.
CO 3: Explain the basic concepts of polarization, principle of polarimeter and the method of producing high intensity light beams.
CO 4: Explain the basic concepts of sound waves, ultrasonics, crystal structure and X-ray diffraction Techniques.
CO 5: Classify different types of solids, to use the appropriate solid as per its magnetic and dielectric properties.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	3	1	-	-	-	-	-	-	-	-	-	-
CO2	2	2	-	-	-	-	-	-	-	-	-	-
CO3	2	2	-	-	-	-	-	-	-	-	-	-
CO4	2	1	-	-	-	-	-	-	-	-	-	-
CO5	2	2	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2	PSO 3
CO1	-	-	-
CO2	-	-	-
CO3	-	-	-
CO4	-	-	-
CO5	-	-	-

UNIT-I:
Interference:
Principle of Superposition – Coherence – Interference in thinfilms (reflection geometry)– Newton's rings – construction and basic principle of Interferometer.

UNIT-II:
Diffraction:
Fraunhofer diffraction at single slit - Cases of double slit, N-slits, & circular aperture, Grating equation – Rayleigh criterion of resolving power-Resolving power of a grating, Telescope and Microscopes.

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UNIT-III:

Polarization:

Types of Polarization-production - Nicol Prism -Quarter wave plateand Half Wave plate-working principle of polarimeter (Sacharimeter)

Lasers:

Characteristics– Stimulated emission – Einstein's Transition Probabilities- Pumping schemes- Ruby laser – Helium Neon laser-CO_2 Laser-Applications

UNIT-IV:

Acoustics:

Reverberation time - Sabine's formula – Acoustics of concert-hall.

Ultrasonics:

Production - Ultrasonic transducers- Non-Destructive Testing-Applications.

Crystallography & x-ray diffraction:

Basis and lattice – Crystal Systems – Bravais Lattice - Symmetry elements- Unit cell-packing fraction – coordination number- Miller indices – Separation between successive (h k l) planes – Bragg's law-Bragg's x-ray spectrometer.

UNIT-V:

Magnetism:

Classification based on Field, Temperature and order/disorder –atomicorigin – Ferromagnetism- Hysteresis- applications of magnetic materials (Para &Ferro).

Dielectrics:

Electric Polarization – Dielectric in DC fields – Internal field –Clausius Mossoti Equation – Dielectric loss- Ferroelectric Hysteresis and applications.

Text Books:

1 Engineering Physics – by M. N. Avadhanulu and T.V.S. Arun Murthy, S. Chand & Company Ltd.,
2 Physics for Engineers by M. R. Srinivasan, New Age international publishers (2009).
3 Engineering Physics by D. K. Bhattacharya and Poonam Tandon, Oxford press (2015).

Reference books:

1 Applied Physics by P. K. Palanisamy, Scitech publications (2014).
2 'Solid State Physics' by A. J. Dekker, Mc Millan Publishers (2011).

Web Links:

1. http://nptel.ac.in/courses/122107035/11
2. http://nptel.ac.in/courses/115102023/
3. https://phet.colorado.edu/en/simulations/category/physics
4. http://physicsgecg.blogspot.in/p/reading-materials.html
5. https://sites.google.com/site/physicsbysureshsaganti/home

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ENGLISH COMMUNICATION SKILLS LAB - II
(Common to all branches)

II Semester

Course Code: 171HS2L02

L	T	P	C
0	0	3	2

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Make effective use of Body language in all situations and contexts to enhance effective communication in all aspects.

CO 2: Identify communicative competency to respond to others in different situations.

CO 3: Make use of effective delivery strategies to select, compile and synthesize information for oral presentation.

CO 4: Demonstratein mock interviews, group discussion and public speaking.

CO 5: Illustrate interpersonal skills using English language confidently and effectively for personal and professional growth.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	-	-	-	-	-	-	-	-	-	3	-	2
CO2	-	-	-	-	-	-	-	-	-	3	-	2
CO3	-	-	-	-	-	-	-	-	-	3	-	2
CO4	-	-	-	-	-	-	-	-	-	3	-	2
CO5	-	-	-	-	-	-	-	-	-	3	-	2

Mapping of Course Outcomes with Program Specific Outcomes:

CO / PSO	PSO 1	PSO 2	PSO 3
CO1	-	-	-
CO2	-	-	-
CO3	-	-	-
CO4	-	-	-
CO5	-	-	-

PRACTICE 1:
Body Language

PRACTICE 2:
Dialogues

PRACTICE 3:
Presentation Skills

PRACTICE 4:
Group Discussion

PRACTICE 5:

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Interviews and Telephonic Interviews.

PRACTICE 6:
Debates

Reference Books:

1. Strengthen your Communication Skills by Dr.M.Hari Prasad, Dr.Salivendra J.Raju and Dr.G.Suvarna Lakshmi, Maruthi Publications.
2. English for Professionals by Prof Eliah, B.S Publications, Hyderabad.
3. A Handbook of English for Professionals by Prof Eliah, B.S Publications.
4. Effective Technical Communication by M. Ashraf Rizvi, Tata Mcraw – Hill Publishing Company.
5. Cornerstone, Developing soft skills, Pearson Education.

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CE 2017-18

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Department of Civil Engineering

Syllabus revision Index for the Academic Year 2017-2018 B.Tech Civil Engineering

S.No	Name of the course	Percentage of syllabus change
1	English-I	65
2	English-II	55
3	English Communication Skills Lab-II	40
4	Mathematics - I	40
5	Environmental Studies	20
6	Engineering Chemistry	25
7	Engineering Chemistry LAB	20
8	Computer Programming Lab	40
9	Mathematics - III	40
10	Engineering Physics	25

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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	English-II	English-I
Course Code	R161201	171HS1T01
Syllabus	UNIT 1: 1. ' The Greatest Resource-Education' from English Encounters 2. ' A P J Abdul Kalam' from The Great Indian Scientists.	UNIT-I: 1. IN LONDON: M.K.GANDHI (Detailed) 2. G.D. NAIDU (Non-Detailed)
	UNIT 2: 1. ' A Dilemma' from English Encounters 2. 'C V Raman' from The Great Indian Scientists.	UNIT-II: 1. THE KNOWLEDGE SOCIETY- APJ ABDUL KALAM (Detailed) 2. G.R. GOPINATH (Non-Detailed)
	UNIT 3: 1. 'Cultural Shock': Adjustments to new Cultural Environments from English Encounters. 2. 'Homi Jehangir Bhabha' from The Great Indian Scientists.	UNIT-III: 1. THE SCIENTIFIC POINT OF VIEW-J.B.S. HALDANE (Detailed) 2. J.C. BOSE (Non-Detailed)
	. UNIT 4: 1. 'The Lottery' from English Encounters. 2. 'Jagadish Chandra Bose' from The Great Indian Scientists.	UNIT-IV: 1. MAN'S PERIL-BERTRAND RUSSELL (Detailed) 2. HOMI JEHANGIR BHABHA (Non-Detailed)
	UNIT 5: 1. ' The Health Threats of Climate Change' from English Encounters 2. ' Prafulla Chandra Ray' from The Great Indian Scientists.	UNIT-V: 1. LUCK—MARK TWAIN (Detailed) 2. A SHADOW (Non-Detailed)
	UNIT 6: 1. ' The Chief Software Architect' from English Encounters 2. ' Srinivasa Ramanujan' from The Great Indian Scientists.	

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Mathematics-I	Mathematics-I
Course Code	R161102	171BS1T01
Syllabus	UNIT I: Differential equations of first order and first degree: Linear-Bernoulli-Exact-Reducible to exact. Applications: Newton's Law of cooling-Law of natural growth and decay-Orthogonal trajectories- Electrical circuits- Chemical reactions.	UNIT I: Differential equations of first order and first degree: Linear differential equations - Bernoulli differential equation - Exact differential equationsEquations reducible to exact (Type-1, Type-2, Type-3, Type-4) Applications: Newton's Law of cooling-Law of natural growth and decay-Orthogonal trajectories.
	UNIT II: Linear differential equations of higher order: Non-homogeneous equations of higher order with constant coefficients with RHS term of the type eax, sin ax, cos ax, polynomials in x, eax V(x), xV(x)- Method of Variation of parameters. Applications: LCR circuit, Simple Harmonic motion.	UNIT II: Linear differential equations of higher order: Linear differential equations of higher order with constant coefficients with RHS term of the type eax, sin ax, cos ax, polynomials in x, eax V(x), xV(x)-Method of Variation of parameters, Method of undetermined coefficients. *(MATLAB Exercise: Introduction to MAT LAB commands and Solution of Initial Value Problems using the command 'dsolve') Applications: Electric circuits, simple harmonic motion.
	UNIT III: Laplace transforms: Laplace transforms of standard functions-Shifting theorems - Transforms of derivatives and integrals – Unit step function –Dirac's delta function- Inverse Laplace transforms– Convolution theorem (with out proof). Applications: Solving ordinary differential equations (initial value problems) using Laplace transforms.	UNIT III: Linear systems of equations: Rank of a matrix - Echelon form-Normal form – Solution of linear systems – Gauss elimination method - Gauss Seidal method. Applications: Finding the current in electrical circuits.
	UNIT IV: Partial differentiation: Introduction- Homogeneous function-Euler's theorem-Total derivative-Chain ruleGeneralized Mean value theorem for	UNIT IV: Eigen values - Eigen vectors and Quadratic forms: Eigen values - Eigen vectors– Properties of eigen values (without proof) – Cayley -Hamilton

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	single variable (without proof)-Taylor's and Mc Laurent's series expansion of functions of two variables– Functional dependence- Jacobian. Applications: Maxima and Minima of functions of two variables without constraints and Lagrange's method (with constraints).	theorem (without proof) - Inverse and powers of a matrix by using Cayley - Hamilton theorem- Diagonalization- Quadratic forms- Reduction of quadratic form to canonical form using orthogonal transformation– Nature of the quadratic form. *(MATLAB Exercise: All Basic Operations on matrices are to be implemented using MATLAB including computation of rank, computation of eigen values and eigen vectors)
	UNIT V: First order Partial differential equations: Formation of partial differential equations by elimination of arbitrary 'constants and arbitrary functions –solutions of first order linear (Lagrange) equation and nonlinear (standard types) equations.	UNIT V: Partial differentiation and Partial differential equations: Homogeneous function-Euler's theorem-Total derivative-Chain rule-Taylor's and Maclaurin's series expansion of functions of two variables– Functional dependence Jacobian. Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions –solutions of first order linear (Lagrange) equation, nonlinear (standard types) equations. Applications: Maxima and Minima of functions of two variables without constraints and Lagrange's method (with constraints). *(MATLAB Exercise: To Plot graphs of various single and multivariable functions using MATLAB and analyze their maxima and minima graphically).
	UNIT VI: Higher order Partial differential equations: Solutions of Linear Partial differential equations, with constant coefficients. RHS term of the type e^(ax+by) , sin(ax+by), cos(ax+by), x^m y^n Classification of second order partial differential equation	

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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Environmental Studies	Environmental Studies
Course Code	R161108	171HS1T02/171HS2T02
Syllabus	UNIT – I Multidisciplinary nature of Environmental Studies: Definition, Scope and Importance –Sustainability: Stockholm and Rio Summit–Global Environmental Challenges: Global warming and climate change, Carbon Credits, acid rains, ozone layer depletion, population growth and explosion, effects. Role of information Technology in Environment and human health. Ecosystems: Concept of an ecosystem. - Structure and function of an ecosystem. - Producers, consumers and decomposers. - Energy flow in the ecosystem - Ecological succession. – Food chains, food webs and ecological pyramids. - Introduction, types, characteristic features, structure and function of Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems.	UNIT –I: Ecosystems: Scope of environmental studies, Structure- Producers, consumers and decomposers Function – Food chain, Food web, Tropic structure and Energy flow in the ecosystem Ecological pyramids, nutrient recycling, primary and secondary production, ecosystem regulation. Ecological succession Terrestrial ecosystem and aquatic ecosystem - Introduction, types, characteristic features.
	UNIT – II Natural Resources: Natural resources and associated problems Forest resources – Use and over – exploitation, deforestation – Timber extraction – 'Mining, dams and other effects on forest and tribal people Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems Mineral resources: Use and exploitation, environmental	UNIT – II: Natural Resources: Natural resources and associated problems Forest resources – Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources

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	effects of extracting and using mineral resources, Sustainable mining of Granite, Literate, Coal, Sea and River sands. Food resources: World food problems, changes caused by non-agriculture activities-effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources Vs Oil and Natural Gas Extraction. Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.	Food resources: World food problems, changes caused by non-agriculture activities effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources vs oil and natural gas extraction. Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.
	UNIT – III Biodiversity and its conservation: Definition: genetic, species and ecosystem diversity- classification - Value of biodiversity: consumptive use, productive use, social IBiodiversity at national and local levels. India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts - Endangered and endemic species of India – Conservation of biodiversity: conservation of biodiversity.	UNIT – III: Biodiversity and its conservation: Definition: genetic, species and ecosystem diversity classification Value of biodiversity: consumptive use, productive use, social-Biodiversity at national and local levels. India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts - Endangered and endemic species of India – Conservation of biodiversity
	UNIT – IV Environmental Pollution: Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies, Sustainable Life Studies. Impact of Fire Crackers on Men and his well being. Solid Waste Management: Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.	UNIT – IV: Environmental Pollution: Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies, Sustainable Life Style. Solid Waste Management: Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.
	UNIT – V Social Issues and the Environment: Urban problems related to energy -Water conservation, rain water harvesting-Resettlement and	UNIT – V: Social Issues and the Environment Urban problems related to energy -Water conservation, rain water harvesting Resettlement and rehabilitation

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Engineering Chemistry	Engineering Chemistry
Course Code	R161105	171BS1T03
Syllabus	UNIT I: HIGH POLYMERS AND PLASTICS Polymerisation:- Introduction- Mechanism of polymerization - Stereo regular polymers – methods of polymerization (emulsion and suspension) -Physical and mechanical properties – Plastics as engineering materials : advantages and limitations – Thermoplastics and Thermosetting plastics – Compounding and fabrication (4/5 techniques)- Preparation, properties and applications of polyethene, PVC, Bakelite Teflon and polycarbonates Elastomers :- Natural rubber- compounding and vulcanization – Synthetic rubbers : Buna S, Buna N, Thiokol and polyurethanes – Applications of elastomers. Composite materials & Fiber reinforced plastics – Biodegradable polymers – Conducting polymers.	UNIT- I: High Polymers and Plastics: Polymerization: Introduction- Mechanism of polymerization - Stereo regular polymers - Physical and mechanical properties – Plastics as engineering materials: advantages and limitations – Thermoplastics and Thermosetting plastics – Compounding and fabrication (compression moulding, injection moulding, extrusion moulding and transfer moulding techniques) - Preparation, properties and applications of polyethene, PVC, Bakelite and polycarbonates. Elastomers – Natural rubber- compounding and vulcanization – Synthetic rubbers: Buna S, Buna N, Thiokol – Applications of elastomers. Biodegradable polymers.
	UNIT II: FUEL TECHNOLOGY Fuels – Introduction – Classification – Calorific value - HCV and LCV – Dulong's formula – Bomb calorimeter – Numerical problems – Coal — Proximate and ultimate analysis – Significance of the analyses – Liquid fuels – Petroleum- Refining – Cracking – Synthetic petrol –Petrol knocking – Diesel knocking - Octane and Cetane ratings – Anti-knock agents – Power alcohol – Bio-diesel – Gaseous fuels – Natural gas, LPG	UNIT - II: Fuel Technology: Fuels:- Introduction – Classification – Calorific value - HCV and LCV – Dulong's formula – Coal — Proximate and ultimate analysis – Significance of the analyses – Liquid fuels – Petroleum- Refining – Cracking – Synthetic petrol –Petrol knocking – Diesel knocking - Octane and Cetane ratings – Anti-knock agents – Power alcohol – Bio-diesel – Gaseous fuels – Natural gas. LPG and CNG – Combustion – Calculation of air for the

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	Foaming, Scale formation, Boiler corrosion, Caustic embrittlement - Internal treatments - Softening of Hard water : Lime – Soda process, Zeolite process and numerical problems based on these processes and Ion Exchange process - Water for drinking purposes- Purification – Sterilization and disinfection : Chlorination, Break point chlorination and other methods – Reverse Osmosis and Electro Dialysis.	formation, Boiler corrosion, Caustic embrittlement - Internal treatments - Softening of Hard water : Lime – Soda process, Zeolite process and numerical problems based on these processes and Ion Exchange process - Water for drinking purposes- Purification – Sterilization and disinfection : Chlorination, Break point chlorination and other methods – Reverse Osmosis and Electro Dialysis.
	UNIT VI: CHEMISTRY OF ENGINEERING MATERIALS AND FUEL CELLS Refractories: - Definition, characteristics, classification, properties, failure of refractories Lubricants: - Definition, function, Theory and mechanism of lubricants, properties (Definition and importance) Cement: - Constituents, manufacturing, hardening and setting, deterioration of cement Insulators: - Thermal and electrical insulators Fuel cells: - Hydrogen Oxygen fuel cells – Methanol Oxygen fuel cells	

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	English -I	English-II
Course Code	R161101	171HS2T03
Syllabus	UNIT I: 1. 'Human Resources' from English for Engineers and Technologists. 2. 'An Ideal Family' from Panorama: A Course on Reading	UNIT-I: 1. TECHNOLOGY WITH A HUMAN FACE (Detailed) 2. AN IDEAL FAMILY (Non-Detailed)
	UNIT 2: 1. ' Transport: Problems and Solutions' from English for Engineers and Technologists. 2. 'War' from 'Panorama : A Course on Reading'	UNIT-II: 1. CLIMATE CHANGE AND HUMAN STRATEGY (Detailed) 2. WAR (Non-Detailed)
	UNIT 3: 1. 'Evaluating Technology' from English for Engineers and Technologists. 2. 'The Verger' from 'Panorama : A Course on Reading	UNIT-III: 1. EMERGING TECHNOLOGIES (Detailed) 2. THE VERGER (Non-Detailed)
	UNIT 4: 1. 'Alternative Sources of Energy' from English for Engineers and Technologists. 2. ' The Scarecrow' from Panorama : A Course on Reading	UNIT-IV: 1. THE SECRET OF WORK (Detailed) 2. THE SCARECROW (Non-Detailed)
	UNIT 5: 1. 'Our Living Environment' from English for Engineers and Technologists. 2. 'A Village Host to Nation' from Panorama : A Course on Reading	UNIT-V: 1. WORK BRINGS SOLACE (Detailed) 2. A VILLAGE LOST TO THE NATION (Non-Detailed)
	UNIT 6: 1. ' Safety and Training' from English for Engineers and Technologists. 2. 'Martin Luther King and Africa' from Panorama : A Course on Reading	

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Mathematics-III	Mathematics-III
Course Code	R161203	171BS2T06
Syllabus	UNIT I: Linear systems of equations: Rank-Echelon form-Normal form – Solution of linear systems – Gauss elimination - Gauss Jordon- Gauss Jacobi and Gauss Seidal methods. Applications: Finding the current in electrical circuits.	UNIT - I: Laplace transforms: Laplace transforms of standard functions-First Shifting theorem, Change of scale, Multiplication with t, Division by t - Transforms of derivatives and integrals – Unit step function –Dirac's delta function, Periodic functions.
	UNIT II: Eigen values - Eigen vectors and Quadratic forms: Eigen values - Eigen vectors– Properties – Cayley-Hamilton theorem - Inverse and powers of a matrix by using Cayley-Hamilton theorem- Diagonalization- Quadratic forms- Reduction of quadratic form to canonical form – Rank - Positive, negative and semi definite - Index – Signature. Applications: Free vibration of a two-mass system.	UNIT- II: Inverse Laplace transforms: Inverse Laplace transforms – Convolution theorem (without proof), Second shifting theorem. *(MATLAB Exercise: Computing Laplace transform off (t) using symbolic toolbox, Solving initial value problems using 'dsolve') Applications: Evaluating improper integrals, solving initial value problems using Laplace transforms.
	UNIT III: Multiple integrals: Curve tracing: Cartesian, Polar and Parametric forms. Multiple integrals: Double and triple integrals – Change of variables – Change of order of integration. Applications: Finding Areas and Volumes.	UNIT - III: Multiple integrals and Beta, Gamma functions: Multiple integrals: Double and triple integrals – Change of variables – Change of order of integration, Beta and Gamma functions- Properties - Relation between Beta and Gamma functions Applications: Finding Areas and Volumes.
	UNIT IV: Special functions: Beta and Gamma functions- Properties - Relation between Beta and Gamma functions. Evaluation of improper integrals. Applications: Evaluation of integrals.	UNIT - IV: Vector Differentiation: Gradient - Directional Derivatives - Divergence- Curl - Laplacian operator - Vector identities. Applications: Equation of continuity, potential surfaces
	UNIT V: Vector Differentiation: Gradient- Divergence- Curl - Laplacian and second order operators -Vector identities.	UNIT - V: Vector Integration: Line integral – Work done - Surface and volume integrals, Green's Theorem, Stokes Theorem and

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	Applications: Equation of continuity, potential surfaces	Gauss Divergence theorem (without proof) and related problems.
	UNIT VI: Vector Integration: Line integral – Work done – Potential function – Area- Surface and volume integrals Vector integral theorems: Greens, Stokes and Gauss Divergence theorems (without proof) and related problems. Applications: Work done, Force.	

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Engineering Physics	Engineering Physics
Course Code	R161204	171BS2T07
Syllabus	UNIT-I INTERFERENCE: Principle of Superposition – Coherent Sources – Interference in thin films (reflection geometry) – Newton's rings – construction and basic principle of Interferometers.	UNIT-I: Interference: Principle of Superposition – Coherence – Interference in thin films (reflection geometry)— Newton's rings – construction and basic principle of Interferometer.
	UNIT-II DIFFRACTION: Fraunhofer diffraction at single slit cases of double slit, N-slits & Circular Aperture (Qualitative treatment only)-Grating equation - Resolving power of a grating, Telescope and Microscopes	UNIT-II: Diffraction: Fraunhofer diffraction at single slit - Cases of double slit, N-slits, & circular aperture, Grating equation – Rayleigh criterion of resolving power- Resolving power of a grating, Telescope and Microscopes.
	UNIT-III POLARIZATION: Types of Polarization-production - Nicol Prism - Quarter wave plate and Half Wave plate – Working principle of Polarimeter (Sacharimeter) LASERS: Characteristics– Stimulated emission – Einstein's Transition PrbabilitiesPumping schemes - Ruby laser – Helium Neon laser.	UNIT-III: Polarization: Types of Polarization-production - Nicol Prism -Quarter wave plateand Half Wave plateworking principle of polarimeter (Sacharimeter) Lasers: Characteristics– Stimulated emission – Einstein's Transition Probabilities- Pumping schemes- Ruby laser – Helium Neon laser-CO2 Laser-Applications
	UNIT-IV ACOUSTICS: Reverberation time - Sabine's formula – Acoustics of concert-hall. ULTRASONICS: Production - Ultrasonic transducers- Non-Destructive Testing – Applications	UNIT-IV: Acoustics: Reverberation time - Sabine's formula – Acoustics of concert-hall. Ultrasonics: Production - Ultrasonic transducers- Non-Destructive Testing-Applications. Crystallography & x-ray diffraction: Basis and lattice – Crystal Systems – Bravais Lattice - Symmetry elements- Unit cellpacking fraction – coordination number- Miller indices – Separation between successive (h k l) planes – Bragg's law-Bragg's x-ray spectrometer.

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	UNIT-V CRYSTALLOGRAPHY & X-RAY DIFFRACTION: Basis and lattice – Bravais systems Symmetry elements- Unit cell-packing fraction – coordination number-Miller indices – Separation between successive (h k l) planes – Bragg's law NUCLEAR ENERGY – SOURCE OF POWER: Mass defect & Binding Energy – Fusion and Fission as sources – Fast breeder Reactors.	UNIT-V: Magnetism: Classification based on Field, Temperature and order/disorder – atomic origin – Ferromagnetism-Hysteresis- applications of magnetic materials (Para &Ferro). Dielectrics: Electric Polarization – Dielectric in DC fields – Internal field –Clausius Mossoti Equation – Dielectric loss- Ferroelectric Hysteresis and applications.
	UNIT-VI MAGNETISM: Classification based on Field, Temperature and order/disorder –atomic origin – Ferromagnetism- Hysteresis- applications of magnetic materials (Para &Ferro).. DIELECTRICS: Electric Polarization – Dielectrics in DC and AC fields – Internal field – Clausius Mossoti Equation - Loss, Breakdown and strength of dielectric materials – Ferroelectric Hysteresis and applications.	

G. Chinna Rao

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Department of Computer Science and Engineering

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Computer Programming Lab	Computer Programming Lab
Course Code	R161119	171ES1L01
Syllabus	**Exercise - 1** Basics a) What is an OS Command, Familiarization of Editors - vi, Emacs b) Using commands like mkdir, ls, cp, mv, cat, pwd, and man c) C Program to Perform Adding, Subtraction, Multiplication and Division of two numbers From Command line	**Exercise - 1** Introduction to C Programming 1.1) Introduction about Editors –Turbo, vi, Emacs 1.2) C Program to Perform Addition, Subtraction, Multiplication and Division of two numbers from Command line 1.3) Write a C Program to Calculate area of a Triangle using Heron's formula.
	Exercise - 2 Basic Math a) Write a C Program to Simulate 3 Laws at Motion b) Write a C Program to convert Celsius to Fahrenheit and vice versa	**Exercise – 2:** Basic Math 2.1) Write a C Program to Find Whether the Given Year is a Leap Year or not. 2.2) Write a C Program to convert Celsius to Fahrenheit and vice versa. 2.3) Write a C Program to find largest of three numbers using ternary operator.
	Exercise - 3 Control Flow - I a) Write a C Program to Find Whether the Given Year is a Leap Year or not. b) Write a C Program to Add Digits & Multiplication of a number	**Exercise – 3:** Control Flow - I 3.1) Write a C program to find the roots of a Quadratic Equation. 3.2) Write a C Program to make a simple Calculator to Add, Subtract, Multiply or Divide Using switch...case. 3.3) Scenario - 1 ATM PIN GENERATION: Aditya purchased a credit card. He has to generate a PIN number to access the ATM and Net banking for which OTP was sent to his registered mobile number. Using this OTP number he has

		to generate ATM PIN number. After generating PIN number, he can use it for further transactions. Maximum login he can make is 3 times. Sample Input: OTP: 6732 If valid Enter PIN: 8858 Confirm your PIN: 8858 Sample output: valid/Invalid PIN generated successfully. Note: OTP is hard coded. 3.4) Scenario - 2 RESET PASSWORD: Sindhuja was using Syndicate Bank's Online Account. She wanted to pay her bills through Online. But she forget her password. Now she has to reset the password. For resetting the password, she has to select reset option from the Menu. NOTE: using switch case. Sample input: 1. Fast withdrawal 2. Mini Statement 3. Balance Enquiry 4. Reset Password Enter your choice: 4 Sample Output: Reset password: New password: ***** Confirm password: *****
	Exercise – 4 Control Flow - II a) Write a C Program to Find Whether the Given Number is i) Prime Number ii) Armstrong Number b) Write a C program to print Floyd Triangle c) Write a C Program to print Pascal Triangle	**Exercise –4:** Control Flow - II 4.1) Write a C Program to Find Whether the Given Number is i) Prime Number ii) Armstrong Number 4.2) Write a C program to print Floyd Triangle 4.3) Write a C Program to print Pascal Triangle
	Exercise – 5 Functions a) Write a C Program demonstrating of parameter passing in Functions and	**Exercise – 5:** Control Flow – III 5.1) Write a C program to find the sum

	returning values. b) Write a C Program illustrating Fibonacci, Factorial with Recursion without Recursion.	of individual digits of a positive integer. 5.2) Write a C program to check whether given number is palindrome or not. 5.3) Write a C program to read two numbers, x and n, and then compute the sum of the geometric progression 1+x+x2 +x3 +.....+xn. 5.4) Scenario - 3 Student Attendance report Generation: Some of the school staff had failed to maintain the attendance of the students, causing lack of essential records related to students attendance that should be submitted in a parents meet. The school management has decided to automate the process in order to maintain the attendance of every student effectively. You are asked to write a program to the above scenario and display whether the student is allowed to write the Exam or not.
	Exercise – 6 Control Flow - III a) Write a C Program to make a simple Calculator to Add, Subtract, Multiply or Divide Using switch…case b) Write a C Program to convert decimal to binary and hex (using switch call function the function)	**Exercise 6:** Arrays Demonstration of arrays 6.1) Linear Search. 6.2) Bubble Sort. 6.3) Operations on Matrix. 6.4) Scenario – 4 Celebrity of the Week: Red FM has launched a program called Celebrity of the week in their channel. Listeners are given a toll free number where they can listen to list of celebrities. Listeners can choose their favourite celebrity from the list and vote for him/her. The votes are validated from Monday to Saturday. The one with highest votes is called as "Celebrity of the Week" and his/her songs are played in the program, which is aired on Sundays. Now write a program to find the celebrity of the week.
	Exercise – 7 Functions - Continued Write a C Program to compute the values ofsin x and cos x and e^x values using Series	**Exercise – 7:** Functions 7.1) Write a C Program to demonstrate parameter passing in Functions and

	expansion. (use factorial function)	returning values. 7.2) Write a C Program to find Fibonacci, Factorial of a number with Recursion and without Recursion. 7.3) Scenario – 5 SELF DRIVE RENTAL Sadiq and his friends are going to Banglore. But they don't have a vehicle in Banglore. For that they go to rental cars to take car for rent. You have find out what is total amount of car's rent. The car's rentals and rules are as follows. i) Minimum booking is 4. ii) There are 3 types of cars iii) There are 3 categories in cars rental FOR SWIFT, • • In LTTE 5 kms are free for one hour and Rs.70 per one hour, if they exceed 5kmph, then Rs.12 per km. • • In CLASS, 10 kms are free for one hour and Rs.90 per one hour, if they exceed 10kmph, then Rs.12 per km. • • In XL, 15 kms are free for one hour and Rs.110 per one hour, if they exceed 15kmph, then Rs.12 per km.
	Exercise – 8 Arrays Demonstration of arrays a) Search-Linear. b) Sorting-Bubble, Selection. c) Operations on Matrix.	**Exercise – 8:** Strings 8.1) Implementation of string manipulation operations with library function. 8.2) Implementation of string manipulation operations without library function. i. copy ii. concatenate iii. length iv. compare i. copy ii. concatenate iii. length iv. compare 8.3) Verify whether the given string is a palindrome or not 8.4) Scenario – 6 Word with

		Obesity: Jeeth is a fun loving and active boy. He likes to play with words and numbers. One day Jeeth and his friends attended a seminar, which was conducted in his school. The Seminar was about "Causes of obesity in children and its effects". Jeeth and his friend Ram are not interested in listening to the seminar, so he thought of giving a puzzle to Ram. Jeeth gave some words to Ram and wanted him to find the word with Obesity. Ram was confused and asking your help. Write a program to find the weights of the words and display the word with highest weight (word with obesity).
	Exercises - 9 Structures a)Write a C Program to Store Information of a Movie Using Structure b)Write a C Program to Store Information Using Structures with Dynamically Memory Allocation c) Write a C Program to Add Two Complex Numbers by Passing Structure to a Function	**Exercise – 9:** Arrays and Pointers 9.1) Write a C Program to Access Elements of an Array Using Pointer 9.2) Write a C Program to find the sum of numbers with arrays and pointers.
	Exercise - 10 Arrays and Pointers a)Write a C Program to Access Elements of an Array Using Pointer b) Write a C Program to find the sum of numbers with arrays and pointers.	**Exercise – 10:** Dynamic Memory Allocations 10.1) Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using malloc () function. 10.2)Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using calloc () function. Understand the difference between the above two programs
	Exercise – 11 Dynamic Memory Allocations a) Write a C program to find sum of n elements entered by user. To perform this program,	**Exercises – 11:** **Structures:** 11.1) Write a C Program to Store Information of a book Using Structure 11.2) Write a C Program to Store

	allocate memory dynamically using malloc () function. b) Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using calloc () function. Understand the difference between the above two programs	Information Using Structures with Dynamically Memory Allocation 11.3) Write a C Program to Add Two Complex Numbers by Passing Structure to a Function 11.4) Scenario – 7 Library Management Shilpa student of PGEC got the Library Card. She wants to lend the books from the Library. The college gave two cards to each and every student. The students can lend only two books at a time and it has to be returned back after 15 days. If the books are not returned late fee will be collected for no. of days the books were returned after the due date. Late fee per day is Rs.50/- Sample Input. Enter the name of student, Roll No. Branch, Section, Year, DOL, DOR, Sample output No. of days returned after the due date = 5 Late fee per day – Rs. 50 Fine paid by the student is 5 * 50 =250.
	Exercise – 12 Strings a) Implementation of string manipulation operations with library function. i) copy ii) concatenate iii) length iv) compare b) Implementation of string manipulation operations without library function. i) copy ii) concatenate iii) length iv) compare	**Exercise -12:** Files 12.1) Write a C program to open a file and to print the contents of the file on screen. 12.2) Write a C program to copy content of one file to another file. 12.3) Write a C program to merge two files and store content in another file. 12.4) Scenario – 8 Student Information System Using Files: Lakshya International school was recently established and having large no of admissions. The school management wanted the Student information to be computerized and wanted to maintain in a simple and in effective manner. You are asked to develop Student Information System using Files to perform the following tasks 1. Add New Student 2. Update Existing Student

		3. Delete Existing Student 4. Retrieve A Particular/All Students Sample Input: Choose the task you want to perform: 1. Add 2. Update 3. Delete 4. Retrieve Your choice: 1 Enter student details: Name: Akhil Age: 5 Class: 1 Sample Output: Student details added
	Exercise -13 Files a)Write a C programming code to open a file and to print it contents on screen. b)Write a C program to copy files	
	Exercise - 14 Files Continued a) Write a C program merges two files and stores their contents in another file. b) Write a C program to delete a file.	
	Exercise – 15 a) System Assembling, Disassembling and identification of Parts / Peripherals. b) Operating System Installation-Install Operating Systems like Windows, Linux along with necessaryDevice Drivers.	
	Exercise – 16 a) MS-Office / Open Office i) Word - Formatting, Page Borders, Reviewing, Equations, symbols. ii) SpreadSheet - organize data, usage of formula, graphs, charts. iii) Powerpoint - features of power point, guidelines for preparing an effectivepresentation. b) Network Configuration & Software Installation-Configuring TCP/IP, Proxy, and firewallsettings. Installing application software, system software & tools.	

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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	· Engineering/Applied Chemistry Lab	Engineering Chemistry Lab
Course Code	R161227/ R161118	171BS1L01
Syllabus	1. Introduction to Chemistry laboratory – Molarity, Normality, Primary, secondary standard solutions, Volumetric titrations, Quantitative analysis, Qualitative analysis, etc....	Exercise 1: Introduction to Chemistry laboratory – Molarity, Normality, Primary, secondary standard solutions, Volumetric titrations, Quantitative analysis, Qualitative analysis, etc.
	2. Trial experiment - Determination of HCl using standard Na2CO3 solution	Exercise 2: Trial experiment - Determination of HCl using standard Na2CO3 solution.
	3. Determination of alkalinity of a sample containing Na2CO3 and NaOH.	Exercise 3: Preparation of Phenol - Formaldehyde resin (Bakelite).
	..4. Determination of KMnO4 using standard Oxalic acid solution	Exercise 4: Determination of KMnO4 using standard Oxalic acid solution.
	5. Determination of Ferrous iron using standard K2Cr2O7 solution	Exercise 5: Determination of ferrous iron using standard K2Cr2O7 solution.
	6. Determination of Copper using standard K2Cr2O7 solution	Exercise 6: Preparation of Bio-Diesel.
	7. Determination of temporary and permanent hardness of water using standard EDTA solution.	Exercise 7: Determination of temporary and permanent hardness of water using standard EDTA solution.
	8. Determination of Copper using standard EDTA solution	Exercise 8: Determination of Copper using standard EDTA solution.
	9. Determination of Iron by a Colorimetric method using thiocynate as reagent.	Exercise 9: Determination of Iron by a Colorimetric method using thiocynate as reagent.
	10. Determination of pH of the given sample solution using pH meter.	Exercise 10: Determination of pH of the given sample solution using pH meter.
	11. Conductometric titration between strong acid and strong base.	Exercise 11: Conduct metric titration between strong acid and strong base.
	12. Conductometric titration between strong acid and weak base.	Exercise 12: Conduct metric titration between strong acid and weak base.
	13. Potentiometric titration between strong acid and strong base.	Exercise 13: Potentiometric titration between strong acid and strong base.
	14. Potentiometric titration between	Exercise 14: Potentiometric titration

	strong acid and weak base.	between strong acid and weak base.
	15. Determination of Zinc using standard EDTA solution.	Exercise 15: Determination of Zinc using standard EDTA solution.
	16. Determination of Vitamin – C.	Exercise 16: Determination of Vitamin – C.

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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	English Communication Skills Lab-II	English Communication Skills Lab-II
Course Code	R161221	171HS2L02
Syllabus	UNIT 1: 1. Debating Practice work	PRACTICE 1: Body Language
	UNIT 2: 1. Group Discussions Practice work	PRACTICE 2: Dialogues
	UNIT 3: 1. Presentation Skills Practice work	PRACTICE 3: Presentation Skills
	UNIT 4: 1. Interview Skills Practice work	PRACTICE 4: Group Discussion
	UNIT 5: 1. Email, 2. Curriculum Vitae Practice work	PRACTICE 5: Interviews and Telephonic Interviews.
	UNIT 6: 1. Idiomatic Expressions 2. Common Errors in English Practice work	PRACTICE 6: Debates

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	strong acid and weak base.	between strong acid and weak base.
	15. Determination of Zinc using standard EDTA solution.	Exercise 15: Determination of Zinc using standard EDTA solution.
	16. Determination of Vitamin – C.	Exercise 16: Determination of Vitamin – C.

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Department of Civil Engineering

Syllabus revision Index for the Academic Year 2017-2018 M.Tech Structural Engineering

S.No	Name of the course	Percentage of syllabus change
1	Experimental Analysis 172SE1E01	20
2	Structural Optimization 172SE1E02	30
3	Analysis & Design of Tall Buildings 172SE1E05	20
4	Plastics Analysis & Designing 172SE1E06	20

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	EXPERIMENTAL STRESS ANALYSIS	EXPERIMENTAL STRESS ANALYSIS
Course Code	172SE1E01	172SE1E01
Syllabus	UNIT-I Introduction and Strain Measurement Methods Model & Prototype Dimensional analysis-Factors influencing model design – Scale factors and Model material properties – Methods of model design. Definition of strain and its relation to experimental determinations - properties of strain gauge systems – Mechanical, Optical, Acoustic and Pneumatic types.	UNIT-I **Introduction and Strain Measurement Methods** Model & Prototype Dimensional analysis-Factors influencing model design – Scale factors and Model material properties – Methods of model design. Definition of strain and its relation to experimental determinations - properties of strain gauge systems – Mechanical, Optical, Acoustic and Pneumatic types.
	UNIT-II Electrical Resistance Strain Gauges Introduction – gauge construction strain gauge adhesives - mounting methods – gauge sensitivities and gage factor – performance characteristics of wire and foil strain gauges – environmental effects. Analysis of strain gauge data – the three-element rectangular rosette – the delta rosette – correction for transverse sensitivity.	UNIT-II **Electrical Resistance Strain Gauges** Introduction – gauge construction strain gauge adhesives - mounting methods – gauge sensitivities and gage factor – performance characteristics of wire and foil strain gauges – environmental effects. Analysis of strain gauge data – the three-element rectangular rosette – the delta rosette – correction for transverse sensitivity.
	UNIT –III Non – Destructive Testing Introduction – objectives of non destructive testing. Ultrasonic pulse velocity method – Rebound Hammer method (Concrete hammer) – Acoustic Emissionapplication to assessment of concrete quality	UNIT –III **Non – Destructive Testing** Introduction – objectives of non destructive testing. Ultrasonic pulse velocitymethod – Rebound Hammer method (Concrete hammer) – Acoustic Emission- application to assessment of concrete quality.

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	UNIT-IV Theory of Photo Elasticity Introduction – temporary double refraction – Index ellipsoid and stress ellipsoid – the stress optic law – effects of stressed model in a polariscope for various arrangements - fringe sharpening.	UNIT-IV **Distress Measurements and Control** Diagnosis of distress in structures - Crack observation and measurements - Corrosion of Reinforcement in concrete - Half cell, construction and use - Damage identification - Controlled blasting for demolition - Techniques for residual stress measurements.
	UNIT-V Two Dimensional Photo Elasticity Introduction–iso-chromatic fringe patterns – isoclinic fringe patterns – compensation techniques – calibration methods – separation methods – materials for photo- elasticity – properties of photo-elastic materials.	UNIT-V **Two Dimensional Photo Elasticity** Introduction–iso-chromatic fringe patterns – isoclinic fringe patterns – compensation techniques – calibration methods – separation methods – materials for photo- elasticity – properties of photo-elastic materials.

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	STRUCTURAL OPTMIZATION	STRUCTURAL OPTMIZATION
Course Code	172SE1E02	172SE1E02
Syllabus	UNIT-I Introduction Need and scope for optimization – statements of optimization problems- Objective function and its surface design variables- constraints and constraint surface- Classification of optimization problems (various functions continuous, discontinuous and discrete) and function behavior (monotonic and unimodal).	**UNIT-I** **Introduction** Need and scope for optimization – statements of optimization problems- Objective function and its surface design variables- constraints and constraint surface- Classification of optimization problems (various functions continuous, discontinuous and discrete) and function behavior (monotonic and unimodal). Design methodology- Civil engineering case study - Optimality criteria - Lagrange multiplier method - Kuhntucker Criteria.
	UNIT-II Classical Optimization Techniques Differential calculus method, multi variable optimization by method of constrained variation and Lagrange multipliers (generalized problem) Khun-Tucker conditions of optimality -Fully stressed design and optimality criterion based algorithmsintroduction, characteristics of fully stressed design th	**UNIT-II** **Classical Optimization Techniques** Differential calculus method, multi variable optimization by method of constrainedvariation and Lagrange multipliers (generalized problem) Khun-Tucker conditionsof optimality -Fully stressed design and optimality criterion based algorithms- introduction, characteristics of fully stressed design theoretical basis- examples.

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	UNIT –III Non-Liner Programming Unconstrained minimization-Fibonacci, golden search, Quadratic and cubic interpolation methods for a one dimensional minimization and univariate method, Powel's method, Newton's method and Davidon Fletcher Powell's method for multivariable optimization-Constrained minimization- Cutting plane method Zoutendjik's method-penalty function methods.	**UNIT –III** **Non-Liner Programming** Unconstrained minimization-Fibonacci, golden search, Quadratic and cubic interpolation methods for a one dimensional minimization and univariate method, Powel's method, Newton's method and Davidon Fletcher Powell's method for multivariable optimization- Constrained minimization- Cutting plane method- Zoutendjik's method-penalty function methods.
	UNIT-IV Linear Programming Definitions and theorems- Simplex method-Duality in Linear programmingPlastic analysis and Minimum weight design and rigid frame.	**UNIT-IV** **Linear Programming** Definitions and theorems-Simplex method-Duality in Linear programming- Plastic analysis and Minimum weight design and rigid frame.
	UNIT-V Introduction to Quadratic Programming Geometric programming- and dynamic programming- Design of beams and frames using dynamic programming technique.	**UNIT-V** **Non Traditional Methods** Genetic Algorithm - Terminology - Natural Law of Evolutions - Genetic operators - steps for solution of problems – Simulated Annealing - Algorithm - Boltzman's equation - ANT Colony optimization - Algorithm - Pheromone trail - Travelling salesman problem - Introduction to TABU search - sample problem – Artificial Neural Network - Application characteristics.

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	ANALYSIS AND DESIGN OF TALL BUILDINGS	ANALYSIS AND DESIGN OF TALL BUILDINGS
Course Code	172SE1E05	172SE1E05
Syllabus	UNIT-I Design Philosophies and Materials Modern concepts – High Performance Concrete, Fibre Reinforced Concrete, Light weight concrete, Self Compacting Concrete	**UNIT-I** **Design Philosophies and Materials** Modern concepts – High Performance Concrete, Fibre Reinforced Concrete, Light weight concrete, Self Compacting Concrete.
	UNIT-II Gravity Loading Dead load, Live load, Impact load, Construction load, Sequential loading. Wind Loading – Static and Dynamic Approach, Analytical method, Wind Tunnel- Experimental methods. Earthquake Loading – Equivalent lateral Load analysis, Response Spectrum Method, Combination of Loads	**UNIT-II** **Gravity Loading** Dead load, Live load, Impact load, Construction load, Sequential loading. Wind Loading – Static and Dynamic Approach, Analytical method, Wind Tunnel Experimental methods. Earthquake Loading – Equivalent lateral Load analysis, Response Spectrum Method, Combination of Loads
	UNIT –III Behavior of Structural Systems Factors affecting the growth, height and structural form, Behaviour of Braced frames, Rigid Frames, In-filled frames, Shear walls, Coupled Shear walls, Wall–Frames, Tubular, Outrigger braced, Hybrid systems.	**UNIT –III** **Behavior of Structural Systems** Factors affecting the growth, height and structural form, Behaviour of Braced frames, Rigid Frames, In-filled frames, Shear walls, Coupled Shear walls, Wall– Frames, Tubular, Outrigger braced, Hybrid systems.

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	UNIT-IV Analysis and Design Modelling for approximate analysis, Accurate analysis and reduction techniques, Analysis of structures as an integral unit, Analysis for member forces, drift and twist. Computerized 3D analysis. Design for differential movement, Creep and Shrinkage effects, Temperature Effects and Fire Resistance.	**UNIT-IV** **Analysis and Design** Modelling for approximate analysis, Accurate analysis and reduction techniques, Analysis of structures as an integral unit, Analysis for member forces, drift and twist. Computerized 3D analysis. Design for differential movement, Creep and Shrinkage effects, Temperature Effects and Fire Resistance.
	UNIT-V Stability Analysis Overall buckling analysis of frames, wall–frames, Approximate methods, Second order effect of gravity loading, P–Delta Effects, Simultaneous first order and PDelta analysis, Translational instability, Torsional Instability, Out of plumb effects, Effect of stiffness of members and foundation rotation in stability of structures	**UNIT-V** **Analysis and Behaviour of Tall Buildings** Linear and Non-linear behavior - Material non-linearity - Geometric non-linearity - Rigid and Elastic Supports - First Order Elastic Analysis - Second Order Elastic Analysis - First order Inelastic Analysis - Second order Inelastic Analysis - Behavior of Structural forms in Tall buildings - Rigid frame, Braced Frames, Shear Walls, Core walls, Tubular, Belt truss, Outrigger (Concepts only)

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	PLASTIC ANALYSIS AND DESIGN	PLASTIC ANALYSIS AND DESIGN
Course Code	172SE1E06	172SE1E06
Syllabus	UNIT-I Introduction and Basic Hypothesis Concepts of stress and strain – relation of steel Moment curvature relation- basic difference between elastic and plastic analysis with examples- Yield condition, idealizations, collapse criteria- Virtual work in the elastic-plastic state-Evaluation of fully plastic moment and shape factors for the various practical sections	**UNIT-I** **Introduction and Basic Hypothesis** Concepts of stress and strain – relation of steel Moment curvature relation- basic difference between elastic and plastic analysis with examples- Yield condition, idealizations, collapse criteria- Virtual work in the elastic-plastic state-Evaluation of fully plastic moment and shape factors for the various practical sections.
	UNIT-II Method of Limit Analysis Introduction to limit analysis of simply supported fixed beams and continuous beams, Effect of partial fixity and end, invariance of collapse loads, basic theorems of limit analysis, rectangular portal frames, gable frames, grids, superposition of mechanisms, drawing statistical bending moment diagrams for checks.	**UNIT-II** **Method of Limit Analysis** Introduction to limit analysis of simply supported fixed beams and continuous beams, Effect of partial fixity and end, invariance of collapse loads, basic theoremsof limit analysis, rectangular portal frames, gable frames, grids, superposition of mechanisms, drawing statistical bending moment diagrams for checks.

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	UNIT –III Limit Design Principles Basic principles, limit design theorems, application of limit design theorems, trial and error method, method of combining mechanisms, plastic moment distribution method, load replacement method, continuous beams and simple frames designs using above principles.	**UNIT –III** **Limit Design Principles** Basic principles, limit design theorems, application of limit design theorems, trial and error method, method of combining mechanisms, plastic moment distribution method, load replacement method, continuous beams and simple frames designs using above principles.
	UNIT-IV: Deflection in Plastic Beams and Frames Load deflection relations for simply supported beams, deflection of simple pin based and fixed based portal frames, method of computing deflections.	**UNIT-IV:** **Deflection in Plastic Beams and Frames** Load deflection relations for simply supported beams, deflection of simple pin based and fixed based portal frames, method of computing deflections.
	UNIT-V Minimum Weight Design Introduction to minimum Weight and linear Weight functions- Foulkes theorems and its geometrical analogue and absolute minimum weight design.	**UNIT-V** **Detailing and Field Practices** Detailing for ductility - Measures of ductility - Flexural yielding in frames and walls - Flexural members in ductile frames - Columns and frame members subject to bending and axial load - Joints in ductile frames - shear walls - Fire resistance of structural members - Code requirements - Quality control of concrete

Signature of the course coordinator

Signature of the HOD

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Department of Computer Science and Engineering

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Computer Programming Lab	Computer Programming Lab
Course Code	R161119	171ES1L01
Syllabus	**Exercise - 1** Basics a) What is an OS Command, Familiarization of Editors - vi, Emacs b) Using commands like mkdir, ls, cp, mv, cat, pwd, and man c) C Program to Perform Adding, Subtraction, Multiplication and Division of two numbers From Command line	**Exercise - 1** Introduction to C Programming 1.1) Introduction about Editors –Turbo, vi, Emacs 1.2) C Program to Perform Addition, Subtraction, Multiplication and Division of two numbers from Command line 1.3) Write a C Program to Calculate area of a Triangle using Heron's formula.
	Exercise - 2 Basic Math a) Write a C Program to Simulate 3 Laws at Motion b) Write a C Program to convert Celsius to Fahrenheit and vice versa	**Exercise – 2:** Basic Math 2.1) Write a C Program to Find Whether the Given Year is a Leap Year or not. 2.2) Write a C Program to convert Celsius to Fahrenheit and vice versa. 2.3) Write a C Program to find largest of three numbers using ternary operator.
	Exercise - 3 Control Flow - I a) Write a C Program to Find Whether the Given Year is a Leap Year or not. b) Write a C Program to Add Digits & Multiplication of a number	**Exercise – 3:** Control Flow - I 3.1) Write a C program to find the roots of a Quadratic Equation. 3.2) Write a C Program to make a simple Calculator to Add, Subtract, Multiply or Divide Using switch…case. 3.3) Scenario - 1 ATM PIN GENERATION: Aditya purchased a credit card. He has to generate a PIN number to access the ATM and Net banking for which OTP was sent to his registered mobile number. Using this OTP number he has

		to generate ATM PIN number. After generating PIN number, he can use it for further transactions. Maximum login he can make is 3 times. Sample Input: OTP: 6732 If valid Enter PIN: 8858 Confirm your PIN: 8858 Sample output: valid/Invalid PIN generated successfully. Note: OTP is hard coded. 3.4) Scenario - 2 RESET PASSWORD: Sindhuja was using Syndicate Bank's Online Account. She wanted to pay her bills through Online. But she forget her password. Now she has to reset the password. For resetting the password, she has to select reset option from the Menu. NOTE: using switch case. Sample input: 1. Fast withdrawal 2. Mini Statement. 3. Balance Enquiry 4. Reset Password Enter your choice: 4 Sample Output: Reset password: New password: ***** Confirm password: *****
	Exercise – 4 Control Flow - II a) Write a C Program to Find Whether the Given Number is i) Prime Number ii) Armstrong Number b) Write a C program to print Floyd Triangle c) Write a C Program to print Pascal Triangle	**Exercise –4:** Control Flow - II 4.1) Write a C Program to Find Whether the Given Number is i) Prime Number ii) Armstrong Number 4.2) Write a C program to print Floyd Triangle 4.3) Write a C Program to print Pascal Triangle
	Exercise – 5 Functions a) Write a C Program demonstrating of parameter passing in Functions and	**Exercise – 5:** Control Flow – III 5.1) Write a C program to find the sum

	returning values. b) Write a C Program illustrating Fibonacci, Factorial with Recursion without Recursion.	of individual digits of a positive integer. 5.2) Write a C program to check whether given number is palindrome or not. 5.3) Write a C program to read two numbers, x and n, and then compute the sum of the geometric progression 1+x+x2 +x3 +.....+xn. 5.4) Scenario - 3 Student Attendance report Generation: Some of the school staff had failed to maintain the attendance of the students, causing lack of essential records related to students attendance that should be submitted in a parents meet. The school management has decided to automate the process in order to maintain the attendance of every student effectively. You are asked to write a program to the above scenario and display whether the student is allowed to write the Exam or not.
	Exercise – 6 Control Flow - III a) Write a C Program to make a simple Calculator to Add, Subtract, Multiply or Divide Using switch...case b) Write a C Program to convert decimal to binary and hex (using switch call function the function)	**Exercise 6:** Arrays Demonstration of arrays 6.1) Linear Search. 6.2) Bubble Sort. 6.3) Operations on Matrix. 6.4) Scenario – 4 Celebrity of the Week: Red FM has launched a program called Celebrity of the week in their channel. Listeners are given a toll free number where they can listen to list of celebrities. Listeners can choose their favourite celebrity from the list and vote for him/her. The votes are validated from Monday to Saturday. The one with highest votes is called as "Celebrity of the Week" and his/her songs are played in the program, which is aired on Sundays. Now write a program to find the celebrity of the week.
	Exercise – 7 Functions - Continued Write a C Program to compute the values ofsin x and cos x and e^x values using Series	**Exercise – 7:** Functions 7.1) Write a C Program to demonstrate parameter passing in Functions and

	expansion. (use factorial function)	returning values. 7.2) Write a C Program to find Fibonacci, Factorial of a number with Recursion and without Recursion. 7.3) Scenario – 5 SELF DRIVE RENTAL Sadiq and his friends are going to Banglore. But they don't have a vehicle in Banglore. For that they go to rental cars to take car for rent. You have find out what is total amount of car's rent. The car's rentals and rules are as follows. i) Minimum booking is 4. ii) There are 3 types of cars iii) There are 3 categories in cars rental FOR SWIFT, • • In LTTE 5 kms are free for one hour and Rs.70 per one hour, if they exceed 5kmph, then Rs.12 per km. • • In CLASS, 10 kms are free for one hour and Rs.90 per one hour, if they exceed 10kmph, then Rs.12 per km. • • In XL, 15 kms are free for one hour and Rs.110 per one hour, if they exceed 15kmph, then Rs.12 per km.
	Exercise – 8 Arrays Demonstration of arrays a) Search-Linear. b) Sorting-Bubble, Selection. c) Operations on Matrix.	**Exercise – 8:** Strings 8.1) Implementation of string manipulation operations with library function. 8.2) Implementation of string manipulation operations without library function. i. copy ii. concatenate iii. length iv. compare i. copy ii. concatenate iii. length iv. compare 8.3) Verify whether the given string is a palindrome or not 8.4) Scenario – 6 Word with

		Obesity: Jeeth is a fun loving and active boy. He likes to play with words and numbers. One day Jeeth and his friends attended a seminar, which was conducted in his school. The Seminar was about "Causes of obesity in children and its effects". Jeeth and his friend Ram are not interested in listening to the seminar, so he thought of giving a puzzle to Ram. Jeeth gave some words to Ram and wanted him to find the word with Obesity. Ram was confused and asking your help. Write a program to find the weights of the words and display the word with highest weight (word with obesity).
	Exercises - 9 Structures a)Write a C Program to Store Information of a Movie Using Structure b)Write a C Program to Store Information Using Structures with Dynamically Memory Allocation c) Write a C Program to Add Two Complex Numbers by Passing Structure to a Function	**Exercise – 9:** Arrays and Pointers 9.1) Write a C Program to Access Elements of an Array Using Pointer 9.2) Write a C Program to find the sum of numbers with arrays and pointers.
	Exercise - 10 Arrays and Pointers a)Write a C Program to Access Elements of an Array Using Pointer b) Write a C Program to find the sum of numbers with arrays and pointers.	**Exercise – 10:** Dynamic Memory Allocations 10.1) Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using malloc () function. 10.2)Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using calloc () function. Understand the difference between the above two programs
	Exercise – 11 Dynamic Memory Allocations a) Write a C program to find sum of n elements entered by user. To perform this program,	**Exercises – 11:** **Structures:** 11.1) Write a C Program to Store Information of a book Using Structure 11.2) Write a C Program to Store

	allocate memory dynamically using malloc () function. b) Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using calloc () function. Understand the difference between the above two programs	Information Using Structures with Dynamically Memory Allocation 11.3) Write a C Program to Add Two Complex Numbers by Passing Structure to a Function 11.4) Scenario – 7 Library Management Shilpa student of PGEC got the Library Card. She wants to lend the books from the Library. The college gave two cards to each and every student. The students can lend only two books at a time and it has to be returned back after 15 days. If the books are not returned late fee will be collected for no. of days the books were returned after the due date. Late fee per day is Rs.50/- Sample Input. Enter the name of student, Roll No. Branch, Section, Year, DOL, DOR, Sample output No. of days returned after the due date = 5 Late fee per day = Rs. 50 Fine paid by the student is 5 * 50 =250.
	Exercise – 12 Strings a) Implementation of string manipulation operations with library function. i) copy ii) concatenate iii) length iv) compare b) Implementation of string manipulation operations without library function. i) copy ii) concatenate iii) length iv) compare	**Exercise -12:** Files 12.1) Write a C program to open a file and to print the contents of the file on screen. 12.2) Write a C program to copy content of one file to another file. 12.3) Write a C program to merge two files and store content in another file. 12.4) Scenario – 8 Student Information System Using Files: Lakshya International school was recently established and having large no of admissions. The school management wanted the Student information to be computerized and wanted to maintain in a simple and in effective manner. You are asked to develop Student Information System using Files to perform the following tasks 1. Add New Student 2. Update Existing Student

		3. Delete Existing Student 4. Retrieve A Particular/All Students Sample Input: Choose the task you want to perform: 1. Add 2. Update 3. Delete 4. Retrieve Your choice: 1 Enter student details: Name: Akhil Age: 5 Class: 1 Sample Output: Student details added
	Exercise -13 Files a)Write a C programming code to open a file and to print it contents on screen. b)Write a C program to copy files	
	Exercise - 14 Files Continued a) Write a C program merges two files and stores their contents in another file. b) Write a C program to delete a file.	
	Exercise – 15 a) System Assembling, Disassembling and identification of Parts / Peripherals. b) Operating System Installation-Install Operating Systems like Windows, Linux along with necessaryDevice Drivers.	
	Exercise – 16 a) MS-Office / Open Office i) Word - Formatting, Page Borders, Reviewing, Equations, symbols. ii) SpreadSheet - organize data, usage of formula, graphs, charts. iii) Powerpoint - features of power point, guidelines for preparing an effectivepresentation. b) Network Configuration & Software Installation-Configuring TCP/IP, Proxy, and firewallsettings. Installing application software, system software & tools.	

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Signature of the HOD

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Program Name : B.Tech. in Electrical and Electronics Engineering

Syllabus Revision for the Academic Year 2017-2018				
S.No	**Semester**	**Course Code**	**Course Name**	**% of content revised for the existing year**
1	I	171HS1T01	English - I	55
2	I	171BS1T01	Mathematics - I	40
3	I	171HS1T02	Environmental Studies	20
4	I	171BS1T05	Applied Chemistry	20
5	I	171ES1T02	Engineering Mechanics	0
6	I	171ES1T01	Computer Programming	0
7	I	171HS1L01	English Communication Skills Lab - I	10
8	I	171BS1L03	Applied Chemistry Lab	0
9	I	171ES1L01	Computer Programming Lab	40
10	II	171HS2T03	English - II	65
11	II	171BS2T02	Mathematics - II	10
12	II	171BS2T06	Mathematics - III	40
13	II	171BS2T04	Applied Physics	20
14	II	171ES2T03	Engineering Drawing	5
15	II	171EE2T01	Electrical Circuit Analysis - I	5
16	II	171HS2L02	English Communication Skills Lab - II	40
17	II	171BS2L04	Applied Physics Lab	10
18	II	171ES2L02	Engineering Workshop and IT Workshop	15

S.No	Semester	Course Code	Course Name	% of content revised for the existing year
19	III	R1621021	Electrical Circuit Analysis - II	0
20	III	R1621022	Electrical Machines-I	80
21	III	R1621023	Basic Electronics and Devices	0
22	III	R1621024	Electro Magnetic Fields	0
23	III	R1621025	Thermal and Hydro Prime Movers	0
24	III	R1621026	Managerial Economics & Financial Analysis	0
25	III	R1621027	Thermal and Hydro Laboratory	0
26	III	R1621028	Electrical Circuits Laboratory	16
27	IV	R1622021	Electrical Measurements	0
28	IV	R1622022	Electrical Machines-II	65
29	IV	R1622023	Switching Theory and Logic Design	0
30	IV	R1622024	Control Systems	0
31	IV	R1622025	Power Systems-I	0
32	IV	R1622026	Management Science	0
33	IV	R1622027	Electrical Machines -I Laboratory	60
34	IV	R1622028	Electronic Devices & Circuits Laboratory	0
35	V	RT31022	Managerial Economics and Financial Analysis	0
36	V	RT31021	Electrical Measurements	0
37	V	RT31023	Power Systems-II	0
38	V	RT31024	Electrical Machines-III	0
39	V	RT31025	Power Electronics	0
40	V	RT31026	Linear & Digital IC Applications	0

S.No	Semester	Course Code	Course Name	% of content revised for the existing year
41	V	RT31027	Electrical Machines-II Lab	0
42	V	RT31028	Control Systems Lab	0
43	V	RT31016	IPR & Patents	0
44	VI	RT32022	Switchgear and Protection	0
45	VI	RT32021	Microprocessors & Microcontrollers	0
46	VI	RT32023	Utilization of Electrical Energy	0
47	VI	RT32024	Power System Analysis	0
48	VI	RT32026	Power Semiconductor Drives	0
49	VI	RT32025	Management Science	0
50	VI	RT32027	Power Electronics Lab	0
51	VI	RT32028	Electrical Measurements Lab	0
52	VII	RT41021	Renewable Energy Sources and Systems	0
53	VII	RT41022	HVAC & DC Transmission	0
54	VII	RT41023	Power System Operation & Control	0
55	VII	RT41024	Energy Audit, Conservation and Management	0
56	VII	RT41025	Instrumentation	0
57	VII	RT41026	Non Conventional Sources of Energy	0
58	VII	RT41027	Optimization Techniques	0
59	VII	RT41028	VLSI Design	0
60	VII	RT41029	Electrical Distribution Systems	0
61	VII	RT41030	Optimization Techniques	0
62	VII	RT4102L	Microprocessors & Microcontrollers Lab	0
63	VII	RT4102M	Electrical Simulation Lab	0

S.No	Semester	Course Code	Course Name	% of content revised for the existing year
64	VII	RT4102N	Power systems lab	0
65	VIII	RT42021	Digital Control Systems	0
66	VIII	RT42022A	Advanced Control Systems	0
67	VIII	RT42022B	Extra High Voltage Transmission	0
68	VIII	RT42022C	Special Electrical Machines	0
69	VIII	RT42023A	Electric Power Quality	0
70	VIII	RT42023B	Digital Signal Processing	0
71	VIII	RT42023C	FACTS: Flexible Alternating Current Transmission Syste	0
72	VIII	RT42024A	OOPS Through Java	0
73	VIII	RT42024B	UNIX and Shell Programming	0
74	VIII	RT42024C	AI Techniques	0
75	VIII	RT42024D	Power System Reforms	0
76	VIII	RT42024E	Systems Engineering	0
77	VIII	RT42025	Project	0
Total number of courses in the academic year 2017-2018				= 77
Number of courses having revision in syllabus content >/= 20% in the academic year 2017-2018				= 12
Percentage of syllabus revision carried out in the academic year 2017-2018 = (12/77)*100				= 15.58%

Program Coordinator

Head of the Department

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PROGRAM STRUCTURE

I SEMESTER

Course Code	Name of the Course	Category	Total Number of contact hours				Credits (C)
			Lecture (L)	Tutorial (T)	Practice (P)	Total Hours	
171HS1T01	English - I	HSS	3	1	0	4	3
171BS1T01	Mathematics - I	BS	3	1	2	6	3
171HS1T02	Environmental Studies	HSS	2	1	0	3	2
171BS1T05	Applied Chemistry	BS	3	1	0	4	3
171ES1T02	Engineering Mechanics	ES	3	1	0	4	3
171ES1T01	Computer Programming	ES	3	1	0	4	3
171HS1L01	English Communication Skills Lab - I	HSS	0	0	3	3	2
171BS1L03	Applied Chemistry Lab	BS	0	0	3	3	2
171ES1L01	Computer Programming Lab	ES	0	0	3	3	2
		TOTAL	**17**	**6**	**11**	**34**	**23**

II SEMESTER

Course Code	Name of the Course	Category	Total Number of contact hours				Credits (C)
			Lecture (L)	Tutorial (T)	Practice (P)	Total Hours	
171HS2T03	English - II	HSS	3	1	0	4	3
171BS2T02	Mathematics - II	BS	3	1	0	4	3
171BS2T06	Mathematics - III	BS	3	1	2	6	3
171BS2T04	Applied Physics	BS	3	1	0	4	3
171ES2T03	Engineering Drawing	ES	3	0	3	6	3
171EE2T01	Electrical Circuit Analysis - I	PC	3	1	0	4	3
171HS2L02	English Communication Skills Lab - II	HSS	0	0	3	3	2
171BS2L04	Applied Physics Lab	BS	0	0	3	3	2
171ES2L02	Engineering Workshop and IT Workshop	ES	0	0	3	3	2
		TOTAL	**18**	**5**	**14**	**37**	**24**

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II Year – I Semester

S. No	Subjects	L	T	P	Credits
1	Electrical Circuit Analysis - II	4	--	--	3
2	Electrical Machines-I	4	--	--	3
3	Basic Electronics and Devices	4	--	--	3
4	Electro Magnetic Fields	4	--	--	3
5	Thermal and Hydro Prime Movers	4	--	--	3
6	Managerial Economics & Financial Analysis	4	--	--	3
7	Thermal and Hydro Laboratory	--	--	3	2
8	Electrical Circuits Laboratory	--	--	3	2
	Total Credits				**22**

II Year – II Semester

S. No	Subjects	L	T	P	Credits
1	Electrical Measurements	4	--	--	3
2	Electrical Machines-II	4	--	--	3
3	Switching Theory and Logic Design	4	--	--	3
4	Control Systems	4	--	--	3
5	Power Systems-I	4	--	--	3
6	Management Science	4	--	--	3
7	Electrical Machines -I Laboratory	--	--	3	2
8	Electronic Devices & Circuits Laboratory	--	--	3	2
	Total Credits				**22**

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III Year – I SEMESTER

S. No.	Subject	T	P	Credits
1	Managerial Economics and FinancialAnalysis	3+1	--	3
2	Electrical Measurements	3+1	--	3
3	Power Systems-II	3+1	--	3
4	Electrical Machines-III	3+1	--	3
5	Power Electronics	3+1	--	3
6	Linear & Digital IC Applications	3+1	--	3
7	Electrical Machines-II Lab	--	3	2
8	Control Systems Lab	--	3	2
9	IPR & Patents	3+1		2
Total Credits				**24**

III Year – II SEMESTER

S. No.	Subject	T	P	Credits
1	Switchgear and Protection	3+1	--	3
2	Microprocessors & Microcontrollers	3+1	--	3
3	Utilization of Electrical Energy	3+1	--	3
4	Power System Analysis	3+1	--	3
5	Power Semiconductor Drives	3+1	--	3
6	Management Science	3+1	--	3
7	Power Electronics Lab	--	3	2
8	Electrical Measurements Lab	--	3	2
Total Credits				**22**

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IV Year – I SEMESTER

S. No.	Subject	T	P	Credits
1	Renewable Energy Sources and Systems	3+1	-	3
2	HVAC & DC Transmission	3+1	-	3
3	Power System Operation & Control	3+1	-	3
4	**Open Elective**	3+1	-	3
5	**Elective – I**	3+1	-	3
6	Microprocessors & Microcontrollers Lab	-	3	2
7	Electrical Simulation Lab	-	3	2
8	Power systems lab		3	2
Total Credits				**21**

Open Elective:

1. Energy Audit, Conservation and Management
2. Instrumentation
3. Non Conventional Sources of Energy
4. Optimization Techniques

Elective – I:

1. VLSI Design
2. Electrical Distribution Systems
3. Optimization Techniques

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IV Year – II SEMESTER

S. No.	Subject	T	P	Credits
1	Digital Control Systems	3+1	-	3
2	**Elective – II**	3+1	-	3
3	**Elective – III**	3+1	-	3
4	**Elective – IV**	3+1	-	3
5	Project	-	-	9
Total Credits				**21**

Elective – II:

1. Advanced Control Systems
2. Extra High Voltage Transmission
3. Special Electrical Machines

Elective – III:

1. Electric Power Quality
2. Digital Signal Processing
3. FACTS: Flexible Alternating Current Transmission Systems.

Elective-IV:

1. OOPS Through Java
2. UNIX and Shell Programming
3. AI Techniques
4. Power System Reforms
5. Systems Engineering

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ENGLISH – I
(Common to all branches)

I Semester	L	T	P	C
Course Code: 171HS1T01	3	1	0	3

Introduction:

In view of the growing importance of English as a tool for global communication and the consequent emphasis on training the students to acquire communicative competence, the syllabus has been designed to develop linguistic and communicative competence of the students of Engineering. As far as the detailed textbooks are concerned, the focus should be on the skills of Listening, Speaking, Reading and Writing. The non-detailed textbooks are meant for extensive reading both to instruct and delight. Hence the focus in the syllabus is primarily on the development of communicative skills and fostering of ideas about the essence of English Communication.

Course Outcomes:
At the end of the Course, Student will be able to:

CO 1: Summarize how Gandhi grew in introspection and the conditions to achieve a higher quality of life, strength and sovereignty of a developed nation.
CO 2: Identify that all men can come together and avert the peril.
CO 3: Comprehend texts from a literary perspective and familiarise the students with Figures of Speech.
CO 4: Explain the characteristic traits of renowned scientists who contributed enormously to the scientific advancement of India.
CO 5: Demonstrate Writing and basic concepts of Grammar skills.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	-	-	-	-	-	-	-	-	-	3	-	-
CO2	-	-	-	-	-	-	-	-	-	3	-	-
CO3	-	-	-	-	-	-	-	-	-	3	-	-
CO4	-	-	-	-	-	-	-	-	-	3	-	-
CO5	-	-	-	-	-	-	-	-	-	3	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

Methodology:

1. The class is to be learner-cantered where the learners are to read the texts to get a comprehensive idea of those texts on their own with the help of the peer group and the teacher.
2. Integrated skill development methodology has to be adopted with focus on individual language skills as per the tasks/exercise.

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3. The tasks/exercises at the end of each unit should be completed by the learners only and the teacher intervention is permitted as per the complexity of the task/exercise.
4. The teacher is expected to use supplementary material wherever necessary and also generate activities/tasks as per the requirement.
5. The teacher is permitted to use lecture method when a completely new concept is introduced in the class.

Recommended Topics:

UNIT-I:
1. IN LONDON: M.K. GANDHI (Detailed)
2. G.D. NAIDU (Non-Detailed)

UNIT-II:
1. THE KNOWLEDGE SOCIETY- APJ ABDUL KALAM (Detailed)
2. G.R. GOPINATH (Non-Detailed)

UNIT-III:
1. THE SCIENTIFIC POINT OF VIEW- J.B.S. HALDANE (Detailed)
2. J.C. BOSE (Non-Detailed)

UNIT-IV:
1. MAN'S PERIL-BERTRAND RUSSELL (Detailed)
2. HOMI JEHANGIR BHABHA (Non-Detailed)

UNIT-V:
1. LUCK—MARK TWAIN (Detailed)
2. A SHADOW (Non-Detailed)

Textbooks:
Detailed Text Book: 'English Essentials' by Ravindra Publications.

Non Detailed Text Book: 'Modern Trail Blazers' by Orient Black Swan Pvt. Ltd. Publishers.

Web Links:
1. https://en.wikipedia.org/wiki/Gopalswamy_Doraiswamy_Naidu
2. https://englishforundergraduates.wordpress.com/2016/09/25/the-knowledge-society-from-ignited-minds-a-p-j-abdul-kalam/
3. http://btechenglish.blogspot.in/2014/01/the-scientific-point-of-view-j-b-s.html
4. https://www.famousscientists.org/jagadish-chandra-bose/
5. https://www.thebetterindia.com/37339/homi-jehangir-bhabha/

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MATHEMATICS-I
(Common to all branches)

I Semester	L	T	P	C
Course Code: 171BS1T01	3	1	0	3

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Associate linear differential equations of first order to solve various physical problems involving differential equations of first order
CO 2: Solve linear differential equations of higher order.
CO 3: Solve linear systems of equations using the concept of rank, Gauss elimination, Gauss Seidal method.
CO 4: Find the eigen values and eigen vectors of matrices.
CO 5: Associate the concepts of Partial Differentiation to maxima and minima of functions of several variables and to solve Partial differential equations.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	-
CO5	3	2	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT I:

Differential equations of first order and first degree:

Linear differential equations - Bernoulli differential equation - Exact Differential Equations-Equations reducible to exact (Type-1, Type-2, Type-3, Type-4)

Applications:

Newton's Law of Cooling-Law of natural growth and Decay-Orthogonal trajectories.

UNIT II:

Linear differential equations of higher order:

Linear differential equations of higher order with constant coefficients with RHS term of the type e^{ax}, sin ax, cos ax, polynomials in x, e^{ax} V(x), xV(x)- Method of Variation of parameters, Method of undetermined coefficients.

*(MATLAB Exercise: Introduction to MAT LAB commands and Solution of Initial Value Problems using the command 'dsolve')

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Applications:
Electric circuits, simple harmonic motion.

UNIT III:
Linear systems of equations:
Rank of a matrix - Echelon form-Normal form – Solution of linear systems – Gauss elimination method - Gauss Seidal method.
Applications:
Finding the current in electrical circuits.

UNIT IV:
Eigen values - Eigen vectors and Quadratic forms:
Eigen values - Eigen vectors– Properties of eigen values (without proof) – Cayley -Hamilton theorem (without proof) - Inverse and powers of a matrix by using Cayley -Hamilton theorem- Diagonalization- Quadratic forms- Reduction of quadratic form to canonical form using orthogonal transformation– Nature of the quadratic form.
*(MATLAB Exercise: All Basic Operations on matrices are to be implemented using MATLAB including computation of rank, computation of eigen values and eigen vectors)

UNIT V:
Partial differentiation and Partial differential equations
Homogeneous Function-Euler's Theorem-Total Derivative-Chain Rule-Taylor's and Maclaurin's series expansion of functions of two variables– Functional dependence-Jacobian.
Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions –solutions of first order linear (Lagrange) equation, nonlinear (standard types) equations.
Applications: Maxima and Minima of functions of two variables without constraints and Lagrange's method (with constraints).
*(MATLAB Exercise: To Plot graphs of various single and multivariable functions using MATLAB and analyze their maxima and minima graphically).

Text Books:
1. B.S.Grewal, Higher Engineering Mathematics, 43rdEdition, Khanna Publishers.
2. Dr.T.K.V. Iyengar, Engineering Mathematics, S. Chand publications

Reference Books:
1. Erwin Kreyszig, Advanced Engineering Mathematics, 10thEdition, Wiley-India
2. D.G.Zill, MICHAIL R CULTER, Advanced Engineering Mathematics 3rdEdition Norosa Publications 2009.
3. Dean G. Duffy, Advanced engineering mathematics with MATLAB, CRCPress.
4. Peter O'neil, Advanced Engineering Mathematics, Cengage Learning.
5. Glyn James, Advanced modern engineering mathematics, Pearson education.
6. MATLAB by Rudra Pratap, Getting started with MATLAB, Oxford Publication.

Web Links:
1. https://en.wikipedia.org/wiki/Portal:Mathematics

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ENVIRONMENTAL STUDIES
(Common to CE, EEE, ME, Min.E, PT & Ag.E)

I Semester	L	T	P	C
Course Code: 171HS1T02	2	1	0	2

Course Outcomes:
At the end of the Course, Student will be able to:

CO 1: Identify the need for protecting the producers and consumers in various ecosystems and their role in the food web.

CO 2: Outline the natural resources and their importance for the sustenance of the life.

CO 3: List out the biodiversity of India, threats and its conservation methods.

CO 4: Illustrate various attributes of the pollution, impacts and measures to control the pollution along with waste management practices. Summarize the legislations of India in environmental protection.

CO 5: Describe social issues both rural and urban environment to combat the challenges. Explain the population growth and its implications.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	-	-	-	-	-	3	2	-	-	-	-	1
CO2	-	-	-	-	-	3	2	-	-	-	-	1
CO3	-	-	-	-	-	3	2	-	-	-	-	1
CO4	-	-	-	-	-	3	2	-	-	-	-	1
CO5	-	-	-	-	-	3	2	-	-	-	-	1

Mapping of Course Outcomes with Program Specific Outcomes:

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT –I: Ecosystems:
Scope of environmental studies, Structure- Producers, consumers and decomposers Function – Food chain, Food web, Tropic structure and Energy flow in the ecosystem Ecological pyramids, nutrient recycling, primary and secondary production, ecosystem regulation. Ecological succession Terrestrial ecosystem and aquatic ecosystem - Introduction, types, characteristic features.

UNIT – II: Natural Resources:
Natural resources and associated problems Forest resources – Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people.

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Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems
Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources.
Food resources: World food problems, changes caused by non-agriculture activities-effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity
Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources vs oil and natural gas extraction.
Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

UNIT – III: Biodiversity and its conservation:
Definition: genetic, species and ecosystem diversity classification Value of biodiversity: consumptive use, productive use, Social-Biodiversity at national and local levels. India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts - Endangered and endemic species of India – Conservation of biodiversity.

UNIT – IV: Environmental Pollution:
Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies, Sustainable Life Style.
Solid Waste Management: Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.

UNIT – V: Social Issues and the Environment
Urban problems related to energy -Water conservation, rain water Harvesting-Resettlement and rehabilitation of people; its problems and concerns. Global challenges
Environmental ethics: Issues and possible solutions. Environmental Protection Act -Air (Prevention and Control of Pollution) Act. –Water (Prevention and control of Pollution) Act - Wildlife Protection Act - Forest Conservation Act-Issues involved in enforcement of environmental legislation. - Public awareness and Environmental management.

Text Books:

1. Environmental Studies, K.V. S. G. Murali Krishna, VGS Publishers, Vijayawada
2. Environmental Studies, R. Rajagopalan, 2nd Edition, 2011, Oxford University Press.
3. Environmental Studies, P.N. Palanisamy, P. Manikandan, A. Geetha, and K. Manjula Rani; Pearson Education, Chennai

Reference Books:

1. Text Book of Environmental Studies, Deeshita Dave & P. Udaya Bhaskar, Cengage Learning.
2. A Textbook of Environmental Studies, Shaashi Chawla, TMH, New Delhi.
3. Environmental Studies, Benny Joseph, Tata McGraw Hill Co, New Delhi.
4. "Perspectives in Environment Studies" Anubha Kaushik, C P Kaushik, New Age International Publishers, 2014.

Web Links:

1. https://www.youtube.com/watch?v=7G3eXI_DPn8

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2. www.nptel.ac.in/courses/122102006/
3. www.nptel.ac.in/courses/120108002/
4. https://www.youtube.com/watch?v=4AuwG2G_ERU
5. www.nptelvideos.in/2012/12/fundamentals-of-environmental-pollution.html
6. www.nptel.ac.in/courses/120108004/

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APPLIED CHEMISTRY

I Semester	L	T	P	C
Course Code: 171BS1T05	3	1	0	3

Course Outcomes

At the end of the Course, Student will be able to:

CO 1: Explain polymeric materials their uses and moulding techniques of plastics.

CO 2: Analyse fuel characteristics using Calorific value, knocking characteristics and flue gas analysis.

CO 3: Explain the working principle of Electro chemical cells and corrosion characteristics.

CO 4: Explain the properties and applications of Nano, Superconductors, Semiconductors, Liquid crystals and fuel cells.

CO 5: Summarize non-conventional energy sources and their applications

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	2	-	-	-	-	-	-	-	-	-	-	-
CO2	2	-	-	-	-	-	-	-	-	-	-	-
CO3	3	-	-	-	-	-	-	-	-	-	-	-
CO4	3	-	-	-	-	-	-	-	-	-	-	-
CO5	2	-	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes:

CO / PSO	PSO1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT - I:

High Polymers and Plastics:

Polymerization: Introduction- Mechanism of polymerization - Stereo regular polymers - Physical and mechanical properties – Plastics as engineering materials: advantages and limitations – Thermoplastics and Thermosetting plastics – Compounding and fabrication (compression moulding, injection moulding, extrusion moulding and transfer moulding techniques)- Preparation, properties and applications of polyethene, PVC, Bakelite and polycarbonates. Elastomers – Natural rubber- compounding and vulcanization – Synthetic rubbers: Buna S, Buna N, Thiokol – Applications of elastomers. Biodegradable polymers.

UNIT - II:

Fuel Technology:

Fuels:- Introduction – Classification – Calorific value - HCV and LCV – Dulong's formula – Coal — Proximate and ultimate analysis – Significance of the analyses – Liquid fuels – Petroleum- Refining – Cracking – Synthetic petrol –Petrol knocking – Diesel knocking - Octane and Cetane ratings – Anti-knock agents – Power alcohol – Bio-diesel – Gaseous fuels

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– Natural gas. LPG and CNG – Combustion – Calculation of air for the combustion of a fuel – Flue gas analysis – Orsat apparatus.

UNIT - III:

Electrochemical Cells and Corrosion:

Galvanic cells - Reversible and irreversible cells – Single electrode potential- Electro chemical series and uses of this series- Standard electrodes (Hydrogen and Calomel electrodes) - Concentration Cells – Batteries: Dry Cell - Li cells - Zinc – air cells.

Corrosion:- Definition – Theories of Corrosion (electrochemical) – Formation of galvanic cells by different metals, by concentration cells, by differential aeration and waterline corrosion – Passivity of metals – Pitting corrosion - Galvanic series – Factors which influence the rate of corrosion - Protection from corrosion – Cathodic protection - Protective coatings: – Metallic (cathodic and anodic) coatings - Methods of application on metals (Galvanizing, Tinning, Electroplating, Electroless plating).

UNIT - IV:

Chemistry of Advanced Materials:

Nano materials:-Introduction – Sol-gel method - Carbon nano tubes and fullerenes: Types, preparation, properties and applications.

Super conductors: -Type –I, Type II – Characteristics and applications

Semiconductors: - Preparation of semiconductors, working of diods and transistors.

Green synthesis: -Principles

Liquid crystals:-Introduction – Types – Applications

Fuel cells: - Introduction - cell representation, H_2-O_2fuel cell: Design and working, advantages and Limitations. Types of fuel cells: methanol-oxygen fuel cells.

UNIT - V:

Non-Conventional Energy Sources:

Solar Energy: - Introduction, application of solar energy, conversion of solar energy (Thermal conversion & photo conversion) – photovoltaic cell: design, working and its importance Non-conventional energy sources:

(i) Hydropower include setup a hydropower plant (schematic diagram)
(ii) Geothermal energy: Introduction-schematic diagram of a geothermal power plant
(iii) Tidal and wave power: Introduction- Design and working-movement of tides and their effect on sea level.
(iv) Ocean thermal energy: Introduction, closed-cycle, ocean thermal energy conversion (OTEC), open cycle OTEC, hybrid OTEC, schematic diagram and explanation.
(v) Biomass and biofuels.

Text Books:

1. Engineering Chemistry by Jain and Jain; Dhanpat Rai Publicating Co.
2. A Text books of Applied Chemistry by Dr. Bharathi kumari Yalamananchili, VGS publications.
3. Engineering Chemistry by Shikha Agarwal; Cambridge University Press, 2015 edition.

Reference Books:

1. Engineering Chemistry by PrasanthRath, Cengage Learning, 2015 edition.
2. A text book of engineering Chemistry by S. S. Dara; S. Chand & Co Ltd., Latest Edition

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3. Applied Chemistry by H.D. Gesser, Springer Publishers
4. Text book of Nano-science and nanotechnology by B.S. Murthy, P. Shankar and others, University Press, IIM

Web Links:

1. http://www.nptelvideos.in/2012/11/chemistry-of-materials
2. http://www.nptelvideos.com/lecture.php?id=2946
3. http://www.nptelvideos.com/lecture.php?id=2922
4. http://www.nptelvideos.com/lecture.php?id=2954

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COMPUTER PROGRAMMING LAB
(Common to all branches)

I Semester	L	T	P	C
Course Code: 171ES1L01	0	0	3	2

Course Outcomes:
At the end of the Course, Student will be able to:

CO 1: Implement basic programs in C.
CO 2: Use Conditional and Iterative statements to solve real time scenarios in C.
CO 3: Implement the concept of Arrays and Modularity.
CO 4: Apply the Dynamic Memory Allocation functions using pointers.
CO 5: Develop programs using structures, and Files.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	-	2	-	-	2	-	-	-	-	-	-	-
CO2	-	2	2	3	2	-	-	-	-	-	-	-
CO3	-	3	2	2	2	-	-	-	-	-	-	-
CO4	-	2	2	3	2	-	-	-	-	-	-	-
CO5	-	2	2	2	2	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes:

CO / PSO	PSO1	PSO 2
CO1	2	-
CO2	2	-
CO3	2	-
CO4	2	-
CO5	2	-

List of Experiments:
Exp – 1:
Introduction to C Programming
1.1) Introduction about Editors –Turbo, vi, Emacs
1.2) C Program to Perform Addition, Subtraction, Multiplication and Division of two numbers from Command line
1.3) Write a C Program to Calculate area of a Triangle using Heron's formula.

Exp – 2:
Basic Math
2.1) Write a C Program to Find Whether the Given Year is a Leap Year or not.
2.2) Write a C Program to convert Celsius to Fahrenheit and vice versa.
2.3) Write a C Program to find largest of three numbers using ternary operator.

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Exp – 3:

Control Flow - I

3.1) Write a C program to find the roots of a Quadratic Equation.

3.2) Write a C Program to make a simple Calculator to Add, Subtract, Multiply or Divide Using switch…case.

3.3) Scenario - 1 ATM PIN GENERATION:

Aditya purchased a credit card. He has to generate a PIN number to access the ATM and Net banking for which OTP was sent to his registered mobile number. Using this OTP number he has to generate ATM PIN number. After generating PIN number, he can use it for further transactions. Maximum login he can make is 3 times.

Sample Input:

OTP: 6732

If valid

Enter PIN: 8858

Confirm your PIN: 8858

Sample output:

valid/Invalid

PIN generated successfully.

Note: OTP is hard coded.

3.4) Scenario - 2 RESET PASSWORD:

Sindhuja was using Syndicate Bank's Online Account. She wanted to pay her bills through Online. But she forget her password. Now she has to reset the password. For resetting the password, she has to select reset option from the Menu.

NOTE: using switch case.

Sample input:

1. Fast withdrawal
2. Mini Statement.
3. Balance Enquiry
4. Reset Password

Enter your choice: 4

Sample Output: Reset password: New password: ***** Confirm password: *****

Exp –4:

Control Flow - II

4.1) Write a C Program to Find Whether the Given Number is

i) Prime Number

ii) Armstrong Number

4.2) Write a C program to print Floyd Triangle

4.3) Write a C Program to print Pascal Triangle

Exp – 5:

Control Flow – III

5.1) Write a C program to find the sum of individual digits of a positive integer.

5.2) Write a C program to check whether given number is palindrome or not.

5.3) Write a C program to read two numbers, x and n, and then compute the sum of the geometric progression $1+x+x^2+x^3+\ldots\ldots\ldots\ldots+x^n$.

5.4) Scenario - 3 Student Attendance report Generation:

Some of the school staff had failed to maintain the attendance of the students, causing lack of essential records related to students attendance that should be submitted in a parents meet.

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The school management has decided to automate the process in order to maintain the attendance of every student effectively. You are asked to write a program to the above scenario and display whether the student is allowed to write the Exam or not.

percentage<65	detained
>=65 and <75	should pay condonation to appear for Exams
>=75	allowed for Exams

Sample Input:
Enter no of students: 5
Enter Students Details:

Rno:1	Name: Kalyan	attendance(%):67	Should pay condonation to appear for Exams
Rno:2	Name: laxman	attendance(%):56	
Rno:3	Name: Yamini	attendance(%):79	
Rno:4	Name: Aryan	attendance(%):60	
Rno:5	Name: Raghav	attendance(%):88	

Sample Output:

Rno	Name	Attendance (%)	Remarks
1	Kalyan	67	should pay condonation to appear for Exams
2	Laxman	56	detained
3	Yamini	79	allowed for Exams
4	Aryan	60	detained
5	Raghav	88	allowed for Exams

Exp 6:

Arrays

Demonstration of arrays
6.1) Linear Search.
6.2) Bubble Sort.
6.3) Operations on Matrix.
6.4) Scenario – 4 Celebrity of the Week:

Red FM has launched a program called Celebrity of the week in their channel. Listeners are given a toll free number where they can listen to list of celebrities. Listeners can choose their favourite celebrity from the list and vote for him/her. The votes are validated from Monday to Saturday. The one with highest votes is called as "Celebrity of the Week" and his/her songs are played in the program, which is aired on Sundays. Now write a program to find the celebrity of the week.

Sample Input:
1. Nagachaithanya
2. Nithin
3. Prabhas
4. Ram
5. Thamanna

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6. Samantha
7. Regina
8. Sruthihasan
Enter no of listeners: 10
Enter your favourite: 3
Enter your favourite: 8
Enter your favourite: 4
Enter your favourite: 3
Enter your favourite: 4
Enter your favourite: 2
Enter your favourite: 7
Enter your favourite: 3
Enter your favourite: 1
Enter your favourite: 5
Sample Output:
"Celebrity of the Week" is PRABHAS

Exp – 7:
Functions
7.1) Write a C Program to demonstrate parameter passing in Functions and returning values.
7.2) Write a C Program to find Fibonacci, Factorial of a number with Recursion and without Recursion.
7.3) Scenario – 5 SELF DRIVE RENTAL
Sadiq and his friends are going to Banglore. But they don't have a vehicle in Banglore. For that they go to rental cars to take car for rent. You have find out what is total amount of car's rent. The car's rentals and rules are as follows.
i) Minimum booking is 4.
ii) There are 3 types of cars
A) SWIFT
B) SCORPIO
C) INNOVA
iii) There are 3 categories in cars rental

A) LTTE
B) CLASS
C) XL
FOR SWIFT,

- In LTTE 5 kms are free for one hour and Rs.70 per one hour, if they exceed 5kmph, then Rs.12 per km.
- In CLASS, 10 kms are free for one hour and Rs.90 per one hour, if they exceed 10kmph, then Rs.12 per km.
- In XL, 15 kms are free for one hour and Rs.110 per one hour, if they exceed 15kmph, then Rs.12 per km.

FOR SCORPIO,

- In LTTE, 5 kms are free for one hour and Rs.90 per one hour, if they exceed 5kmph, then Rs.15 per km.
- In CLASS, 10 kms are free for one hour and Rs.110 per one hour, if they exceed 10kmph, then Rs.15 per km.

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- In XL, 15 kms are free for one hour and Rs.130 per one hour, if they exceed 15kmph, then Rs.15 per km.

FOR INNOVA

- In LTTE, 5 kms are free for one hour and Rs.110 per one hour, if they exceed 5kmph, then Rs.18 per km.
- In CLASS, 10 kms are free for one hour and Rs.130 per one hour, if they exceed 10kmph, then Rs.18 per km.
- In XL, 15 kms are free for one hour and Rs.150 per one hour, if they exceed 15kmph, then Rs.18 per km.

SAMPLE INPUT:
ENTER NO.OF DAYS AND HOURS FOR CAR: 01 02 (I.E 1 DAY 2 HOURS = 26 HOURS)
1. SWIFT
2. SCORPIO
3. INNOVA
SELECT A CAR: 2
1. LTTE
2. CLASS
3. XL
SELECT RENTAL TYPE: 2
TOTAL KMS COVERED: 300

SAMPLE OUTPUT:

TOTAL HOURS:	26
CAR NAME:	SCORPIO
RENTAL TYPE:	CLASS
AMOUNT:	2860
EXCEED AMOUNT (40KM *15):	600
GRAND TOTAL:	3460

Exp – 8:
Strings
8.1) Implementation of string manipulation operations with library function.
i) copy
ii) concatenate
iii) length
iv) compare
8.2) Implementation of string manipulation operations without library function.
i) copy
ii) concatenate
iii) length
iv) compare
8.3) Verify whether the given string is a palindrome or not
8.4) Scenario – 6 Word with Obesity:
Jeeth is a fun loving and active boy. He likes to play with words and numbers. One day Jeeth and his friends attended a seminar, which was conducted in his school. The Seminar was

about "Causes of obesity in children and its effects". Jeeth and his friend Ram are not interested in listening to the seminar, so he thought of giving a puzzle to Ram. Jeeth gave some words to Ram and wanted him to find the word with Obesity. Ram was confused and asking your help. Write a program to find the weights of the words and display the word with highest weight (word with obesity).

Sample Input:
Enter no of words: 3
Enter 3 words: apple banana carrot

Sample Output:
Word with Obesity is carrot

Exp – 9:
Arrays and Pointers
9.1) Write a C Program to Access Elements of an Array Using Pointer
9.2) Write a C Program to find the sum of numbers with arrays and pointers.

Exp – 10:
Dynamic Memory Allocations

10.1) Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using malloc () function.
10.2)Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using calloc () function. Understand the difference between the above two programs

List of Augmented Experiments:
(Any two of the following experiments can be performed)

Aug Exp – 1:
Structures
1.1) Write a C Program to Store Information of a book Using Structure
1.2) Write a C Program to Store Information Using Structures with Dynamically Memory Allocation
1.3) Write a C Program to Add Two Complex Numbers by Passing Structure to a Function
1.4) Scenario – 7 Library Management
Shilpa student of PGEC got the Library Card. She wants to lend the books from the Library. The college gave two cards to each and every student. The students can lend only two books at a time and it has to be returned back after 15 days. If the books are not returned late fee will be collected for no. of days the books were returned after the due date. Late fee per day is Rs.50/-
Sample Input.
Enter the name of student, Roll No. Branch, Section, Year, DOL, DOR,
Sample output
No. of days returned after the due date = 5
Late fee per day = Rs. 50
Fine paid by the student is 5 * 50 =250.

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Aug Exp -2:
Files

2.1) Write a C program to open a file and to print the contents of the file on screen.
2.2) Write a C program to copy content of one file to another file.
2.3) Write a C program to merge two files and store content in another file.
2.4) Scenario – 8 Student Information System Using Files:
Lakshya International school was recently established and having large no of admissions. The school management wanted the Student information to be computerized and wanted to maintain in a simple and in effective manner. You are asked to develop Student Information System using Files to perform the following tasks
1. Add New Student
2. Update Existing Student
3. Delete Existing Student
4. Retrieve A Particular/All Students
Sample Input:
Choose the task you want to perform:
1. Add
2. Update
3. Delete
4. Retrieve
Your choice: 1
Enter student details:
Name: Akhil
Age: 5
Class: 1
Sample Output:
Student details added

Reference Books:

1. Let Us C by Yashwanth Kanetkar.
2. Programming in C A-Practial Approach by Ajay Mittal.
3. The C programming Language, Dennis Richie and Brian Kernighan, Pearson Education.

Web Links:

1. https://www.hackerrank.com/
2. https://www.codechef.com/
3. https://www.topcoder.com/
4. https://code-cracker.github.io/

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ENGLISH – II
(Common to all branches)

II Semester	L	T	P	C
Course Code: 171HS2T03	3	1	0	3

Introduction:

In view of the growing importance of English as a tool for global communication and the consequent emphasis on training the students to acquire communicative competence, the syllabus has been designed to develop linguistic and communicative competence of the students of Engineering. As far as the detailed textbooks are concerned, the focus should be on the skills of Listening, Speaking, Reading and Writing. The non-detailed textbooks are meant for extensive reading both to instruct and delight. Hence the focus in the syllabus is primarily on the development of communicative skills and fostering of ideas about the essence of English Communication.

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Compare the difference between traditional and modern technologies.

CO 2: Identify the causes for climate change.

CO 3: Infer professional work habits, necessary for effective collaboration and cooperation.

CO 4: Develop competency in writing for political, social and religious documents.

CO 5: Demonstrate writing and basic concepts of grammar skills.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	-	-	-	-	1	-	-	-	-	3	-	-
CO2	-	-	-	-	-	-	-	-	-	3	-	-
CO3	-	-	-	-	-	-	1	-	-	3	-	-
CO4	-	-	-	-	-	-	1	-	-	3	-	-
CO5	-	-	-	-	-	-	-	-	-	3	-	-

Mapping of Course Outcomes with Program Specific Outcomes:

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

Methodology:

1 The class is to be learner-centered where the learners are to read the texts to get a comprehensive idea of those texts on their own with the help of the peer group and the teacher.
2 Integrated skill development methodology has to be adopted with focus on individual language skills as per the tasks/exercise.
3 The tasks/exercises at the end of each unit should be completed by the learners only and the teacher intervention is permitted as per the complexity of the task/exercise.

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4 The teacher is expected to use supplementary material wherever necessary and also generate activities/tasks as per the requirement.
5 The teacher is permitted to use lecture method when a completely new concept is introduced in the class.

Recommended Topics:

UNIT-I:
1. TECHNOLOGY WITH A HUMAN FACE (Detailed)
2. AN IDEAL FAMILY (Non-Detailed)

UNIT-II:
1. CLIMATE CHANGE AND HUMAN STRATEGY (Detailed)
2. WAR (Non-Detailed)

UNIT-III:
1. EMERGING TECHNOLOGIES (Detailed)
2. THE VERGER (Non-Detailed)

UNIT-IV:
1. THE SECRET OF WORK (Detailed)
2. THE SCARECROW (Non-Detailed)

UNIT-V:
1. WORK BRINGS SOLACE (Detailed)
2. A VILLAGE LOST TO THE NATION (Non-Detailed)

Text Books:
Detailed Text Book: 'Sure Outcomes' by Orient Black Swan Pvt. Ltd. Publishers.

Non Detailed Text Book: Panorama- A course on Reading by Oxford University Press Pvt. Ltd. Publishers.

Web Links:
1. http://www.cooperative-individualism.org/schumacher-e-f_technology-with-a-human-face-1973.htm
2. http://www.sinden.org/verger.html
3. http://btechenglish.blogspot.in/2015/05/work-brings-solace-sure-out-comes-b.html
4. http://www.ramakrishnavivekananda.info/vivekananda/volume_1/karma-yoga/secret_of_work.htm
5. https://en.wikipedia.org/wiki/Solar_power_in_Spain

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MATHEMATICS-III
(Common to all branches)

	L	T	P	C
II Semester				
Course Code: 171BS2T06	3	1	0	3

Course Outcomes:
At the end of the Course, Student will be able to:

CO 1: Compute Laplace transform of various functions.

CO 2: Apply Laplace transform to solve initial value problems.

CO 3: Discuss about beta and gamma function, double integral over a region and triple integral over a volume.

CO 4: Find the gradient of a scalar function, divergence and curl of a vector function.

CO 5: Apply line, surface and volume integrals to find work done by a force, flux.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	-
CO5	3	2	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes:

CO / PSO	PSO1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT - I:
Laplace transforms:
Laplace transforms of standard Functions-First Shifting theorem, Change of scale, Multiplication with t, Division by t - Transforms of derivatives and integrals – Unit step function –Dirac's delta function, Periodic functions.

UNIT- II:

Inverse Laplace transforms:
Inverse Laplace transforms – Convolution theorem (without proof), Second shifting theorem.
*(MATLAB Exercise: Computing Laplace transform off (t) using symbolic toolbox, solving initial value problems using 'dsolve')

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Applications:
Evaluating improper integrals, solving initial value problems using Laplace transforms.

UNIT - III:
Multiple integrals and Beta, Gamma functions:
Multiple integrals: Double and triple integrals – Change of variables – Change of order of integration, Beta and Gamma functions- Properties - Relation between Beta and Gamma functions-
Applications:
Finding Areas and Volumes.

UNIT - IV:
Vector Differentiation:
Gradient - Directional Derivatives - Divergence- Curl - Laplacian operator - Vector identities.
Applications:
Equation of continuity, potential surfaces

UNIT - V:
Vector Integration:
Line integral – Work done - Surface and volume integrals, Green's Theorem, Stokes Theorem and Gauss Divergence theorem (without proof) and related problems.

Text Books:

1. B.S.Grewal, Higher Engineering Mathematics, 43rdEdition, Khanna Publishers.
2. Dr. T K V Iyengar, Engineering Mathematics, S. Chand Publications.

Reference Books:

1. George B. Thomas, D, Weir and J. Hass. Thomas Calculus, 12th edition, 2010 Pearson Education
2. Greenberg, Advanced Engineering Mathematics, 2ndedition, Pearson Education.
3. Erwin Kreyszig, Advanced Engineering Mathematics, 10thEdition, Wiley-India.
4. W. Jordan and T. Smith, Mathematical Techniques, Oxford University Press.

Web Links:

1. https://en.wikipedia.org/wiki/Portal:Mathematics
2. http://mathworld.wolfram.com
3. https://www.khanacademy.org
4. http://nptel.ac.in/courses/122104017

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APPLIED PHYSICS

II Semester	L	T	P	C
Course Code: 171BS2T04	3	1	0	3

Course Outcomes:

At the end of the Course, Student will be able to:

- CO 1: Make use of the basic concepts of interference and relate to the principle of interferometer.
- CO 2: Relate the basic concepts of diffraction to illustrate the principle of optical instruments like Telescope & microscope.
- CO 3: Explain the basic concepts of polarization, principle of polarimeter and the method of producing high intensity light beams.
- CO 4: Interpret the wave nature of microscopic particles by using quantum mechanics and explain the electrical conductivity of materials.
- CO 5: Explain the behaviour of materials to classify using the band theory of solids and the basic concepts of semiconductors.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	2	1	-	-	-	-	-	-	-	-	-	-
CO3	2	1	-	-	-	-	-	-	-	-	-	-
CO4	2	1	-	-	-	-	-	-	-	-	-	-
CO5	2	2	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes:

CO / PSO	PSO1	PSO 2
CO1	1	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT-I:

Interference:

Principle of Superposition – Coherence– Interference in thin films (reflection geometry) – Newton's rings – construction and working principle of Interferometer.

UNIT-II:

Diffraction:

Fraunhofer diffraction at single slit – Cases of double slit, N-slits, & circular aperture, grating equation – Rayleigh criterion of resolving power-Resolving power of a grating, Telescope and Microscopes

UNIT-III:

Polarization:

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Types of Polarization – Methods of production – Nicol Prism –Quarter wave plate and Half Wave plate- working principle of polarimeter (Sacharimeter).
LASERS: Characteristics– Stimulated emission – Einstein's Transition Probabilities- Pumping schemes- Ruby laser – Helium Neon laser-CO_2 Laser-Applications

UNIT-IV:
Quantum Mechanics:
Introduction –Matter waves – Schrödinger Time Independent and Time Dependent wave equations – Particle in a box.
FREE ELECTRON THEORY: Defects of classical free electron theory –Quantum Free electron theory – concept of Fermi Energy.

UNIT-V:
Band Theory of Solids:
Bloch's theorem (qualitative) – Kronig – Penney model (Qualitative) – energy bands in crystalline solids – classification of crystalline solids– effective mass of electron & concept of hole.

Semiconductor Physics:
Conduction – Density of carriers in Intrinsic and Extrinsic semiconductors – Drift & Diffusion – relevance of Einstein's equation- Hall effect in semiconductors.

Text Books:
1. Applied Physics – by M.N.Avadhanulu and T.V.S. Arun Murthy, S. Chand & Company Ltd.,
2. Engineering Physics by D. K. Bhattacharya and Poonam Tandon, Oxford press (2015).

Reference Books:
1. Applied Physics by P. K. Palanisamy, Scitech publications (2014)
2. Concepts of Modern Physics, Arthur Beiser, Tata McGraw-Hill Education, (2003) Engineering Physics by M. Arumugam, Anuradha Publication (2014).

Web Links:
1. http://nptel.ac.in/courses/122107035/11
2. http://nptel.ac.in/courses/115102023/
3. https://phet.colorado.edu/en/simulations/category/physics
4. http://physicsgecg.blogspot.in/p/reading-materials.html
5. https://sites.google.com/site/physicsbysureshsaganti/home

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ENGLISH COMMUNICATION SKILLS LAB - II
(Common to all branches)

II Semester	L	T	P	C
Course Code: 171HS2L02	0	0	3	2

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Make effective use of Body language in all situations and contexts to enhance effective communication in all aspects.

CO 2: Identify communicative competency to respond to others in different situations.

CO 3: Make use of effective delivery strategies to select, compile and synthesize information for oral presentation.

CO 4: Demonstrate in mock interviews, group discussion and public speaking.

CO 5: Illustrate interpersonal skills using English language confidently and effectively for personal and professional growth.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	-	-	-	-	-	-	-	-	-	3	-	2
CO2	-	-	-	-	-	-	-	-	-	3	-	2
CO3	-	-	-	-	-	-	-	-	-	3	-	2
CO4	-	-	-	-	-	-	-	-	-	3	-	2
CO5	-	-	-	-	-	-	-	-	-	3	-	2

Mapping of Course Outcomes with Program Specific Outcomes:

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

PRACTICE 1:
Body Language

PRACTICE 2:
Dialogues

PRACTICE 3:
Presentation Skills

PRACTICE 4:
Group Discussion

PRACTICE 5:
Interviews and Telephonic Interviews.

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PRACTICE 6:
Debates

Reference Books:

1. Strengthen your Communication Skills by Dr.M.Hari Prasad, Dr.Salivendra J.Raju and Dr.G.Suvarna Lakshmi, Maruthi Publications.
2. English for Professionals by Prof Eliah, B.S Publications, Hyderabad.
3. A Handbook of English for Professionals by Prof Eliah, B.S Publications.
4. Effective Technical Communication by M. Ashraf Rizvi, Tata Mcraw – Hill Publishing Company.
5. Cornerstone, Developing soft skills, Pearson Education.

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II Year – I SEMESTER

L	T	P	C
4	0	0	3

ELECTRICAL MACHINES – I

Preamble:
This is a basic course on rotating electrical machines. This course covers the topics related to principles, performance, applications and design considerations of dc machines and transformers.

Learning objectives:

- Understand the unifying principles of electromagnetic energy conversion.
- Understand the construction, principle of operation and performance of DC machines.
- Learn the characteristics, performance,methods of speed control and testing methods of DC motors.
- To predetermine the performance of single phase transformers with equivalent circuit models.
- Understand the methods of testing of single-phase transformer.
- Analyze the three phase transformers and achieve three phase to two phase conversion.

UNIT–I:
Electromechanical Energy Conversion and introduction to DC machines
Principles of electromechanical energy conversion – singly excited and multi excited system – Calculation of force and torque using the concept of co-energy.
Construction and principle of operation of DC machine – EMF equation for generator – Classification of DC machines based on excitation – OCC of DC shunt generator.

UNIT–II:
Performance of D.C. Machines
Torque and back-emf equations of dc motors– Armature reaction and commutation – characteristics of separately-excited, shunt, series and compound motors - losses and efficiency- applications of dc motors.

UNIT-III:
Starting, Speed Control and Testing of D.C. Machines
Necessity of starter – Starting by 3 point and 4 point starters – Speed control by armature voltage and field control – testing of DC machines - brake test, Swinburne's method – principle of regenerative or Hopkinson's method - retardation test -- separation of losses.

UNIT–IV:
Single-phase Transformers
Types and constructional details - principle of operation - emf equation - operation on no load and on load – lagging, leading and unity power factors loads - phasor diagrams of transformers – equivalent circuit – regulation – losses and efficiency – effect of variation of frequency and supply voltage on losses – All day efficiency.

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UNIT-V

Single-phase Transformers Testing

Tests on single phase transformers – open circuit and short circuit tests – Sumpner's test – separation of losses – parallel operation with equal voltage ratios – auto transformer - equivalent circuit – comparison with two winding transformers.

UNIT-VI

3-Phase Transformers

Polyphase connections - Y/Y, Y/Δ, Δ/Y, Δ/Δ and open Δ -- Third harmonics in phase voltages - three winding transformers: determination of Zp, Zs and Zt -- transients in switching - off load and on load tap changers -- Scott connection.

Learning outcomes:

- Able to assimilate the concepts of electromechanical energy conversion.
- Able to mitigate the ill-effects of armature reaction and improve commutation in dc machines.
- Able to understand the torque production mechanism and control the speed of dc motors.
- Able to analyze the performance of single phase transformers.
- Able to predetermine regulation, losses and efficiency of single phase transformers.
- Able to parallel transformers, control voltages with tap changing methods and achieve three-phase to two-phase transformation.

Text Books:

1. Electrical Machines – P.S. Bhimbra, Khanna Publishers
2. Electric Machinery by A.E.Fitzgerald,Charleskingsley,StephenD.Umans, TMH

Reference Books:

1. Electrical Machines by D. P.Kothari, I .J .Nagarth,McGrawHill Publications, 4th edition
2. Electrical Machines by R.K.Rajput, Lakshmi publications,5th edition.
3. Electrical Machinery by AbijithChakrabarthi and SudhiptaDebnath,McGraw Hill education 2015
4. Electrical Machinery Fundamentals by Stephen J Chapman McGraw Hill education 2010
5. Electric Machines by MulukutlaS.Sarma&Mukeshk.Pathak, CENGAGE Learning.
6. Theory & Performance of Electrical Machines by J.B.Guptha. S.K.Kataria& Sons

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II Year – II SEMESTER

L	T	P	C
4	0	0	3

ELECTRICAL MACHINES – II

Preamble:

This course covers the topics on 3-phase induction motor, 1-phase induction motorand synchronous machines which have wide application in power systems. The main aim of the course is to provide a detailedanalysis of operation and performance of 3-phase induction motor, 1-phase induction motorand synchronous machines. In addition,it also covers voltage regulation and parallel operation of synchronous generators.

Learning objectives:

- Understand the principle of operation and performance of 3-phase induction motor.
- Quantify the performance of induction motor and induction generator in terms of torque and slip.
- To understand the torque producing mechanism of a single phase induction motor.
- To understand the principle of emf generation, the effect of armature reaction and predetermination of voltage regulation in synchronous generators.
- To study parallel operation and control of real and reactive powers for synchronous generators.
- To understand the operation, performance and starting methods of synchronous motors.

UNIT-I

3-phase Induction Motors

Construction details of cage and wound rotor machines - production of rotating magnetic field - principle of operation - rotor emf and rotor frequency - rotor current and pf at standstill and during running conditions - rotor power input, rotor copper loss and mechanical power developed and their interrelationship – equivalent circuit – phasor diagram

UNIT-II

Characteristics, starting and testing methods of Induction Motors

Torque equation - expressions for maximum torque and starting torque - torque slip characteristic - double cage and deep bar rotors - crawling and cogging – speed control of induction motor with V/f method – no load and blocked rotor tests - circle diagram for predetermination of performance– methods of starting – starting current and torque calculations – induction generator operation (Qualitative treatment only)

UNIT – III:

Single Phase Motors

Single phase induction motors – Constructional features and equivalent circuit Problem of starting–Double revolving field theory–Starting methods, shaded pole motors, AC Series motor.

UNIT–IV:

Construction, Operation and Voltage Regulation of Synchronous generator

Constructional features of non–salient and salient pole type – Armature windings – Distributed and concentrated windings – Distribution– Pitch and winding factors –E.M.F equation–Improvements of waveform and armature reaction–Voltage regulation by synchronous impedance method– MMFmethod and Potier triangle method–Phasor diagrams– Two reaction analysis of salient pole machines and phasor diagram.

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UNIT –V:

Parallel operation of synchronous generators

Parallel operation with infinite bus and other alternators – Synchronizing power – Load sharing – Control of real and reactive power– Numerical problems.

UNIT–VI:

Synchronous motor – operation, starting and performance

Synchronous Motor principle and theory of operation– Phasor diagram – Starting torque– Variation of current and power factor with excitation –Synchronous condenser – Mathematical analysis for power developed– Hunting and its suppression – Methods of starting – Applications.

Learning outcomes:

- Able to explain the operation and performance of three phase induction motor.
- Able to analyze the torque-speed relation, performance of induction motor and induction generator.
- Able to explain design procedure for transformers and three phase induction motors.
- Implement the starting of single phase induction motors.
- To perform winding design and predetermine the regulation of synchronous generators.
- Avoid hunting phenomenon, implement methods of staring and correction of power factor with synchronous motor.

Text Books:

1. Electrical Machines – P.S. Bhimbra, Khanna Publishers
2. Electric Machinery by A.E.Fitzgerald,Charleskingsley,StephenD.Umans, TMH

Reference Books:

1. Electrical Machines by D. P.Kothari, I .J .Nagarth,McGrawHill Publications, 4th edition
2. Electrical Machines by R.K.Rajput, Lakshmi publications,5th edition
3. Electrical Machinery by AbijithChakrabarthi and SudhiptaDebnath,McGraw Hill education 2015
4. Electrical Machinery Fundamentals by Stephen J Chapman McGraw Hill education 2010
5. Electric Machines by MulukutlaS.Sarma&Mukeshk.Pathak, CENGAGE Learning.
6. Theory & Performance of Electrical Machines by J.B.Guptha. S.K.Kataria& Sons

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	L	T	P	C
II Year – II SEMESTER	0	0	3	2

ELECTRICAL MACHINES – I LABORATORY

Learning objectives:

- To plot the magnetizing characteristics of DC shunt generator and understand the mechanism of self-excitation.
- To control the speed of the DC motors.
- Determine and predetermine the performance of DC machines.
- To predetermine the efficiency and regulation of transformers and assess their performance.

Any 10 of the following experiments are to be conducted

1. Magnetization characteristics of DC shunt generator. Determination of critical field resistance and critical speed.
2. Brake test on DC shunt motor. Determination of performance curves.
3. Hopkinson's test on DC shunt machines. Predetermination of efficiency.
4. Swinburne's test and Predetermination of efficiencies as Generator and Motor.
5. Speed control of DC shunt motor by Field and armature Control.
6. Retardation test on DC shunt motor. Determination of losses at rated speed.
7. Separation of losses in DC shunts motor.
8. Oc& SC test on single phase transformer.
9. Sumpner's test on single phase transformer.
10. Scott connection of transformers
11. Parallel operation of Single phase Transformers
12. Separation of core losses of a single phase transformer
13. Heat run test on a bank of 3 Nos. of single phase Delta connected transformers

Learning outcomes:

- To determine and predetermine the performance of DC machines and Transformers.
- To control the speed of DC motor.
- To achieve three phase to two phase transformation.

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Department of Electrical and Electronics Engineering

Syllabus revision Index for 2017-2018

S. No	Name of the course	Percentage of syllabus change
1	English – I	65
2	Mathematics - I	40
3	Environmental Studies	20
4	Applied Chemistry	20
5	Computer Programming Lab	40
6	English - II	55
7	Mathematics - III	40
8	Applied Physics	20
9	English Communication Skills Lab - II	40
10	Electrical Machines-I	80
11	Electrical Machines-II	65
12	Electrical Machines -I Laboratory	60

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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	English-II	English-I
Course Code	R161201	171HS1T01
Syllabus	UNIT 1: 1. ' The Greatest Resource-Education' from English Encounters 2. ' A P J Abdul Kalam' from The Great Indian Scientists.	UNIT-I: 1. IN LONDON: M.K.GANDHI (Detailed) 2. G.D. NAIDU (Non-Detailed)
	UNIT 2: 1. ' A Dilemma' from English Encounters 2. 'C V Raman' from The Great Indian Scientists.	UNIT-II: 1. THE KNOWLEDGE SOCIETY- APJ ABDUL KALAM (Detailed) 2. G.R. GOPINATH (Non-Detailed)
	UNIT 3: 1. 'Cultural Shock': Adjustments to new Cultural Environments from English Encounters. 2. 'Homi Jehangir Bhabha' from The Great Indian Scientists.	UNIT-III: 1. THE SCIENTIFIC POINT OF VIEW-J.B.S. HALDANE (Detailed) 2. J.C. BOSE (Non-Detailed)
	. UNIT 4: 1. 'The Lottery' from English Encounters. 2. 'Jagadish Chandra Bose' from The Great Indian Scientists.	UNIT-IV: 1. MAN'S PERIL-BERTRAND RUSSELL (Detailed) 2. HOMI JEHANGIR BHABHA (Non-Detailed)
	UNIT 5: 1. ' The Health Threats of Climate Change' from English Encounters 2. ' Prafulla Chandra Ray' from The Great Indian Scientists.	UNIT-V: 1. LUCK—MARK TWAIN (Detailed) 2. A SHADOW (Non-Detailed)
	UNIT 6: 1. ' The Chief Software Architect' from English Encounters 2. ' Srinivasa Ramanujan' from The Great Indian Scientists.	

Signature of the course coordinator

Signature of the HOD

Head of the Departm
Department of H &
Aditya Engineering C

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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Mathematics-I	Mathematics-I
Course Code	R161102	171BSIT01
Syllabus	UNIT I: Differential equations of first order and first degree: Linear-Bernoulli-Exact-Reducible to exact. Applications: Newton's Law of cooling-Law of natural growth and decay-Orthogonal trajectories- Electrical circuits- Chemical reactions.	UNIT I: Differential equations of first order and first degree: Linear differential equations - Bernoulli differential equation - Exact differential equationsEquations reducible to exact (Type-1, Type-2, Type-3, Type-4) Applications: Newton's Law of cooling-Law of natural growth and decay-Orthogonal trajectories.
	UNIT II: Linear differential equations of higher order: Non-homogeneous equations of higher order with constant coefficients with RHS term of the type eax, sin ax, cos ax, polynomials in x, eax V(x), xV(x)- Method of Variation of parameters. Applications: LCR circuit, Simple Harmonic motion.	UNIT II: Linear differential equations of higher order: Linear differential equations of higher order with constant coefficients with RHS term of the type eax, sin ax, cos ax, polynomials in x, eax V(x), xV(x)- Method of Variation of parameters, Method of undetermined coefficients. *(MATLAB Exercise: Introduction to MAT LAB commands and Solution of Initial Value Problems using the command 'dsolve') Applications: Electric circuits, simple harmonic motion.
	UNIT III: Laplace transforms: Laplace transforms of standard functions-Shifting theorems - Transforms of derivatives and integrals – Unit step function –Dirac's delta function- Inverse Laplace transforms– Convolution theorem (with out proof). Applications: Solving ordinary differential equations (initial value problems) using Laplace transforms.	UNIT III: Linear systems of equations: Rank of a matrix - Echelon form-Normal form – Solution of linear systems – Gauss elimination method - Gauss Seidal method. Applications: Finding the current in electrical circuits.
	UNIT IV: Partial differentiation: Introduction- Homogeneous function-Euler's theorem-Total derivative-Chain ruleGeneralized Mean value theorem for	UNIT IV: Eigen values - Eigen vectors and Quadratic forms: Eigen values - Eigen vectors– Properties of eigen values (without proof) – Cayley -Hamilton

	single variable (without proof)-Taylor's and Mc Laurent's series expansion of functions of two variables– Functional dependence- Jacobian. Applications: Maxima and Minima of functions of two variables without constraints and Lagrange's method (with constraints).	theorem (without proof) - Inverse and powers of a matrix by using Cayley - Hamilton theorem- Diagonalization- Quadratic forms- Reduction of quadratic form to canonical form using orthogonal transformation– Nature of the quadratic form. *(MATLAB Exercise: All Basic Operations on matrices are to be implemented using MATLAB including computation of rank, computation of eigen values and eigen vectors)
	UNIT V: First order Partial differential equations: Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions –solutions of first order linear (Lagrange) equation and nonlinear (standard types) equations.	UNIT V: Partial differentiation and Partial differential equations: Homogeneous function-Euler's theorem-Total derivative-Chain rule-Taylor's and Maclaurin's series expansion of functions of two variables– Functional dependence Jacobian. Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions –solutions of first order linear (Lagrange) equation, nonlinear (standard types) equations. Applications: Maxima and Minima of functions of two variables without constraints and Lagrange's method (with constraints). *(MATLAB Exercise: To Plot graphs of various single and multivariable functions using MATLAB and analyze their maxima and minima graphically).
	UNIT VI: Higher order Partial differential equations: Solutions of Linear Partial differential equations with constant coefficients. RHS term of the type e^(ax+by) , sin(ax+by), cos(ax+by), x^m y^n Classification of second order partial differential equation	

G. V.
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Signature of the HOD
Head of the Depart
Department of
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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Environmental Studies	Environmental Studies
Course Code	R161108	171HS1T02/171HS2T02
Syllabus	UNIT – I Multidisciplinary nature of Environmental Studies: Definition, Scope and Importance –Sustainability: Stockholm and Rio Summit–Global Environmental Challenges: Global warming and climate change, Carbon Credits, acid rains, ozone layer depletion, population growth and explosion, effects. Role of information Technology in Environment and human health. Ecosystems: Concept of an ecosystem. - Structure and function of an ecosystem. - Producers, consumers and decomposers. - Energy flow in the ecosystem - Ecological succession. – Food chains, food webs and ecological pyramids. - Introduction, types, characteristic features, structure and function of Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems.	UNIT –I: Ecosystems: Scope of environmental studies, Structure- Producers, consumers and decomposers Function – Food chain, Food web, Tropic structure and Energy flow in the ecosystem Ecological pyramids, nutrient recycling, primary and secondary production, ecosystem regulation. Ecological succession Terrestrial ecosystem and aquatic ecosystem - Introduction, types, characteristic features.
	UNIT – II Natural Resources: Natural resources and associated problems Forest resources – Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems Mineral resources: Use and exploitation, environmental	UNIT – II: Natural Resources: Natural resources and associated problems Forest resources – Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources

	effects of extracting and using mineral resources, Sustainable mining of Granite, Literate, Coal, Sea and River sands. Food resources: World food problems, changes caused by non-agriculture activities-effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources Vs Oil and Natural Gas Extraction. Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.	Food resources: World food problems, changes caused by non-agriculture activities effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources vs oil and natural gas extraction. Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.
	UNIT – III Biodiversity and its conservation: Definition: genetic, species and ecosystem diversity- classification - Value of biodiversity: consumptive use, productive use, social lBiodiversity at national and local levels. India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts - Endangered and endemic species of India – Conservation of biodiversity: conservation of biodiversity.	UNIT – III: Biodiversity and its conservation: Definition: genetic, species and ecosystem diversity classification Value of biodiversity: consumptive use, productive use, social-Biodiversity at national and local levels. India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts - Endangered and endemic species of India – Conservation of biodiversity
	UNIT – IV Environmental Pollution: Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies, Sustainable Life Studies. Impact of Fire Crackers on Men and his well being. Solid Waste Management: Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.	UNIT – IV: Environmental Pollution: Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies, Sustainable Life Style. Solid Waste Management: Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.
	UNIT – V Social Issues and the Environment: Urban problems related to energy -Water conservation, rain water harvesting-Resettlement and	UNIT – V: Social Issues and the Environment Urban problems related to energy -Water conservation, rain water harvesting Resettlement and rehabilitation

	rehabilitation of people; its problems and concerns. Environmental ethics: Issues and possible solutions. Environmental Protection Act -Air (Prevention and Control of Pollution) Act. –Water (Prevention and control of Pollution) Act - Wildlife Protection Act -Forest Conservation Act-Issues involved in enforcement of environmental legislation. -Public awareness.	of people; its problems and concerns. Global challenges Environmental ethics: Issues and possible solutions. Environmental Protection Act - Air (Prevention and Control of Pollution) Act. – Water (Prevention and control of Pollution) Act -Wildlife Protection Act - Forest Conservation Act-Issues involved in enforcement of environmental legislation. - Public awareness and Environmental management.
	UNIT – VI Environmental Management: Impact Assessment and its significance various stages of EIA, preparation of EMP and EIS, Environmental audit. Ecotourism, Green Campus – Green business and Green politics. The student should Visit an Industry / Ecosystem and submit a report individually on any issues related to Environmental Studies course and make a power point presentation.	

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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Applied Chemistry	Applied Chemistry
Course Code	R161106/R161221	171BS1T05/ 171BS2T05
Syllabus	UNIT I: HIGH POLYMERS AND PLASTICS Polymerisation : Introduction- Mechanism of polymerization - Stereo regular polymers – methods of polymerization (emulsion and suspension) -Physical and mechanical properties – Plastics as engineering materials : advantages and limitations – Thermoplastics and Thermosetting plastics – Compounding and fabrication (4/5 techniques)- Preparation, properties and applications of polyethene, PVC, Bakelite Teflon and polycarbonates Elastomers – Natural rubber- compounding and vulcanization – Synthetic rubbers : Buna S, Buna N, Thiokol and polyurethanes – Applications of elastomers. Composite materials & Fiber reinforced plastics – Biodegradable polymers – Conducting polymers.	UNIT - I: High Polymers and Plastics: Polymerization: Introduction- Mechanism of polymerization - Stereo regular polymers - Physical and mechanical properties – Plastics as engineering materials: advantages and limitations – Thermoplastics and Thermosetting plastics – Compounding and fabrication (compression moulding, injection moulding, extrusion moulding and transfer moulding techniques)- Preparation, properties and applications of polyethene, PVC, Bakelite and polycarbonates. Elastomers – Natural rubber- compounding and vulcanization – Synthetic rubbers: Buna S, Buna N, Thiokol – Applications of elastomers. Biodegradable polymers.
	UNIT II: FUEL TECHNOLOGY Fuels:- Introduction – Classification – Calorific value - HCV and LCV – Dulong's formula – Bomb calorimeter – Numerical problems – Coal — Proximate and ultimate analysis – Significance of the analyses – Liquid fuels – Petroleum- Refining – Cracking – Synthetic petrol –Petrol knocking – Diesel knocking - Octane and Cetane ratings – Anti-knock agents – Power alcohol – Bio-diesel – Gaseous fuels – Natural gas. LPG and CNG – Combustion – Calculation of air for the combustion of a fuel – Flue gas	UNIT - II: Fuel Technology: Fuels:- Introduction – Classification – Calorific value - HCV and LCV – Dulong's formula – Coal — Proximate and ultimate analysis – Significance of the analyses – Liquid fuels – Petroleum- Refining – Cracking – Synthetic petrol –Petrol knocking – Diesel knocking - Octane and Cetane ratings – Anti-knock agents – Power alcohol – Bio-diesel – Gaseous fuels – Natural gas. LPG and CNG – Combustion – Calculation of air for the combustion of a fuel – Flue gas analysis – Orsat apparatus.

	analysis – Orsat apparatus – Numerical problems on combustion. Explosives:- Introduction, classification, examples: RDX, TNT and ammonium nitrite - rocket fuels	
	UNIT III: ELECTROCHEMICAL CELLS AND CORROSION Galvanic cells - Reversible and irreversible cells – Single electrode potential – Electro chemical series and uses of this series- Standard electrodes (Hydrogen and Calomel electrodes) - Concentration Cells – Batteries: Dry Cell - Ni-Cd cells - Ni-Metal hydride cells - Li cells - Zinc – air cells. Corrosion:- Definition – Theories of Corrosion (electrochemical) – Formation of galvanic cells by different metals, by concentration cells, by differential aeration and waterline corrosion – Passivity of metals – Pitting corrosion - Galvanic series – Factors which influence the rate of corrosion - Protection from corrosion – Design and material selection – Cathodic protection - Protective coatings: – Surface preparation – Metallic (cathodic and anodic) coatings - Methods of application on metals (Galvanizing, Tinning, Electroplating, Electroless plating)	UNIT - III: Electrochemical Cells and Corrosion: Galvanic cells - Reversible and irreversible cells – Single electrode potential- Electro chemical series and uses of this series- Standard electrodes (Hydrogen and Calomel electrodes) - Concentration Cells – Batteries: Dry Cell - Li cells - Zinc – air cells. Corrosion:- Definition – Theories of Corrosion (electrochemical) – Formation of galvanic cells by different metals, by concentration cells, by differential aeration and waterline corrosion – Passivity of metals – Pitting corrosion - Galvanic series – Factors which influence the rate of corrosion - Protection from corrosion – Cathodic protection - Protective coatings: – Metallic (cathodic and anodic) coatings - Methods of application on metals (Galvanizing, Tinning, Electroplating, Electroless plating).
	UNIT IV: CHEMISTRY OF ADVANCED MATERIALS Nano materials:- Introduction – Sol-gel method & chemical reduction method of preparation – Characterization by BET method and TEM methods - Carbon nano tubes and fullerenes: Types, preparation, properties and applications Liquid crystals:- Introduction – Types – Applications Superconductors :- Type-I & Type-2, properties &applications Green synthesis:- Principles - 3or 4 methods of synthesis with examples – R4M4 principles	UNIT - IV: Chemistry of Advanced Materials: Nano materials:-Introduction – Sol-gel method - Carbon nano tubes and fullerenes: Types, preparation, properties and applications. Super conductors: -Type – I, Type II – Characteristics and applications Semiconductors: - Preparation of semiconductors, working of diods and transistors. Green synthesis: -Principles Liquid crystals:-Introduction – Types – Applications Fuel cells: - Introduction - cell representation, H2-O2fuel cell: Design and working, advantages and Limitations. Types of fuel cells: methanol-oxygen fuel cells.
	UNIT V: SOLID STATE CHEMISTRY Types of solids - close packing of atoms and ions - BCC , FCC, structures of rock salt - cesium chloride- spinel - normal and inverse spinels, Non-elemental	UNIT - V: Non-Conventional Energy Sources: Solar Energy: - Introduction, application of solar energy, conversion of solar energy (Thermal conversion & photo conversion) – photovoltaic cell: design,

	semiconducting Materials:- Stoichiometric, controlled valency & Chalcogen photo/semiconductors, Preparation of Semiconductors - Semiconductor Devices:- p-n junction diode as rectifier – junction transistor. Insulators (electrical and electronic applications) Magnetic materials:- Ferro and ferri magnetism. Hall effect and its applications.	working and its importance Non-conventional energy sources: (i) Hydropower include setup a hydropower plant (schematic diagram) (ii) Geothermal energy: Introduction-schematic diagram of a geothermal power plant (iii) Tidal and wave power: Introduction- Design and working-movement of tides and their effect on sea level. (iv) Ocean thermal energy: Introduction, closed-cycle, ocean thermal energy conversion (OTEC), open cycle OTEC, hybrid OTEC, schematic diagram and explanation. (v) Biomass and biofuels.
	UNIT VI: NON CONVENTIONAL ENERGY SOURCES AND STORAGE DEVICES Solar Energy: - Introduction, application of solar energy, conversion of solar energy (Thermal conversion & photo conversion) – photovoltaic cell: design, working and its importance Non-conventional energy sources: (i) Hydropower include setup a hydropower plant (schematic diagram) (ii) Geothermal energy: Introduction-schematic diagram of a geothermal power plant (iii) Tidal and wave power: Introduction- Design and working-movement of tides and their effect on sea level. (iv) Ocean thermal energy: Introduction, closed-cycle, ocean thermal energy conversion (OTEC), open cycle OTEC, hybrid OTEC, schematic diagram and explanation. (v) Biomass and biofuels Fuel cells:- Introduction - cell representation, H2-O2 fuel cell: Design and working, advantages and limitations. Types of fuel cells: Alkaline fuel cell - methanol-oxygen - phosphoric acid fuel cells - molten carbonate fuel cells.	

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Department of Computer Science and Engineering

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Computer Programming Lab	Computer Programming Lab
Course Code	R161119	171ES1L01
Syllabus	**Exercise - 1** Basics a) What is an OS Command, Familiarization of Editors - vi, Emacs b) Using commands like mkdir, ls, cp, mv, cat, pwd, and man c) C Program to Perform Adding, Subtraction, Multiplication and Division of two numbers From Command line	**Exercise - 1** Introduction to C Programming 1.1) Introduction about Editors –Turbo, vi, Emacs 1.2) C Program to Perform Addition, Subtraction, Multiplication and Division of two numbers from Command line 1.3) Write a C Program to Calculate area of a Triangle using Heron's formula.
	Exercise - 2 Basic Math a) Write a C Program to Simulate 3 Laws at Motion b) Write a C Program to convert Celsius to Fahrenheit and vice versa	**Exercise – 2:** Basic Math 2.1) Write a C Program to Find Whether the Given Year is a Leap Year or not. 2.2) Write a C Program to convert Celsius to Fahrenheit and vice versa. 2.3) Write a C Program to find largest of three numbers using ternary operator.
	Exercise - 3 Control Flow - I a) Write a C Program to Find Whether the Given Year is a Leap Year or not. b) Write a C Program to Add Digits & Multiplication of a number	**Exercise – 3:** Control Flow - I 3.1) Write a C program to find the roots of a Quadratic Equation. 3.2) Write a C Program to make a simple Calculator to Add, Subtract, Multiply or Divide Using switch…case. 3.3) Scenario - 1 ATM PIN GENERATION: Aditya purchased a credit card. He has to generate a PIN number to access the ATM and Net banking for which OTP was sent to his registered mobile number. Using this OTP number he has

		to generate ATM PIN number. After generating PIN number, he can use it for further transactions. Maximum login he can make is 3 times. Sample Input: OTP: 6732 If valid Enter PIN: 8858 Confirm your PIN: 8858 Sample output: valid/Invalid PIN generated successfully. Note: OTP is hard coded. 3.4) Scenario - 2 RESET PASSWORD: Sindhuja was using Syndicate Bank's Online Account. She wanted to pay her bills through Online. But she forget her password. Now she has to reset the password. For resetting the password, she has to select reset option from the Menu. NOTE: using switch case. Sample input: 1. Fast withdrawal 2. Mini Statement. 3. Balance Enquiry 4. Reset Password Enter your choice: 4 Sample Output: Reset password: New password: ***** Confirm password: *****
	Exercise – 4 Control Flow - II a) Write a C Program to Find Whether the Given Number is i) Prime Number ii) Armstrong Number b) Write a C program to print Floyd Triangle c) Write a C Program to print Pascal Triangle	**Exercise –4:** Control Flow - II 4.1) Write a C Program to Find Whether the Given Number is i) Prime Number ii) Armstrong Number 4.2) Write a C program to print Floyd Triangle 4.3) Write a C Program to print Pascal Triangle
	Exercise – 5 Functions a) Write a C Program demonstrating of parameter passing in Functions and	**Exercise – 5:** Control Flow – III 5.1) Write a C program to find the sum

	returning values. b) Write a C Program illustrating Fibonacci, Factorial with Recursion without Recursion.	of individual digits of a positive integer. 5.2) Write a C program to check whether given number is palindrome or not. 5.3) Write a C program to read two numbers, x and n, and then compute the sum of the geometric progression 1+x+x2 +x3 +……+xn. 5.4) Scenario - 3 Student Attendance report Generation: Some of the school staff had failed to maintain the attendance of the students, causing lack of essential records related to students attendance that should be submitted in a parents meet. The school management has decided to automate the process in order to maintain the attendance of every student effectively. You are asked to write a program to the above scenario and display whether the student is allowed to write the Exam or not.
	Exercise – 6 Control Flow - III a) Write a C Program to make a simple Calculator to Add, Subtract, Multiply or Divide Using switch…case b) Write a C Program to convert decimal to binary and hex (using switch call function the function)	**Exercise 6:** Arrays Demonstration of arrays 6.1) Linear Search. 6.2) Bubble Sort. 6.3) Operations on Matrix. 6.4) Scenario – 4 Celebrity of the Week: Red FM has launched a program called Celebrity of the week in their channel. Listeners are given a toll free number where they can listen to list of celebrities. Listeners can choose their favourite celebrity from the list and vote for him/her. The votes are validated from Monday to Saturday. The one with highest votes is called as "Celebrity of the Week" and his/her songs are played in the program, which is aired on Sundays. Now write a program to find the celebrity of the week.
	Exercise – 7 Functions - Continued Write a C Program to compute the values ofsin x and cos x and e^x values using Series	**Exercise** – 7: Functions 7.1) Write a C Program to demonstrate parameter passing in Functions and

	expansion. (use factorial function)	returning values. 7.2) Write a C Program to find Fibonacci, Factorial of a number with Recursion and without Recursion. 7.3) Scenario – 5 SELF DRIVE RENTAL Sadiq and his friends are going to Banglore. But they don't have a vehicle in Banglore. For that they go to rental cars to take car for rent. You have find out what is total amount of car's rent. The car's rentals and rules are as follows. i) Minimum booking is 4. ii) There are 3 types of cars iii) There are 3 categories in cars rental FOR SWIFT, • • In LTTE 5 kms are free for one hour and Rs.70 per one hour, if they exceed 5kmph, then Rs.12 per km. • • In CLASS, 10 kms are free for one hour and Rs.90 per one hour, if they exceed 10kmph, then Rs.12 per km. • • In XL, 15 kms are free for one hour and Rs.110 per one hour, if they exceed 15kmph, then Rs.12 per km.
	Exercise – 8 Arrays Demonstration of arrays a) Search-Linear. b) Sorting-Bubble, Selection. c) Operations on Matrix.	**Exercise – 8:** Strings 8.1) Implementation of string manipulation operations with library function. 8.2) Implementation of string manipulation operations without library function. i. copy ii. concatenate iii. length iv. compare i. copy ii. concatenate iii. length iv. compare 8.3) Verify whether the given string is a palindrome or not 8.4) Scenario – 6 Word with

		Obesity: Jeeth is a fun loving and active boy. He likes to play with words and numbers. One day Jeeth and his friends attended a seminar, which was conducted in his school. The Seminar was about "Causes of obesity in children and its effects". Jeeth and his friend Ram are not interested in listening to the seminar, so he thought of giving a puzzle to Ram. Jeeth gave some words to Ram and wanted him to find the word with Obesity. Ram was confused and asking your help. Write a program to find the weights of the words and display the word with highest weight (word with obesity).
	Exercises - 9 Structures a)Write a C Program to Store Information of a Movie Using Structure b)Write a C Program to Store Information Using Structures with Dynamically Memory Allocation c) Write a C Program to Add Two Complex Numbers by Passing Structure to a Function	**Exercise – 9:** Arrays and Pointers 9.1) Write a C Program to Access Elements of an Array Using Pointer 9.2) Write a C Program to find the sum of numbers with arrays and pointers.
	Exercise - 10 Arrays and Pointers a)Write a C Program to Access Elements of an Array Using Pointer b) Write a C Program to find the sum of numbers with arrays and pointers.	**Exercise – 10:** Dynamic Memory Allocations 10.1) Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using malloc () function. 10.2)Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using calloc () function. Understand the difference between the above two programs
	Exercise – 11 Dynamic Memory Allocations a) Write a C program to find sum of n elements entered by user. To perform this program,	**Exercises – 11:** **Structures:** 11.1) Write a C Program to Store Information of a book Using Structure 11.2) Write a C Program to Store

	allocate memory dynamically using malloc () function. b) Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using calloc () function. Understand the difference between the above two programs	Information Using Structures with Dynamically Memory Allocation 11.3) Write a C Program to Add Two Complex Numbers by Passing Structure to a Function 11.4) Scenario – 7 Library Management Shilpa student of PGEC got the Library Card. She wants to lend the books from the Library. The college gave two cards to each and every student. The students can lend only two books at a time and it has to be returned back after 15 days. If the books are not returned late fee will be collected for no. of days the books were returned after the due date. Late fee per day is Rs.50/- Sample Input. Enter the name of student, Roll No. Branch, Section, Year, DOL, DOR, Sample output No. of days returned after the due date = 5 Late fee per day = Rs. 50 Fine paid by the student is 5 * 50 =250.
	Exercise – 12 Strings a) Implementation of string manipulation operations with library function. i) copy ii) concatenate iii) length iv) compare b) Implementation of string manipulation operations without library function. i) copy ii) concatenate iii) length iv) compare	**Exercise -12:** Files 12.1) Write a C program to open a file and to print the contents of the file on screen. 12.2) Write a C program to copy content of one file to another file. 12.3) Write a C program to merge two files and store content in another file. 12.4) Scenario – 8 Student Information System Using Files: Lakshya International school was recently established and having large no of admissions. The school management wanted the Student information to be computerized and wanted to maintain in a simple and in effective manner. You are asked to develop Student Information System using Files to perform the following tasks 1. Add New Student 2. Update Existing Student

		3. Delete Existing Student 4. Retrieve A Particular/All Students Sample Input: Choose the task you want to perform: 1. Add 2. Update 3. Delete 4. Retrieve Your choice: 1 Enter student details: Name: Akhil Age: 5 Class: 1 Sample Output: Student details added
	Exercise -13 Files a)Write a C programming code to open a file and to print it contents on screen. b)Write a C program to copy files	
	Exercise - 14 Files Continued a) Write a C program merges two files and stores their contents in another file. b) Write a C program to delete a file.	
	Exercise – 15 a) System Assembling, Disassembling and identification of Parts / Peripherals. b) Operating System Installation-Install Operating Systems like Windows, Linux along with necessaryDevice Drivers.	
	Exercise – 16 a) MS-Office / Open Office i) Word - Formatting, Page Borders, Reviewing, Equations, symbols. ii) SpreadSheet - organize data, usage of formula, graphs, charts. iii) Powerpoint - features of power point, guidelines for preparing an effectivepresentation. b) Network Configuration & Software Installation-Configuring TCP/IP, Proxy, and firewallsettings. Installing application software, system software & tools.	

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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	English -I	English-II
Course Code	R161101	17HS2T03
Syllabus	UNIT I: 1. 'Human Resources' from English for Engineers and Technologists. 2. 'An Ideal Family' from Panorama: A Course on Reading	UNIT-I: 1. TECHNOLOGY WITH A HUMAN FACE (Detailed) 2. AN IDEAL FAMILY (Non-Detailed)
	UNIT 2: 1. ' Transport: Problems and Solutions' from English for Engineers and Technologists. 2. 'War' from 'Panorama : A Course on Reading'	UNIT-II: 1. CLIMATE CHANGE AND HUMAN STRATEGY (Detailed) 2. WAR (Non-Detailed)
	UNIT 3: 1. 'Evaluating Technology' from English for Engineers and Technologists. 2. 'The Verger' from 'Panorama : A Course on Reading	UNIT-III: 1. EMERGING TECHNOLOGIES (Detailed) 2. THE VERGER (Non-Detailed)
	UNIT 4: 1. 'Alternative Sources of Energy' from English for Engineers and Technologists. 2. ' The Scarecrow' from Panorama : A Course on Reading	UNIT-IV: 1. THE SECRET OF WORK (Detailed) 2. THE SCARECROW (Non-Detailed)
	UNIT 5: 1. 'Our Living Environment' from English for Engineers and Technologists. 2. 'A Village Host to Nation' from Panorama : A Course on Reading	UNIT-V: 1. WORK BRINGS SOLACE (Detailed) 2. A VILLAGE LOST TO THE NATION (Non-Detailed)
	UNIT 6: 1. ' Safety and Training' from English for Engineers and Technologists. 2. 'Martin Luther King and Africa' from Panorama : A Course on Reading	

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Head of the Depart-
Department of H
Aditya Engineering College

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Mathematics-III	Mathematics-III
Course Code	R161203	171BS2T06
Syllabus	UNIT I: Linear systems of equations: Rank-Echelon form-Normal form – Solution of linear systems – Gauss elimination - Gauss Jordon- Gauss Jacobi and Gauss Seidal methods. Applications: Finding the current in electrical circuits.	UNIT - I: Laplace transforms: Laplace transforms of standard functions-First Shifting theorem, Change of scale, Multiplication with t, Division by t - Transforms of derivatives and integrals – Unit step function –Dirac's delta function, Periodic functions.
	UNIT II: Eigen values - Eigen vectors and Quadratic forms: Eigen values - Eigen vectors– Properties – Cayley-Hamilton theorem - Inverse and powers of a matrix by using Cayley-Hamilton theorem- Diagonalization- Quadratic forms- Reduction of quadratic form to canonical form – Rank - Positive, negative and semi definite - Index – Signature. Applications: Free vibration of a two-mass system.	UNIT- II: Inverse Laplace transforms: Inverse Laplace transforms – Convolution theorem (without proof), Second shifting theorem. *(MATLAB Exercise: Computing Laplace transform off (t) using symbolic toolbox, Solving initial value problems using 'dsolve') Applications: Evaluating improper integrals, solving initial value problems using Laplace transforms.
	UNIT III: Multiple integrals: Curve tracing: Cartesian, Polar and Parametric forms. Multiple integrals: Double and triple integrals – Change of variables – Change of order of integration. Applications: Finding Areas and Volumes.	UNIT - III: Multiple integrals and Beta, Gamma functions: Multiple integrals: Double and triple integrals – Change of variables – Change of order of integration, Beta and Gamma functions- Properties - Relation between Beta and Gamma functions Applications: Finding Areas and Volumes.
	UNIT IV: Special functions: Beta and Gamma functions- Properties - Relation between Beta and Gamma functions. Evaluation of improper integrals. Applications: Evaluation of integrals.	UNIT - IV: Vector Differentiation: Gradient - Directional Derivatives - Divergence- Curl - Laplacian operator - Vector identities. Applications: Equation of continuity, potential surfaces
	UNIT V: Vector Differentiation: Gradient- Divergence- Curl - Laplacian and second order operators -Vector identities.	UNIT - V: Vector Integration: Line integral – Work done - Surface and volume integrals, Green's Theorem, Stokes Theorem and

	Applications: Equation of continuity, potential surfaces	Gauss Divergence theorem (without proof) and related problems.
	UNIT VI: Vector Integration: Line integral – Work done – Potential function – Area- Surface and volume integrals Vector integral theorems: Greens, Stokes and Gauss Divergence theorems (without proof) and related problems. Applications: Work done, Force.	

Signature of the course coordinator

Signature of the HOD

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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Applied Physics	Applied Physics
Course Code	R161207	171BS1T04/171BS2T04
Syllabus	UNIT-I INTERFERENCE: Principle of Superposition – Coherent Sources – Interference in thin films (reflection geometry) – Newton's rings – construction and basic principle of Interferometers.	UNIT-I: Interference: Principle of Superposition – Coherence– Interference in thin films (reflection geometry) – Newton's rings – construction and working principle of Interferometer.
	UNIT-II DIFFRACTION: Fraunhofer diffraction at single slit - Cases of double slit, N-slits & Circular Aperture (Qualitative treatment only)-Grating equation - Resolving power of a grating, Telescope and Microscopes.	UNIT-II: Diffraction: Fraunhofer diffraction at single slit – Cases of double slit, N-slits, & circular aperture, grating equation – Rayleigh criterion of resolving power- Resolving power of a grating, Telescope and Microscopes
	UNIT-III POLARIZATION: Types of Polarization – Methods of production - Nicol Prism -Quarter wave plate and Half Wave plate – Working principle of Polarimeter (Sacharimeter). LASERS: Characteristics– Stimulated emission – Einstein's Transition Probabilities Pumping schemes - Ruby laser – Helium Neon laser.	UNIT-III: Polarization: Types of Polarization – Methods of production – Nicol Prism – Quarter wave plate and Half Wave plate- working principle of polarimeter (Sacharimeter). LASERS: Characteristics– Stimulated emission – Einstein's Transition ProbabilitiesPumping schemes- Ruby laser – Helium Neon laser-CO2 Laser-Applications
	UNIT-IV ELECTROMAGNETIC FIELDS: Scalar and Vector Fields – Electric Potential- Gradient, Divergence of fields – Gauss and Stokes theorems-Propagation of EM waves through dielectric medium.	UNIT-IV: Quantum Mechanics: Introduction –Matter waves – Schrödinger Time Independent and Time Dependent wave equations – Particle in a box. FREE ELECTRON THEORY: Defects of classical free electron theory –Quantum Free electron theory – concept of Fermi Energy..
	UNIT-V QUANTUM MECHANICS: Introduction - Matter waves – Schröedinger Time Independent and Time Dependent wave equations – Particle in a box. FREE ELECTRON	UNIT-V: Band Theory of Solids: Bloch's theorem (qualitative) – Kronig – Penney model (Qualitative) – energy bands in crystalline solids – classification of crystalline solids– effective mass of

	THEORY: Defects of Classical free electron theory –Quantum Free electron theory - concept of Fermi Energy.	electron & concept of hole. Semiconductor Physics: Conduction – Density of carriers in Intrinsic and Extrinsic semiconductors – Drift & Diffusion – relevance of Einstein's equation- Hall effect in semiconductors.–
	UNIT-VI BAND THEORY OF SOLIDS: Bloch's theorem (qualitative) – Kronig – Penney model – energy bands in crystalline solids – classification of crystalline solids– effective mass of electron & concept of hole. SEMICONDUCTOR PHYSICS: Conduction – Density of carriers in Intrinsic and Extrinsic semiconductors – Drift & Diffusion – relevance of Einstein's equation- Hall effect in semiconductors	

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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	English Communication Skills Lab-II	English Communication Skills Lab-II
Course Code	R161221	171HS2L02
Syllabus	UNIT 1: 1. Debating Practice work	PRACTICE 1: Body Language
	UNIT 2: 1. Group Discussions Practice work	PRACTICE 2: Dialogues
	UNIT 3: 1. Presentation Skills Practice work	PRACTICE 3: Presentation Skills
	UNIT 4: 1. Interview Skills Practice work	PRACTICE 4: Group Discussion
	UNIT 5: 1. Email, 2. Curriculum Vitae Practice work	PRACTICE 5: Interviews and Telephonic Interviews.
	UNIT 6: 1. Idiomatic Expressions 2. Common Errors in English Practice work	PRACTICE 6: Debates

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Department of Electrical and Electronics Engineering

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	**Electrical Machines-I**	**Electrical Machines-I**
Course Code	**RT21026**	**R1621022**
Syllabus	**UNIT–I: Electromechanical Energy Conversion:** Introduction to S.I Units - principles of electromechanical energy conversion – forces and torque in magnetic field systems – energy balance- singly excited machine- magnetic force - co-energy – multi excited magnetic field system- construction features of conventional and modern DC machines.	**UNIT–I: Electromechanical Energy Conversion and introduction to DC machines:** Principles of electromechanical energy conversion – singly excited and multi excited system – Calculation of force and torque using the concept of co-energy. Construction and principle of operation of DC machine – EMF equation for generator – Classification of DC machines based on excitation – OCC of DC shunt generator.
	UNIT–II: D.C. Generators – I Principle of operation – E.M.F equation- armature windings – lap and wave windings – armature reaction – cross magnetizing and de-magnetizing AT/pole –commutation process – methods of improving commutation – compensating windings – Interpoles.	**UNIT–II: Performance of D.C. Machines** Torque and back-emf equations of dc motors– Armature reaction and commutation – characteristics of separately-excited, shunt, series and compound motors - losses and efficiency- applications of dc motors.
	UNIT III: DC Generators -II: Methods of excitation-Self excited and separately excited-types of generators build-up of emf-open circuit characteristics-critical field resistance-critical speed-causes for failure to self-excitation-remedial measures-Internal and external characteristics of separately excited, shunt, series, compound generators-applications, losses and efficiency.	**UNIT-III: Starting, Speed Control and Testing of D.C. Machines** Necessity of starter – Starting by 3 point and 4-point starters – Speed control by armature voltage and field control – testing of DC machines - brake test, Swinburne's method – principle of regenerative or Hopkinson's method - retardation test -- separation of losses.
	UNIT–IV: D.C. Motors Principle of operation – back E.M.F - torque equation –characteristics of shunt, series and compound motors –	**UNIT–IV: Single-phase Transformers** Types and constructional details - principle of operation - emf equation - operation on no load and on load –

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	armature reaction and commutation - losses and efficiency- speed torque characteristics-applications of dc motors. Starting by 3 point and 4 point starters – protective devices.	lagging, leading and unity power factors loads - phasor diagrams of transformers – equivalent circuit – regulation – losses and efficiency – effect of variation of frequency and supply voltage on losses – All day efficiency.
	UNIT-V: Speed Control and Testing of D.C. Machines: Speed control by armature voltage and field flux control – testing of DC machines - brake test, Swinburne's method – principle of regenerative or Hopkinson's method - retardation test -- separation of losses – methods of electrical braking: plugging, dynamic and regenerative.	**UNIT-V Single-phase Transformers Testing:** Tests on single phase transformers – open circuit and short circuit tests – Sumpner's test – separation of losses – parallel operation with equal voltage ratios – auto transformer - equivalent circuit – comparison with two winding transformers.
	UNIT–VI: Design of D.C. Machines Design concept - output equation - choice of specific electric and magnetic loadings – separation of D and L - estimation of number of conductors/ turns - coils - armature slots – conductor dimension – slot dimension - choice of number of poles – length of air gap.	**UNIT-VI 3-Phase Transformers** Polyphase connections - Y/Y, Y/Δ, Δ/Y, Δ/Δ and open Δ -- Third harmonics in phase voltages three winding transformers: determination of Zp, Zs and Zt -- transients in switching - off load and on load tap changers -- Scott connection

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Electrical Machines-II	Electrical Machines-II
Course Code	RT22025	R1622022
Syllabus	**UNIT-I Single-phase Transformers** Types and constructional details - principle of operation - emf equation - operation on no load and on load – lagging, leading and unity power factors loads - phasor diagrams of transformers – equivalent circuit – regulation – losses and efficiency – effect of variation of frequency and supply voltage on losses – All day efficiency.	**UNIT-I 3-phase Induction Motors** Construction details of cage and wound rotor machines - production of rotating magnetic field - principle of operation - rotor emf and rotor frequency - rotor current and pf at standstill and during running conditions - rotor power input, rotor copper loss and mechanical power developed and their interrelationship – equivalent circuit – phasor diagram
	UNIT-II Single-phase Transformers Testing: Tests on single phase transformers – open circuit and short circuit tests – Sumpner's test – separation of losses – parallel operation with equal voltage ratios – auto transformer - equivalent circuit – comparison with two winding transformers	**UNIT-II Characteristics, starting and testing methods of Induction Motors** Torque equation - expressions for maximum torque and starting torque - torque slip characteristic - double cage and deep bar rotors - crawling and cogging – speed control of induction motor with V/f method – no load and blocked rotor tests - circle diagram for predetermination of performance– methods of starting – starting current and torque calculations – induction generator operation (Qualitative treatment only)
	UNIT-III 3-Phase Transformers Polyphase connections - Y/Y, Y/Δ, Δ/Y, Δ/Δ and open Δ -- Third harmonics in phase voltages - three winding transformers: determination of Zp, Zs and Zt -- transients in switching - off load and on load tap changers -- Scott connection.	**UNIT – III: Single Phase Motors** Single phase induction motors – Constructional features and equivalent circuit Problem of starting–Double revolving field theory–Starting methods, shaded pole motors, AC Series motor.
	UNIT-IV 3- phase Induction Motors	**UNIT–IV: Construction, Operation and Voltage Regulation of**

	construction details of cage and wound rotor machines - production of a rotating magnetic field - principle of operation - rotor emf and rotor frequency - rotor current and pf at standstill and during running conditions - rotor power input, rotor copper loss and mechanical power developed and their inter relationship – equivalent circuit – phasor diagram.	**Synchronous generator** Constructional features of non–salient and salient pole type – Armature windings – Distributed and concentrated windings – Distribution– Pitch and winding factors –E.M.F equation–Improvements of waveform and armature reaction–Voltage regulation by synchronous impedance method– MMFmethod and Potier triangle method–Phasor diagrams– Two reaction analysis of salient pole machines and phasor diagram.
	UNIT-V Characteristics, starting and testing methods of Induction Motors: Torque equation - expressions for maximum torque and starting torque - torque slip characteristic - double cage and deep bar rotors - crawling and cogging - no load and blocked rotor tests - circle diagram for predetermination of performance - methods of starting – starting current and torque calculations – induction generator operation.	**UNIT –V: Parallel operation of synchronous generators:** Parallel operation with infinite bus and other alternators – Synchronizing power – Load sharing – Control of real and reactive power– Numerical problems.
	UNIT-VI Design of transformer and 3-phase induction motor Transformer: Design concept – output equation – choice of windings – calculation of number of turns – length of mean turn of winding - calculation of resistance and leakage reactance. Three phase induction motor: Design concept – choice of specific electric and magnetic loadings – output equation – stator design – number of slots – conductor dimensions – type of winding – number of rotor slots – conductor dimensions.	**UNIT–VI: Synchronous motor – operation, starting and performance** Synchronous Motor principle and theory of operation– Phasor diagram – Starting torque– Variation of current and power factor with excitation –Synchronous condenser – Mathematical analysis for power developed– Hunting and its suppression – Methods of starting – Applications.

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Department of Electrical and Electronics Engineering

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Electrical Machines -I Laboratory	Electrical Machines -I Laboratory
Course Code	RT22027	R1622027
Syllabus	1.Magnetization characteristics of DC shunt generator. Determination of critical field resistance and critical speed.	1. Magnetization characteristics of DC shunt generator. Determination of critical field resistance and critical speed.
	2.Load test on DC shunt generator. Determination of characteristics.	2.Brake test on DC shunt motor. Determination of performance curves.
	3.Brake test on DC shunt motor. Determination of performance curves.	3.Hopkinson's test on DC shunt machines. Predetermination of efficiency.
	4.Load test on DC compound generator. Determination of characteristics.	4.Swinburne's test and Predetermination of efficiencies as Generator and Motor
	5.Hopkinson's test on DC shunt machines. Predetermination of efficiency.	5.Speed control of DC shunt motor by Field and armature Control.
	6.Fields test on DC series machines. Determination of efficiency.	6.Retardation test on DC shunt motor. Determination of losses at rated speed
	7.Swinburne's test and Predetermination of efficiencies as Generator and Motor.	7.Separation of losses in DC shunts motor.
	8.Speed control of DC shunt motor by Field and armature Control.	8.OC & SC test on single phase transformer.
	9.Brake test on DC compound motor. Determination of performance curves.	9.Sumpner's test on single phase transformer
	10.Load test on DC series generator. Determination of characteristics	10.Scott connection of transformers
	11.Retardation test on DC shunt motor. Determination of losses at rated speed.	11.Parallel operation of Single-phase Transformers
	12.Separation of losses in DC shunt motor.	12.Separation of core losses of a single-phase transformer

		13.Heat run test on a bank of 3 Nos. of single-phase Delta connected transformers

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Program Name : B.Tech. in Mechanical Engineering

Syllabus Revision for the Academic Year 2017-18				
S.No	**Semester**	**Course Code**	**Course Name**	**% of content revised for the existing year**
1	I	171HS1T01	English - I	65
2	I	171BS1T01	Mathematics - I	40
3	I	171HS1T02	Environmental Studies	25
4	I	171BS1T03	Engineering Chemistry	25
5	I	171ES1T02	Engineering Mechanics	0
6	I	171ES1T01	Computer Programming	0
7	I	171HS1L01	English Communication Skills Lab - I	10
8	I	171BS1L01	Engineering Chemistry Lab	20
9	I	171ES1L01	Computer Programming Lab	40
10	II	171HS2T03	English - II	55
11	II	171BS2T02	Mathematics - II	10
12	II	171BS2T06	Mathematics - III	40
13	II	171BS2T07	Engineering Physics	10
14	II	171ES2T03	Engineering Drawing	5
15	II	171ES2T05	Basic Electrical and Electronics Engineering	0
16	II	171HS2L02	English Communication Skills Lab - II	40
17	II	171BS2L02	Engineering Physics Lab	10
18	II	171ES2L02	Engineering Work shop and IT work shop	0

S.No	Semester	Course Code	Course Name	% of content revised for the existing year
19	III	R1621031	Metallurgy & Materials Science	0
20	III	R1621032	Mechanics of Solids	0
21	III	R1621033	Thermodynamics	0
22	III	R1621026	Managerial Economics and Financial Analysis	0
23	III	R1621034	Fluid Mechanics & Hydraulic Machinery	0
24	III	R1621035	Computer Aided Engineering Drawing Practice	10
25	III	R1621036	Electrical And Electronics Engg. Lab	0
26	III	R1621037	Mechanics of Solids and Metallurgy Lab	0
27	IV	R1622031	Kinematics of Machinery	0
28	IV	R1622032	Thermal Engineering -I	0
29	IV	R1622033	Production Technology	0
30	IV	R1622034	Design of Machine members-I	0
31	IV	R1622035	Machine Drawing	0
32	IV	R1622036	Industrial Engineering and Management	0
33	IV	R1622037	Fluid Mechanics and Hydraulic Machinery Lab	0
34	IV	R1622038	Production Technology Lab	0
35	V	RT31031	Dynamics of Machinery	0
36	V	RT31032	Metal Cutting and Machine Tools	0
37	V	RT31033	Design of Machine members-I	0
38	V	RT31034	Instrumentation and Control systems	0
39	V	RT31035	Thermal Engineering -II	0
40	V	RT31036	Metrology	0

S.No	Semester	Course Code	Course Name	% of content revised for the existing year
41	V	RT31037	Machine Tools Lab	0
42	V	RT31038	Metrology and instrumentation Lab	0
43	V	RT31016	IPR&Patents	0
44	VI	RT32031	Operations Research	0
45	VI	RT32032	Interactive Computer Graphics	0
46	VI	RT32033	Design of Machine members-II	0
47	VI	RT32034	Robotics	0
48	VI	RT32035	Heat Transfer	0
49	VI	RT32036	Industrial Engineering Management	0
50	VI	RT32037A	Refrigeration and Air Conditioning	0
51	VI	RT32037B	Computational Fluid Dynamics	0
52	VI	RT32037C	Condition Monitoring	0
53	VI	RT32037D	Rapid Prototyping	0
54	VI	RT32038	Heat Transfer Lab	0
55	VII	RT41031	Automobile Engineering	0
56	VII	RT41032	CAD/CAM	0
57	VII	RT41033	finite Element Methods	0
58	VII	RT41034	Unconventional Machining Processes	0
59	VII	RT41035	MEMS	0
60	VII	RT41036	Nano technology	0
61	VII	RT41037	Material Characterization techniques	0
62	VII	RT41038	Design for Manufacture	0
63	VII	RT41039	Automation in Manufacturing	0

S.No	Semester	Course Code	Course Name	% of content revised for the existing year
64	VII	RT4103A	Industrial hydraulics and Pneumatics	0
65	VII	RT4103L	Simulation Lab	0
66	VII	RT4103M	Design/Fabrication project	0
67	VIII	RT42031	Production Planning and control	0
68	VIII	RT42032	Green Engineering Systems	0
69	VIII	RT42033A	Experimental Stress Analysis	0
70	VIII	RT42033B	Mechatronics	0
71	VIII	RT42033C	Advanced Materials	0
72	VIII	RT42033D	Power Plant Engineering	0
73	VIII	RT42034A	Non Destructive Evaluation	0
74	VIII	RT42034B	Advanced Optimization techniques	0
75	VIII	RT42034C	Gas Dynamics and Jet Propulsion	0
76	VIII	RT42034D	Quality &Reliability Engineering	0
77	VIII	RT42035	Project Work	0
Total number of courses in the academic year 2017-2018				= 77
Number of courses having revision in syllabus content >/= 20% in the academic year 2017-18				9
Percentage of syllabus revision carried out in the academic year 2017-2018 = (9/77)*100				11.68

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PROGRAM STRUCTURE

I SEMESTER

Course Code	Course Title	Course Component	Total Number of contact hours				Credits (C)
			Lecture (L)	Tutorial (T)	Practical (P)	Total Hours	
171HS1T01	English - I	HSS	3	1	---	4	3
171BS1T01	Mathematics - I	BS	3	1	---	4	3
171HS1T02	Environmental Studies	HSS	2	1	---	3	2
171BS1T03	Engineering Chemistry	BS	3	1	---	4	3
171ES1T02	Engineering Mechanics	ES	3	1	---	4	3
171ES1T01	Computer Programming	ES	3	1	---	4	3
171HS1L01	English Communication Skills Lab - I	HSS	---	---	3	3	2
171BS1L01	Engineering Chemistry Lab	BS	---	---	3	3	2
171ES1L01	Computer Programming Lab	ES	---	---	3	3	2
		TOTAL	17	6	11	34	23

II SEMESTER

Course Code	Course Title	Course Component	Total Number of contact hours				Credits (C)
			Lecture (L)	Tutorial (T)	Practical (P)	Total Hours	
171HS2T03	English - II	HSS	3	1	---	4	3
171BS2T02	Mathematics - II	BS	3	1	---	4	3
171BS2T06	Mathematics - III	BS	3	1	---	4	3
171BS2T07	Engineering Physics	BS	3	1	---	4	3
171ES2T03	Engineering Drawing	ES	3	---	3	6	3
171ES2T05	Basic Electrical and Electronics Engineering	ES	3	1	--	4	3
171HS2L02	English Communication Skills Lab – II	HSS	---	---	3	3	2
171BS2L02	Engineering Physics Lab	BS	---	---	3	3	2
171ES2L02	Engineering Workshop And IT Workshop	ES	---	---	3	3	2
		TOTAL	18	5	14	37	24

BS: Basic Sciences; HSS: Humanities and Social Sciences; ES: Engineering Sciences; PC: Professional Core; PE: Professional Elective; OE: Open Elective; SS: Self Study Course; PR: Project

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II Year - I Semester

S. No.	Subjects	L	T	P	Credits
1	Metallurgy & Materials Science	4	--	--	3
2	Mechanics of Solids	4	--	--	3
3	Thermodynamics	4	--	--	3
4	Managerial Economics & Financial Analysis	4	--	--	3
5	Fluid Mechanics & Hydraulic Machines	4	--	--	3
6	Computer Aided Engineering Drawing Practice	3	3	--	3
7	Electrical & Electronics Engg. Lab	--	--	3	2
8	Mechanics of Solids & Metallurgy Lab	--	--	3	2
	Total Credits				**22**

II Year - II Semester

S. No.	Subjects	L	T	P	Credits
1	Kinematics of Machinery	4	--	--	3
2	Thermal Engineering -I	4	--	--	3
3	Production Technology	4	--	--	3
4	Design of Machine Members -I	4	--	--	3
5	Machine Drawing	3	3	--	3
6	Industrial Engineering and Management	4	--	--	3
7	Fluid Mechanics & Hydraulic Machines Lab	--	--	3	2
8	Production Technology Lab	--	--	3	2
	Total Credits				**22**

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3	Thermodynamics	3+1*	--	3
4	Managerial Economics & Financial Analysis	3+1*	--	3
5	Basic Electrical & Electronics Engineering	3+1*	--	3
6	Computer aided Engineering Drawing Practice	3+1*	--	3
7	Basic Electrical & Electronics Engg. Lab	--	3	2
8	Mechanics of Solids & Metallurgy lab	--	3	2
Total Credits				**22**

II Year – II SEMESTER

S. No.	Subject	T	P	Credits
1	Kinematics of Machinery	3+1*	--	3
2	Thermal Engineering -I	3+1*	--	3
3	Production Technology	3+1*	--	3
4	Fluid Mechanics & Hydraulic machinery	3+1*	--	3
5	Machine Drawing	3+1*	--	3
6	Fluid mechanics & Hydraulic machinery Lab	--	3	2
7	Production Technology Lab	--	3	2
8	Thermal Engineering Lab	--	3	2
Total Credits				**21**

III Year – I SEMESTER

S. No.	Subject	T	P	Credits
1	Dynamics of Machinery	3+1*		3
2	Metal Cutting & Machine Tools	3+1*		3
3	Design of Machine Members–I	3+1*		3
4	Instrumentation & Control Systems	3+1*		3
5	Thermal Engineering -II	3+1*		3
6	Metrology	3+1*		3
7	Metrology & Instrumentation Lab		3	2
8	Machine Tools Lab		3	2
9	IPR & Patents		3	2
Total Credits				**24**

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III Year – II SEMESTER

S. No.	Subject	T	P	Credits
1	Operations Research	3+1*		3
2	Interactive Computer Graphics	3+1*		3
3	Design of Machine Members– II	3+1*		3
4	Robotics	3+1*		3
5	Heat Transfer	3+1*		3
6	Industrial Engineering Management	3+1*		3
7	**Departmental Elective – I**	3+1*		3
8	Heat Transfer Lab		3	2
	Total Credits			23

IV Year – I SEMESTER

S. No.	Subject	T	P	Credits
1	Automobile Engineering	3+1*		3
2	CAD/CAM	3+1*		3
3	Finite Element Methods	3+1*		3
4	Unconventional Machining Processes	3+1*		3
5	**Open Elective**	3+1*		3
6	**Departmental Elective – II**	3+1*		3
7	Simulation Lab		3	2
8	Design/Fabrication Project		2	1
	Total Credits			**21**

IV Year – II SEMESTER

S. No.	Subject	T	P	Credits
1	Production Planning and Control	3+1*		3
2	Green Engineering Systems	3+1*		3
3	**Departmental Elective – III**	3+1*		3
4	**Departmental Elective – IV**	3+1*		3
5	Project Work			9
	Total Credits			**21**

OPEN ELECTIVE:

1. MEMS
2. Nanotechnology

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Departmental Elective -I:

1. Refrigeration & Air-conditioning
2. Computational Fluid Dynamics
3. Condition Monitoring
4. Rapid Prototyping

Departmental Elective -II:

1. Material Characterization Techniques
2. Design for Manufacture
3. Automation in Manufacturing
4. Industrial Hydraulics & Pneumatics

Departmental Elective -III:

1. Experimental Stress Analysis
2. Mechatronics
3. Advanced Materials
4. Power Plant Engineering

Departmental Elective -IV:

1. Non Destructive Evaluation
2. Advanced Optimization Techniques
3. Gas Dynamics & Jet Propulsion
4. Quality and Reliability Engineering

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ENGLISH – I
(Common to all branches)

I Semester	L	T	P	C
Course Code: 171HS1T01	3	1	0	3

Introduction:

In view of the growing importance of English as a tool for global communication and the consequent emphasis on training the students to acquire communicative competence, the syllabus has been designed to develop linguistic and communicative competence of the students of Engineering. As far as the detailed textbooks are concerned, the focus should be on the skills of Listening, Speaking, Reading and Writing. The non-detailed textbooks are meant for extensive reading both to instruct and delight. Hence the focus in the syllabus is primarily on the development of communicative skills and fostering of ideas about the essence of English Communication.

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Summarize how Gandhi grew in introspection and the conditions to achieve a higher quality of life, strength and sovereignty of a developed nation.
CO 2: Identify that all men can come together and avert the peril.
CO 3: Comprehend texts from a literary perspective and familiarise the students with Figures of Speech.
CO 4: Explain the characteristic traits of renowned scientists who contributed enormously to the scientific advancement of India.
CO 5: Demonstrate Writing and basic concepts of Grammar skills.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	-	-	-	-	-	-	-	-	-	3	-	-
CO2	-	-	-	-	-	-	-	-	-	3	-	-
CO3	-	-	-	-	-	-	-	-	-	3	-	-
CO4	-	-	-	-	-	-	-	-	-	3	-	-
CO5	-	-	-	-	-	-	-	-	-	3	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

Methodology:

1. The class is to be learner-centered where the learners are to read the texts to get a comprehensive idea of those texts on their own with the help of the peer group and the teacher.
2. Integrated skill development methodology has to be adopted with

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focus on individual language skills as per the tasks/exercise.

3. The tasks/exercises at the end of each unit should be completed by the learners only and the teacher intervention is permitted as per the complexity of the task/exercise.
4. The teacher is expected to use supplementary material wherever necessary and also generate activities/tasks as per the requirement.
5. The teacher is permitted to use lecture method when a completely new concept is introduced in the class.

Recommended Topics:

UNIT-I:

1. IN LONDON: M.K. GANDHI (Detailed)
2. G.D. NAIDU (Non-Detail)

UNIT-II:

1. THE KNOWLEDGE SOCIETY- APJ ABDUL KALAM (Detailed)
2. G.R. GOPINATH (Non-Detail)

UNIT-III:

1.THE SCIENTIFIC POINT OF VIEW- J.B.S. HALDANE(Detailed)
2.J.C. BOSE(Non-Detail)

UNIT-IV:

1.MAN'S PERIL-BERTRAND RUSSELL(Detailed)
2.HOMI JEHANGIR BHABHA(Non-Detail)

UNIT-V:

1.LUCK—MARK TWAIN(Detailed)
2.A SHADOW(Non-Detail)

Textbooks:

Detailed Text Book: 'English Essentials' by Ravindra Publications.
Non-Detailed Text Book: 'Modern Trail Blazers' by Orient Black Swan Pvt. Ltd. Publishers.

Web Links:

1.https://englishforundergraduates.wordpress.com/2016/09/25/theknowledge-society-from-ignited-minds-a-p-j-abdul-kalam/
2.http://btechenglish.blogspot.in/2014/01/the-scientific-point-of-view-j-b-s.html
3.https://www.famousscientists.org/jagadish-chandra-bose/
4.https://www.thebetterindia.com/37339/homi-jehangir-bhabha/

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MATHEMATICS-I
(Common to all branches)

I Semester | L | T | P | C
Course Code: 171BS1T01 | 3 | 1 | 0 | 3

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Associate linear differential equations of first order to solve various physical problems involving differential equations of first order
CO 2: Solve linear differential equations of higher order.
CO 3: Solve linear systems of equations using the concept of rank, Gauss elimination, Gauss seidel method.
CO 4: Find the eigen values and eigen vectors of matrices
CO 5: Associate the concepts of Partial Differentiation to maxima and minima of functions of several variables and to solve Partial differential equations.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	-
CO5	3	2	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT I:

Differential equations of first order and first degree:

Linear differential equations - Bernoulli differential equation - Exact differential equations- Equations reducible to exact (Type-1, Type-2, Type-3, Type-4)

Applications:

Newton's Law of cooling-Law of natural growth and decay-Orthogonal trajectories.

UNIT II:

Linear differential equations of higher order:

Linear differential equations of higher order with constant coefficients with RHS term of the type e^{ax}, sin ax, cos ax, polynomials in x, e^{ax} V(x), xV(x)- Method of Variation of parameters, Method of undetermined coefficients.

*(MATLAB Exercise: Introduction to MAT LAB commands and Solution of Initial Value Problems using the command 'solve')

Applications:

Electric circuits, simple harmonic motion.

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UNIT III:

Linear systems of equations:

Rank of a matrix - Echelon form-Normal form – Solution of linear systems – Gauss elimination method - Gauss Seidel method.

Applications:

Finding the current in electrical circuits.

UNIT IV:

Eigen values - Eigen vectors and Quadratic forms:

Eigen values - Eigen vectors– Properties of eigen values (without proof) – Cayley - Hamilton theorem (without proof) - Inverse and powers of a matrix by using Cayley - Hamilton theorem- Diagonalization- Quadratic forms- Reduction of quadratic form to canonical form using orthogonal transformation– Nature of the quadratic form.

*(MATLAB Exercise: All Basic Operations on matrices are to be implemented using MATLAB including computation of rank, computation of eigen values and eigen vectors)

UNIT V:

Partial differentiation and Partial differential equations

Homogeneous function-Euler's Theorem-Total Derivative-Chain rule-Taylor's and Maclaurin's series expansion of functions of two variables– Functional dependence- Jacobian. Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions –solutions of first order linear (Lagrange) equation, nonlinear (standard types) equations.

Applications: Maxima and Minima of functions of two variables without constraints and Lagrange's method (with constraints).

*(MATLAB Exercise: To Plot graphs of various single and multivariable functions using MATLAB and analyze their maxima and minima graphically).

Text Books:

1. B.S.Grewal, Higher Engineering Mathematics, 43rd Edition, Khanna Publishers.
2. Dr.T.K.V. Iyengar, Engineering Mathematics, S. Chand publications.

Reference Books:

1. Erwin Kreyszig, Advanced Engineering Mathematics, 10th Edition, Wiley- India.
2. D.G.Zill, MICHAIL R CULTER, Advanced Engineering Mathematics Third Edition Norosa Publications2009.
3. Dean G. Duffy, Advanced engineering mathematics with MATLAB, CRC Press.
4. Peter O'neil, Advanced Engineering Mathematics, CengageLearning.
5. Glyn James, Advanced modern engineering mathematics, Pearson education.
6. MATLAB by Rudra Pratap, Getting started with MATLAB, Oxford Publication.

Web Links:

1. http://mathworld.wolfram.com
2. https://www.khanacademy.org
3. http://nptel.ac.in/courses/122104017

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ENVIRONMENTAL STUDIES
(Common to CE, EEE, ME, Min.E, PT &Ag.E)

I Semester L T P C
Course Code: 171HS1T02 2 1 0 2

Course Outcomes:
At the end of the Course, Student will be able to:

CO 1: Identify the need for protecting the producers and consumers in various ecosystems role in the food web.
CO 2: Outline the natural resources and their importance for the sustenance of the life.
CO 3: List out the bio diversity of India, threats and its conservation methods.
CO 4: Explain the different types of pollutions and their control technologies, Waste water treatment, Bio medical waste management etc.
CO 5: Explain EIA- Environmental Impact Assessment, Sustainable developmental activities, environmental policies and regulations.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	-	-	-	-	-	1	3	-	-	-	-	-
CO2	-	-	-	-	-	2	3	-	-	-	-	-
CO3	-	-	-	-	-	1	3	-	-	-	-	-
CO4	-	-	2	-	-	2	3	-	-	-	-	-
CO5	-	-	2	-	-	2	3	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT –I:
Ecosystems:
Scope of environmental studies, Structure- Producers, consumers and decomposers Function – Food chain, Food web, Tropic structure and Energy flow in the ecosystem Ecological pyramids, nutrient recycling, primary and secondary production, ecosystem regulation. Ecological succession Terrestrial ecosystem and aquatic ecosystem - Introduction, types, characteristic features.

UNIT – II:
Natural Resources:
Natural resources and associated problems Forest resources – Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems

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Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources
Food resources: World food problems, changes caused by non-agriculture activities- effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources vs oil and natural gas extraction.
Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

UNIT – III:
Biodiversity and its conservation:
Definition: genetic, species and ecosystem diversity classification Value of biodiversity: consumptive use, productive use, social-Biodiversity at national and local levels. India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts - Endangered and endemic species of India – Conservation of biodiversity.

UNIT – IV:
Environmental Pollution:
Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies, Sustainable Life Style.
Solid Waste Management: Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical,
Hazardous and e – waste management.

UNIT – V:
Social Issues and the Environment
Urban problems related to energy -Water conservation, rain water harvesting- Resettlement and rehabilitation of people; its problems and concerns. Global challenges
Environmental ethics: Issues and possible solutions. Environmental Protection Act - Air (Prevention and Control of Pollution) Act. –Water (Prevention and control of Pollution) Act - Wildlife Protection Act - Forest Conservation Act-Issues involved in enforcement of environmental legislation. - Public awareness and Environmental management.

Text Books:
1. Environmental Studies, K.V. S. G. Murali Krishna, VGS Publishers, Vijayawada
2. Environmental Studies, R. Rajagopalan, 2nd Edition, 2011, Oxford University Press.
3. Environmental Studies, P.N. Palanisamy, P. Manikandan, A. Geetha, and K. Manjula Rani; Pearson Education, Chennai

Reference Books:
1. Text Book of Environmental Studies, Deeshita Dave & P. Udaya Bhaskar, Cengage Learning.
2. A Textbook of Environmental Studies, Shaashi Chawla, TMH, NewDelhi.
3. Environmental Studies, Benny Joseph, Tata McGraw Hill Co, NewDelhi.
4. "Perspectives in Environment Studies" Anubha Kaushik, C P Kaushik, New Age International Publishers,2014.

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ENGINEERING CHEMISTRY
(Common to CE, ME, Min.E, PT &Ag.E)

I Semester
Course Code: 171BS1T03

L	T	P	C
3	1	0	3

Course Outcomes
At the end of the Course, Student will be able to:

CO 1: Explain polymeric materials their uses and molding techniques of plastics.
CO 2: Analyze fuel characteristics using Calorific value, knocking characteristics and flue gas analysis.
CO 3: Explain the working principle of Electro chemical cells and corrosion characteristics.
CO 4: Explain the properties and applications of Nano, Superconductors, Semiconductors, Liquic crystals and fuel cells.
CO 5: Summarize water purification techniques and boiler troubles.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	2	-	-	-	-	-	-	-	-	-	-	-
CO2	2	-	-	-	-	-	-	-	-	-	-	-
CO3	3	-	-	-	-	-	-	-	-	-	-	-
CO4	3	-	-	-	-	-	-	-	-	-	-	-
CO5	2	-	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT- I:
High Polymers and Plastics:
Polymerization: Introduction- Mechanism of polymerization - Stereo regular polymers -Physical and mechanical properties – Plastics as engineering materials: advantages and limitations – Thermoplastics and Thermosetting plastics – Compounding and fabrication (compression moulding, injection moulding, extrusion moulding and transfer moulding techniques) - Preparation, properties and applications of polyethene, PVC, Bakelite and polycarbonates. Elastomers – Natural rubber- compounding and vulcanization – Synthetic rubbers: Buna S, Buna N, Thiokol – Applications of elastomers. Biodegradable polymers.

UNIT - II:
Fuel Technology:
Fuels:- Introduction – Classification – Calorific value - HCV and LCV – Dulong's formula – Coal — Proximate and ultimate analysis – Significance of the analyses – Liquid fuels – Petroleum- Refining – Cracking – Synthetic petrol –Petrol knocking – Diesel knocking - Octane and Cetane ratings – Anti-knock agents – Power alcohol – Bio-diesel – Gaseous fuels – Natural gas. LPG and CNG – Combustion – Calculation of air for the combustion of a fuel – Flue gas

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analysis – Orsat apparatus.

UNIT - III:

Electrochemical Cells and Corrosion:

Galvanic cells - Reversible and irreversible cells – Single electrode potential- Electro chemical series and uses of this series- Standard electrodes (Hydrogen and Calomel electrodes) - Concentration Cells – Batteries: Dry Cell - Li cells - Zinc – air cells.

Corrosion:- Definition – Theories of Corrosion (electrochemical) – Formation of galvanic cells by different metals, by concentration cells, by differential aeration and waterline corrosion – Passivity of metals – Pitting corrosion - Galvanic series – Factors which influence the rate of corrosion - Protection from corrosion – Cathodic protection - Protective coatings: – Metallic (cathodic and anodic) coatings - Methods of application on metals (Galvanizing, Tinning, Electroplating, Electrolessplating).

UNIT - IV:

Chemistry of Advanced Materials:

Nano materials:-Introduction – Sol-gel method - Carbon nano tubes and fullerenes: Types, preparation, properties and applications.

Super conductors:-Type –I, Type II – Characteristics and applications

Semi conductors: - Preparation of semiconductors, working of diodes and transistors. Green synthesis:-Principles

Liquid crystals:-Introduction – Types – Applications

Fuel cells: - Introduction - cell representation, H_2-O_2fuel cell: Design and working, advantages and Limitations. Types of fuel cells: methanol-oxygen fuel cells.

UNIT - V:

Water Technology

Hard water:-Reasons for hardness – units of hardness - determination of hardness and alkalinity - Water for steam generation - Boiler troubles – Priming and Foaming, Scale formation, Boiler corrosion, Caustic embrittlement - Internal treatments - Softening of Hard water : Lime – Soda process, Zeolite process and numerical problems based on these processes and Ion Exchange process – Water for drinking purposes - Purification – Sterilization and disinfection : Chlorination, Break point chlorination and other methods – Reverse Osmosis and Electro Dialysis.

Text Books:

1. Engineering Chemistry by Jain and Jain; Dhanpat Rai Publicating Co.
2. A Text books of Applied Chemistry by Dr. Bharathi kumariYalamananchili, VGS publications
3. Engineering Chemistry by Shikha Agarwal; Cambridge University Press, 2015 edition.

Reference Books:

1. Engineering Chemistry by PrasanthRath, Cengage Learning, 2015edition.
2. A text book of engineering Chemistry by S. S. Dara; S. Chand & Co Ltd., LatestEdition
3. Applied Chemistry by H.D. Gesser, SpringerPublishers
4. Text book of Nano-science and nanotechnology by B.S. Murthy, P. Shankar and others, University Press,IIM

Web Links:

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1. http://www.nptelvideos.in/2012/11/chemistry-of-materials
2. http://www.nptelvideos.com/lecture.php?id=2946
3. http://www.nptelvideos.com/lecture.php?id=2922
4. http://www.nptelvideos.com/lecture.php?id=2954

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ENGINEERING CHEMISTRY LAB
(Common to CE, ME, Min.E, PT &Ag.E)

I Semester L T P C
Course Code: 171BS1L01 0 0 3 2

Course Outcomes:
At the end of the Course, Student will be able to:

CO 1: Demonstrate Acid –Base, Complexometric titrations by volumetric analysis.
CO 2: Demonstrate Acid – Base titrations by instrumental analysis.
CO 3: Estimate Vitamin C using volumetric analysis
CO 4: Prepare polymer like Bakelite.
CO5 : Prepare alternative fuel like Bio-Diesel.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	2	-	-	-	-	-	-	-	-	-	-	-
CO2	2	-	-	-	-	-	-	-	-	-	-	-
CO3	2	-	-	-	-	-	-	-	-	-	-	-
CO4	2	-	-	-	-	-	-	-	-	-	-	-
CO5	2	-	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

Exercise 1:
Introduction to Chemistry laboratory – Molarity, Normality, Primary, secondary standard solutions, Volumetric titrations, Quantitative analysis, Qualitative analysis, etc.

Exercise 2:
Trial experiment - Determination of HCl using standard Na_2CO_3 solution.

Exercise 3:
Preparation of Phenol - Formaldehyde resin (Bakelite).

Exercise 4:
Determination of $KMnO_4$ using standard Oxalic acid solution.

Exercise 5:
Determination of ferrous iron using standard $K_2Cr_2O_7$ solution.

Exercise 6:
Preparation of Bio-Diesel.

Exercise 7:
Determination of temporary and permanent hardness of water using standard EDTA solution.

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Exercise 8:
Determination of Copper using standard EDTA solution.

Exercise 9:
Determination of Iron by a Colorimetric method using thiocynate as reagent.

Exercise 10:
Determination of pH of the given sample solution using pH meter.

Exercise 11:
Conduct metric titration between strong acid and strong base.

Exercise 12:
Conduct metric titration between strong acid and weak base.

Exercise 13:
Potentiometric titration between strong acid and strong base.

Exercise 14:
Potentiometric titration between strong acid and weak base.

Exercise 15:
Determination of Zinc using standard EDTA solution.

Exercise 16:
Determination of Vitamin – C.

Reference Books:

1. A Textbook of Quantitative Analysis, Arthur J.Vogel.
2. Dr. Jyotsna Cherukuris (2012) Laboratory Manual of engineering chemistry - II, VGS TechnoSeries.
3. Chemistry Practical Manual, Lorven Publications K. Mukkanti (2009). Practical Engineering Chemistry, B. S.Publication.

Web Links:

1. http://www.nptelvideos.in/2012/11/chemistry-of-materials
2. http://www.nptelvideos.com/lecture.php?id=2946

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COMPUTER PROGRAMMING LAB
(Common to all branches)

I Semester L T P C

Course Code: 171ES1L01 0 0 3 2

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Implement basic programs in C.
CO 2: Use Conditional and Iterative statements to solve real time scenarios in C.
CO 3: Implement the concept of Arrays and Modularity.
CO 4: Apply the Dynamic Memory Allocation functions using pointers.
CO 5: Develop programs using structures, and Files.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	-	2	-	-	2	-	-	-	-	-	-	-
CO2	-	2	2	3	2	-	-	-	-	-	-	-
CO3	-	3	2	2	2	-	-	-	-	-	-	-
CO4	-	2	2	3	2	-	-	-	-	-	-	-
CO5	-	2	2	2	2	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	2	-
CO2	2	-
CO3	2	-
CO4	2	-
CO5	2	-

Exercise – 1:

Introduction to C Programming

1.1) Introduction about Editors –Turbo, vi, Emacs
1.2) C Program to Perform Addition, Subtraction, Multiplication and Division of two numbers from Command line
1.3) Write a C Program to Calculate area of a Triangle using Heron's formula.

Exercise – 2:

Basic Math

2.1) Write a C Program to Find Whether the Given Year is a Leap Year or not.
2.2) Write a C Program to convert Celsius to Fahrenheit and vice versa.
2.3) Write a C Program to find largest of three numbers using ternary operator.

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Exercise – 3:
Control Flow – I
3.1) Write a C program to find the roots of a Quadratic Equation.
3.2) Write a C Program to make a simple Calculator to Add, Subtract, Multiply or Divide Using switch…case.
3.1) Scenario - 1 ATM PINGENERATION:
Aditya purchased a credit card. He has to generate a PIN number to access the ATM and Net banking for which OTP was sent to his registered mobile number. Using this OTP number he has to generate ATM PIN number. After generating PIN number, he can use it for further transactions. Maximum login he can make is 3 times.
Sample Input:
OTP: 6732
If valid
Enter PIN: 8858 Confirm your PIN: 8858 Sample output:
valid/Invalid
PIN generated successfully. Note: OTP is hard coded.
3.2) Scenario - 2 RESET PASSWORD:
Sindhuja was using Syndicate Bank's Online Account. She wanted to pay her bills through Online. But she forget her password. Now she has to reset the password. For resetting the password, she has to select reset option from the Menu.
NOTE: using switch case. Sample input:
1. Fast withdrawal
2. Mini Statement.
3. Balance Enquiry
4. Reset Password Enter your choice:4
Sample Output: Reset password: New password: ***** Confirm password: *****

Exercise –4:
Control Flow - II
4.1) Write a C Program to Find Whether the Given Numbers
i) PrimeNumber
ii) ArmstrongNumber
4.2) Write a C program to print Floyd Triangle 4.3) Write a C Program to print PascalTriangle

Exercise – 5:
Control Flow – III
5.1) Write a C program to find the sum of individual digits of a positive integer. 5.2) Write a C program to check whether given number is palindrome or not.
5.2) Write a C program to read two numbers, x and n, and then compute the sum of the geometric progression $1+x+x^2+x^3+ \quad +x^n$.
5.3) Scenario - 3 Student Attendance reportGeneration:
Some of the school staff had failed to maintain the attendance of the students, causing lack of essential records related to students' attendance that should be submitted in a parents meet. The school management has decided to automate the process in order to

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maintain the attendance of every student effectively. You are asked to write a program to the above scenario and display whether the student is allowed to write the Exam or not.

percentage<65	detained
>=65 and <75	should pay condonation to appear for Exams
>=75	allowed for Exams

Sample Input:
Enter no of students: 5 Enter Students Details:

Rno:1	Name: Kalyan	attendance(%):67	Should pay condonation to appear for Exams
Rno:2	Name: laxman	attendance(%):56	
Rno:3	Name: Yamini	attendance(%):79	
Rno:4	Name: Aryan	attendance(%):60	
Rno:5	Name: Raghav	attendance(%):88	

Sample Output:

Rno	Name	Attendance (%)	Remarks
1	Kalyan	67	should pay condonation to appear for Exams
2	Laxman	56	detained
3	Yamini	79	allowed for Exams
4	Aryan	60	detained
5	Raghav	88	allowed for Exams

Exercise 6:
Arrays
Demonstration of arrays 6.1) Linear Search.
6.2) Bubble Sort.
6.3) Operations on Matrix.
6.4) Scenario – 4 Celebrity of the Week:
Red FM has launched a program called Celebrity of the week in their channel. Listeners are given a toll-free number where they can listen to list of celebrities. Listeners can choose their favourite celebrity from the list and vote for him/her. The votes are validated from Monday to Saturday. The one with highest votes is called as "Celebrity of the Week" and his/her songs are played in the program, which is aired on Sundays. Now write a program to find the celebrity of the week.
Sample Input:

1. Nagachaithanya
2. Nithin
3. Prabhas
4. Ram
5. Thamanna
6. Samantha

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7. Regina
8. Sruthihasan

Enter no of listeners: 10 Enter your favourite: 3 Enter your favourite: 8 Enter your favourite: 4 Enter your favourite: 3 Enter your favourite: 4 Enter your favourite: 2 Enter your favourite: 7 Enter your favourite: 3 Enter your favourite: 1 Enter your favourite: 5 Sample Output: "Celebrity of the Week" is PRABHAS

Exercise – 7:
Functions

7.1) Write a C Program to demonstrate parameter passing in Functions and returning values.

7.2) Write a C Program to find Fibonacci, Factorial of a number with Recursion and withoutRecursion.

7.3) Scenario – 5 SELF DRIVERENTAL

Sadiq and his friends are going to Banglore. But they don't have a vehicle in Banglore. For that they go to rental cars to take car for rent. You have find out what is total amount of car's rent. The car's rentals and rules are as follows.

i) Minimum booking is4.
ii) There are 3 types ofcars
A) SWIFT
B) SCORPIO
C) INNOVA

iii) There are 3 categories in carsrental
A) LTTE
B) CLASS
C) XL

FOR SWIFT,

- In LTTE 5 kms are free for one hour and Rs.70 per one hour, if they exceed 5kmph, then Rs.12 perkm.
- In CLASS, 10 kms are free for one hour and Rs.90 per one hour, if they exceed 10kmph, then Rs.12 perkm.
- In XL, 15 kms are free for one hour and Rs.110 per one hour, if they exceed 15kmph, then Rs.12 perkm.

FOR SCORPIO,

- In LTTE, 5 kms are free for one hour and Rs.90 per one hour, if they exceed 5kmph, then Rs.15 perkm.
- In CLASS, 10 kms are free for one hour and Rs.110 per one hour, if they exceed 10kmph, then Rs.15 perkm.

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- In XL, 15 kms are free for one hour and Rs.130 per one hour, if they exceed 15kmph, then Rs.15 perkm.

FOR INNOVA

- In LTTE, 5 kms are free for one hour and Rs.110 per one hour, if they exceed 5kmph, then Rs.18 perkm.
- In CLASS, 10 kms are free for one hour and Rs.130 per one hour, if they exceed 10kmph, then Rs.18 perkm.
- In XL, 15 kms are free for one hour and Rs.150 per one hour, if they exceed 15kmph, then Rs.18 perkm.

SAMPLE INPUT:
ENTER NO.OF DAYS AND HOURS FOR CAR: 01 02 (I.E 1 DAY 2 HOURS = 26 HOURS)
1. SWIFT
2. SCORPIO
3. INNOVA SELECT A CAR:2
1. LTTE
2. CLASS
3. XL
SELECT RENTAL TYPE: 2 TOTAL KMS COVERED: 300

SAMPLE OUTPUT:

TOTAL HOURS:	26
CAR NAME:	SCORPIO
RENTAL TYPE:	CLASS
AMOUNT:	2860
EXCEED AMOUNT (40KM *15):	600
GRAND TOTAL:	3460

Exercise – 8:
Strings
8.1) Implementation of string manipulation operations with library function.
i) copy
ii) concatenate
iii) length
iv) compare
8.2) Implementation of string manipulation operations without library function.
i) copy
ii) concatenate
iii) length
iv) compare
8.3) Verify whether the given string is a palindrome or not 8.4) Scenario – 6 Word with Obesity:
Jeeth is a fun loving and active boy. He likes to play with words and numbers. One day Jeeth and his friends attended a seminar, which was conducted in his school. The

Seminar was about "Causes of obesity in children and its effects". Jeeth and his friend Ram are not interested in listening to the seminar, so he thought of giving a puzzle to Ram. Jeeth gave some words to Ram and wanted him to find the word with Obesity. Ram was confused and asking your help. Write a program to find the weights of the words and display the word with highest weight (word with obesity).

Sample Input:
Enter no of words: 3
Enter 3 words: apple banana carrot

Sample Output:
Word with Obesity is carrot

Exercise – 9:
Arrays and Pointers

9.1) Write a C Program to Access Elements of an Array UsingPointer
9.2) Write a C Program to find the sum of numbers with arrays andpointers.

Exercise – 10:
Dynamic Memory Allocations

10.1) Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using malloc ()function.
10.2) Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using calloc () function. Understand the difference between the above two programs

Exercises – 11:
Structures

11.1) Write a C Program to Store Information of a book Using Structure
11.2) Write a C Program to Store Information Using Structures with Dynamically Memory Allocation
11.3) Write a C Program to Add Two Complex Numbers by Passing Structure to a Function
11.4) Scenario – 7 Library Management

Shilpa student of PGEC got the Library Card. She wants to lend the books from the Library. The college gave two cards to each and every student. The students can lend only two books at a time and it has to be returned back after 15 days. If the books are not returned late fee will be collected for no. of days the books were returned after the due date. Late fee per day is Rs.50/-
Sample Input.
Enter the name of student, Roll No. Branch, Section, Year, DOL, DOR, Sample output
No. of days returned after the due date = 5 Late fee per day = Rs. 50
Fine paid by the student is 5 * 50 =250.

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Exercise -12:
Files

12.1) Write a C program to open a file and to print the contents of the file on screen. 12.2) Write a C program to copy content of one file to another file.
12.3) Write a C program to merge two files and store content in another file. 12.4) Scenario – 8 Student Information System Using Files:
Lakshya International school was recently established and having large no of admissions. The school management wanted the Student information to be computerized and wanted to maintain in a simple and in effective manner. You are asked to develop Student Information System using Files to perform the following tasks

1. Add New Student
2. Update Existing Student
3. Delete Existing Student
4. Retrieve A Particular/All Students Sample Input:

Choose the task you want to perform:

1. Add
2. Update
3. Delete
4. Retrieve Your choice:1

Enter student details:
Name: Akhil Age: 5
Class: 1 Sample Output:
Student details added

Reference Books:

1. Let Us C by Yashwant Kanetkar.
2. Programming in C A-Practical Approach by Ajay Mittal.
3. The C programming Language, Dennis Richie and Brian Kernighan, Pearson Education.

Web Links:

1. https://www.hackerrank.com/
2. https://www.codechef.com/
3. https://www.topcoder.com/
4. https://code-cracker.github.io/

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ENGLISH – II
(Common to all branches)

II Semester	L	T	P	C
Course Code: 171HS2T03	3	1	0	3

Introduction:

In view of the growing importance of English as a tool for global communication and the consequent emphasis on training the students to acquire communicative competence, the syllabus has been designed to develop linguistic and communicative competence of the students of Engineering. As far as the detailed textbooks are concerned, the focus should be on the skills of Listening, Speaking, Reading and Writing. The non-detailed textbooks are meant for extensive reading both to instruct and delight. Hence the focus in the syllabus is primarily on the development of communicative skills and fostering of ideas about the essence of English Communication.

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Compare the difference between traditional and modern technologies.
CO 2: Identify the causes for climate change.
CO 3: Infer professional work habits, necessary for effective collaboration and cooperation.
CO 4: Develop competency in writing for political, social and religious documents.
CO 5: Demonstrate writing and basic concepts of grammar skills.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	-	-	-	-	1	-	-	-	-	3	-	-
CO2	-	-	-	-	-	-	-	-	-	3	-	-
CO3	-	-	-	-	-	-	1	-	-	3	-	-
CO4	-	-	-	-	-	-	1	-	-	3	-	-
CO5	-	-	-	-	-	-	-	-	-	3	-	-

Mapping of Course Outcomes with Program Specific Outcomes:

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

Methodology:

1 The class is to be learner-centered where the learners are to read the texts to get a comprehensive idea of those texts on their own with the help of the peer group and the teacher.
2 Integrated skill development methodology has to be adopted with focus on individual language skills as per the tasks/exercise.
3 The tasks/exercises at the end of each unit should be completed by the learners only and

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the teacher intervention is permitted as per the complexity of the task/exercise.

4 The teacher is expected to use supplementary material wherever necessary and also generate activities/tasks as per the requirement.

5 The teacher is permitted to use lecture method when a completely new concept is introduced in the class.

Recommended Topics:

UNIT-I:

1. TECHNOLOGY WITH A HUMAN FACE(Detailed)
2. AN IDEAL FAMILY(Non-Detailed)

UNIT-II:

1. CLIMATE CHANGE AND HUMAN STRATEGY(Detailed)
2. WAR(Non-Detailed)

UNIT-III:

1. EMERGING TECHNOLOGIES(Detailed)
2. THE VERGER(Non-Detailed)

UNIT-IV:

1. THE SECRET OF WORK(Detailed)
2. THE SCARECROW(Non-Detailed)

UNIT-V:

1. WORK BRINGS SOLACE(Detailed)
2. A VILLAGE LOST TO THE NATION(Non-Detailed)

Prescribed Text Books:

Detailed Text Book: 'Sure Outcomes' by Orient Black Swan Pvt. Ltd. Publishers.

Non Detailed Text Book: Panorama- A course on Reading by Oxford University Press Pvt. Ltd. Publishers.

Web Links:

1. http://www.cooperative-individualism.org/schumacher-e-f_technology-with-a-human-face-1973.htm
2. http://www.sinden.org/verger.html
3. http://btechenglish.blogspot.in/2015/05/work-brings-solace-sure-out comes- b.html
4. http://www.ramakrishnavivekananda.info/vivekananda/volume_1 karma- yoga/secret_of_work.htm

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MATHEMATICS-III
(Common to all branches)

II Semester

Course Code: 171BS2T06

L	T	P	C
3	1	0	3

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Compute Laplace transform of various functions.

CO 2: Apply Laplace transform to solve initial value problems.

CO 3: Discuss about beta and gamma function, double integral over a region and triple integral over a volume.

CO 4: Find the gradient of a scalar function, divergence and curl of a vector function.

CO 5: Apply line, surface and volume integrals to find work done by a force, flux.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	-
CO5	3	2	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT - I:

Laplace transforms:

Laplace transforms of standard functions-First Shifting theorem, Change of scale, Multiplication with t, Division by t - Transforms of derivatives and integrals – Unit step function –Dirac's delta function, Periodic functions.

UNIT – II:

Inverse Laplace transforms:

Inverse Laplace transforms – Convolution theorem (without proof), Second shifting theorem. *(MATLAB Exercise: Computing Laplace transform off (t) using symbolic toolbox, Solving initial value problems using 'dsolve')

Applications:

Evaluating improper integrals, solving initial value problems using Laplace transforms.

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UNIT - III:

Multiple integrals and Beta, Gamma functions:

Multiple integrals: Double and triple integrals – Change of variables – Change of order of integration, Beta and Gamma functions- Properties - Relation between Beta and Gamma functions-

Applications:

Finding Areas and Volumes.

UNIT - IV:

Vector Differentiation:

Gradient - Directional Derivatives - Divergence- Curl - Laplacian operator -Vector identities.

Applications:

Equation of continuity, potential surfaces

UNIT - V:

Vector Integration:

Line integral – Work done - Surface and volume integrals, Green's Theorem, Stokes Theorem and Gauss Divergence theorem (without proof) and related problems.

Text Books:

1. B.S.Grewal, Higher Engineering Mathematics, 43rdEdition, Khanna Publishers.
2. Dr. T K V Iyengar, Engineering Mathematics, S. Chand Publications.

Reference Books:

1. George B. Thomas, D, Weir and J. Hass. Thomas Calculus, 12th edition, 2010 Pearson Education
2. Greenberg, Advanced Engineering Mathematics, 2nd edition, Pearson Education.
3. Erwin Kreyszig, Advanced Engineering Mathematics, 10th Edition, Wiley- India.
4. W. Jordan and T. Smith, Mathematical Techniques, Oxford University Press.

Web Links:

1. http://mathworld.wolfram.com
2. https://www.khanacademy.org
3. http://nptel.ac.in/courses/122104017

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ENGLISH COMMUNICATION SKILLS LAB - II
(Common to all branches)

II Semester	L	T	P	C
Course Code: 171HS2L02	0	0	3	2

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Make effective use of Body language in all situations and contexts to enhance effective communication in all aspects.

CO 2: Identify communicative competency to respond to others in different situations.

CO 3: Make use of effective delivery strategies to select, compile and synthesize information for oral presentation.

CO 4: Demonstrate in mock interviews, group discussion and public speaking.

CO 5: Illustrate interpersonal skills using English language confidently and effectively for personal and professional growth.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	-	-	-	-	-	-	-	-	-	3	-	2
CO2	-	-	-	-	-	-	-	-	-	3	-	2
CO3	-	-	-	-	-	-	-	-	-	3	-	2
CO4	-	-	-	-	-	-	-	-	-	3	-	2
CO5	-	-	-	-	-	-	-	-	-	3	-	2

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

PRACTICE1:
Body Language

PRACTICE2:
Dialogues

PRACTICE 3:
Presentation Skills

PRACTICE 4:
Group Discussion

PRACTICE 5:
Interviews and Telephonic Interviews.

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PRACTICE 6:
Debates

Reference Books:

1. Strengthen your Communication Skills by Dr.M.Hari Prasad, Dr.Salivendra J.Raju and Dr.G.Suvarna Lakshmi, Maruthi Publications.
2. English for Professionals by Prof Eliah, B.S Publications, Hyderabad.
3. A Handbook of English for Professionals by Prof Eliah, B.S Publications.
4. Effective Technical Communication by M. Ashraf Rizvi, Tata Mcraw – Hill Publishing Company.
5. Cornerstone, Developing soft skills, Pearson Education.

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Department of Mechanical Engineering

Syllabus revision Index (2017-18)

S.No	Name of the course	Percentage of syllabus change
1	English-I	65
2	Mathematics-I	40
3	Environmental Studies	25
4	Engineering Chemistry	25
5	Engineering Chemistry Lab	20
6	Computer Programming Lab	40
7	English-II	55
8	Mathematics-III	40
9	English Communication Skills Lab-II	40

Program Coordinator

Head of the Department

Head of the Department
Department of Mechanical Engineering
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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	English-II	English-I
Course Code	R161201	171HS1T01
Syllabus	UNIT 1: 1. ' The Greatest Resource-Education' from English Encounters 2. ' A P J Abdul Kalam' from The Great Indian Scientists.	UNIT-I: 1. IN LONDON: M.K.GANDHI (Detailed) 2. G.D. NAIDU (Non-Detailed)
	UNIT 2: 1. ' A Dilemma' from English Encounters 2. 'C V Raman' from The Great Indian Scientists.	UNIT-II: 1. THE KNOWLEDGE SOCIETY- APJ ABDUL KALAM (Detailed) 2. G.R. GOPINATH (Non-Detailed)
	UNIT 3: 1. 'Cultural Shock': Adjustments to new Cultural Environments from English Encounters. 2. 'Homi Jehangir Bhabha' from The Great Indian Scientists.	UNIT-III: 1. THE SCIENTIFIC POINT OF VIEW-J.B.S. HALDANE (Detailed) 2. J.C. BOSE (Non-Detailed)
	. UNIT 4: 1. 'The Lottery' from English Encounters. 2. 'Jagadish Chandra Bose' from The Great Indian Scientists.	UNIT-IV: 1. MAN'S PERIL-BERTRAND RUSSELL (Detailed) 2. HOMI JEHANGIR BHABHA (Non-Detailed)
	UNIT 5: 1. ' The Health Threats of Climate Change' from English Encounters 2. ' Prafulla Chandra Ray' from The Great Indian Scientists.	UNIT-V: 1. LUCK—MARK TWAIN (Detailed) 2. A SHADOW (Non-Detailed)
	UNIT 6: 1. ' The Chief Software Architect' from English Encounters 2. ' Srinivasa Ramanujan' from The Great Indian Scientists.	

Signature of the course coordinator

Signature of the HOD

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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Mathematics-I	Mathematics-I
Course Code	R161102	171BS1T01
Syllabus	UNIT I: Differential equations of first order and first degree: Linear-Bernoulli-Exact-Reducible to exact. Applications: Newton's Law of cooling-Law of natural growth and decay-Orthogonal trajectories- Electrical circuits- Chemical reactions.	UNIT I: Differential equations of first order and first degree: Linear differential equations - Bernoulli differential equation - Exact differential equationsEquations reducible to exact (Type-1, Type-2, Type-3, Type-4) Applications: Newton's Law of cooling-Law of natural growth and decay-Orthogonal trajectories.
	UNIT II: Linear differential equations of higher order: Non-homogeneous equations of higher order with constant coefficients with RHS term of the type eax, sin ax, cos ax, polynomials in x, eax V(x), xV(x)- Method of Variation of parameters. Applications: LCR circuit, Simple Harmonic motion.	UNIT II: Linear differential equations of higher order: Linear differential equations of higher order with constant coefficients with RHS term of the type eax, sin ax, cos ax, polynomials in x, eax V(x), xV(x)- Method of Variation of parameters, Method of undetermined coefficients. *(MATLAB Exercise: Introduction to MAT LAB commands and Solution of Initial Value Problems using the command 'dsolve') Applications: Electric circuits, simple harmonic motion.
	UNIT III: Laplace transforms: Laplace transforms of standard functions-Shifting theorems - Transforms of derivatives and integrals – Unit step function –Dirac's delta function- Inverse Laplace transforms– Convolution theorem (with out proof). Applications: Solving ordinary differential equations (initial value problems) using Laplace transforms.	UNIT III: Linear systems of equations: Rank of a matrix - Echelon form-Normal form – Solution of linear systems – Gauss elimination method - Gauss Seidal method. Applications: Finding the current in electrical circuits.
	UNIT IV: Partial differentiation: Introduction- Homogeneous function-Euler's theorem-Total derivative-Chain ruleGeneralized Mean value theorem for	UNIT IV: Eigen values - Eigen vectors and Quadratic forms: Eigen values - Eigen vectors– Properties of eigen values (without proof) – Cayley -Hamilton

	single variable (without proof)-Taylor's and Mc Laurent's series expansion of functions of two variables– Functional dependence- Jacobian. Applications: Maxima and Minima of functions of two variables without constraints and Lagrange's method (with constraints).	theorem (without proof) - Inverse and powers of a matrix by using Cayley - Hamilton theorem- Diagonalization- Quadratic forms- Reduction of quadratic form to canonical form using orthogonal transformation– Nature of the quadratic form. *(MATLAB Exercise: All Basic Operations on matrices are to be implemented using MATLAB including computation of rank, computation of eigen values and eigen vectors)
	UNIT V: First order Partial differential equations: Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions –solutions of first order linear (Lagrange) equation and nonlinear (standard types) equations.	UNIT V: Partial differentiation and Partial differential equations: Homogeneous function-Euler's theorem-Total derivative-Chain rule-Taylor's and Maclaurin's series expansion of functions of two variables– Functional dependence Jacobian. Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions –solutions of first order linear (Lagrange) equation, nonlinear (standard types) equations. Applications: Maxima and Minima of functions of two variables without constraints and Lagrange's method (with constraints). *(MATLAB Exercise: To Plot graphs of various single and multivariable functions using MATLAB and analyze their maxima and minima graphically).
	UNIT VI: Higher order Partial differential equations: Solutions of Linear Partial differential equations with constant coefficients. RHS term of the type e^(ax+by) , sin(ax+by), cos(ax+by), x^m y^n Classification of second order partial differential equation	

G. V. R

Signature of the course coordinator

Signature of the HOD

Head of the Department

Department of H & B

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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Environmental Studies	Environmental Studies
Course Code	R161108	171HS1T02/171HS2T02
Syllabus	UNIT – I Multidisciplinary nature of Environmental Studies: Definition, Scope and Importance –Sustainability: Stockholm and Rio Summit–Global Environmental Challenges: Global warming and climate change, Carbon Credits, acid rains, ozone layer depletion, population growth and explosion, effects. Role of information Technology in Environment and human health. Ecosystems: Concept of an ecosystem. - Structure and function of an ecosystem. - Producers, consumers and decomposers. - Energy flow in the ecosystem - Ecological succession. – Food chains, food webs and ecological pyramids. - Introduction, types, characteristic features, structure and function of Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems.	UNIT –I: Ecosystems: Scope of environmental studies, Structure- Producers, consumers and decomposers Function – Food chain, Food web, Tropic structure and Energy flow in the ecosystem Ecological pyramids, nutrient recycling, primary and secondary production, ecosystem regulation. Ecological succession Terrestrial ecosystem and aquatic ecosystem - Introduction, types, characteristic features.
	UNIT – II Natural Resources: Natural resources and associated problems Forest resources – Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems Mineral resources: Use and exploitation, environmental	UNIT – II: Natural Resources: Natural resources and associated problems Forest resources – Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources

	effects of extracting and using mineral resources, Sustainable mining of Granite, Literate, Coal, Sea and River sands. Food resources: World food problems, changes caused by non-agriculture activities-effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources Vs Oil and Natural Gas Extraction. Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.	Food resources: World food problems, changes caused by non-agriculture activities effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources vs oil and natural gas extraction. Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.
	UNIT – III Biodiversity and its conservation: Definition: genetic, species and ecosystem diversity- classification - Value of biodiversity: consumptive use, productive use, social IBiodiversity at national and local levels. India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts - Endangered and endemic species of India – Conservation of biodiversity: conservation of biodiversity.	UNIT – III: Biodiversity and its conservation: Definition: genetic, species and ecosystem diversity classification Value of biodiversity: consumptive use, productive use, social-Biodiversity at national and local levels. India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts - Endangered and endemic species of India – Conservation of biodiversity
	UNIT – IV Environmental Pollution: Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies, Sustainable Life Studies. Impact of Fire Crackers on Men and his well being. Solid Waste Management: Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.	UNIT – IV: Environmental Pollution: Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies, Sustainable Life Style. Solid Waste Management: Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.
	UNIT – V Social Issues and the Environment: Urban problems related to energy -Water conservation, rain water harvesting-Resettlement and	UNIT – V: Social Issues and the Environment Urban problems related to energy -Water conservation, rain water harvesting Resettlement and rehabilitation

	rehabilitation of people; its problems and concerns. Environmental ethics: Issues and possible solutions. Environmental Protection Act -Air (Prevention and Control of Pollution) Act. –Water (Prevention and control of Pollution) Act - Wildlife Protection Act -Forest Conservation Act-Issues involved in enforcement of environmental legislation. -Public awareness.	of people; its problems and concerns. Global challenges Environmental ethics: Issues and possible solutions. Environmental Protection Act - Air (Prevention and Control of Pollution) Act. – Water (Prevention and control of Pollution) Act -Wildlife Protection Act - Forest Conservation Act-Issues involved in enforcement of environmental legislation. - Public awareness and Environmental management.
	UNIT – VI Environmental Management: Impact Assessment and its significance various stages of EIA, preparation of EMP and EIS, Environmental audit. Ecotourism, Green Campus – Green business and Green politics. The student should Visit an Industry / Ecosystem and submit a report individually on any issues related to Environmental Studies course and make a power point presentation.	

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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Engineering Chemistry	Engineering Chemistry
Course Code	R161105	171BS1T03
Syllabus	UNIT I: HIGH POLYMERS AND PLASTICS Polymerisation:- Introduction- Mechanism of polymerization - Stereo regular polymers – methods of polymerization (emulsion and suspension) -Physical and mechanical properties – Plastics as engineering materials : advantages and limitations – Thermoplastics and Thermosetting plastics – Compounding and fabrication (4/5 techniques)- Preparation, properties and applications of polyethene, PVC, Bakelite Teflon and polycarbonates Elastomers :- Natural rubber- compounding and vulcanization – Synthetic rubbers : Buna S, Buna N, Thiokol and polyurethanes – Applications of elastomers. Composite materials & Fiber reinforced plastics – Biodegradable polymers – Conducting polymers.	UNIT- I: High Polymers and Plastics: Polymerization: Introduction- Mechanism of polymerization - Stereo regular polymers - Physical and mechanical properties – Plastics as engineering materials: advantages and limitations – Thermoplastics and Thermosetting plastics – Compounding and fabrication (compression moulding, injection moulding, extrusion moulding and transfer moulding techniques) - Preparation, properties and applications of polyethene, PVC, Bakelite and polycarbonates. Elastomers – Natural rubber- compounding and vulcanization – Synthetic rubbers: Buna S, Buna N, Thiokol – Applications of elastomers. Biodegradable polymers.
	UNIT II: FUEL TECHNOLOGY Fuels – Introduction – Classification – Calorific value - HCV and LCV – Dulong's formula – Bomb calorimeter – Numerical problems – Coal — Proximate and ultimate analysis – Significance of the analyses – Liquid fuels – Petroleum- Refining – Cracking – Synthetic petrol –Petrol knocking – Diesel knocking - Octane and Cetane ratings – Anti-knock agents – Power alcohol – Bio-diesel – Gaseous fuels – Natural gas, LPG	UNIT - II: Fuel Technology: Fuels:- Introduction – Classification – Calorific value - HCV and LCV – Dulong's formula – Coal — Proximate and ultimate analysis – Significance of the analyses – Liquid fuels – Petroleum- Refining – Cracking – Synthetic petrol –Petrol knocking – Diesel knocking - Octane and Cetane ratings – Anti-knock agents – Power alcohol – Bio-diesel – Gaseous fuels – Natural gas. LPG and CNG – Combustion – Calculation of air for the

	and CNG – Combustion – Calculation of air for the combustion of a fuel – Flue gas analysis – Orsat apparatus – Numerical problems on combustion. Explosives:- Rocket fuels	combustion of a fuel – Flue gas analysis – Orsat apparatus.
	UNIT III: ELECTROCHEMICAL CELLS AND CORROSION Galvanic cells - Reversible and irreversible cells – Single electrode potential – Electro chemical series and uses of this series- Standard electrodes (Hydrogen and Calomel electrodes) - Concentration Cells – Batteries: Dry Cell - Ni-Cd cells - Ni-Metal hydride cells - Li cells - Zinc – air cells. Corrosion :- Definition – Theories of Corrosion (chemical & electrochemical) – Formation of galvanic cells by different metals, by concentration cells, by differential aeration and waterline corrosion – Passivity of metals – Pitting corrosion - Galvanic series – Factors which influence the rate of corrosion - Protection from corrosion – Design and material selection – Cathodic protection - Protective coatings: – Surface preparation – Metallic (cathodic and anodic) coatings - Methods of application on metals (Galvanizing, Tinning, Electroplating, Electroless plating).	UNIT - III: Electrochemical Cells and Corrosion: Galvanic cells - Reversible and irreversible cells – Single electrode potential- Electro chemical series and uses of this series- Standard electrodes (Hydrogen and Calomel electrodes) - Concentration Cells – Batteries: Dry Cell - Li cells - Zinc – air cells. Corrosion:- Definition – Theories of Corrosion (electrochemical) – Formation of galvanic cells by different metals, by concentration cells, by differential aeration and waterline corrosion – Passivity of metals – Pitting corrosion - Galvanic series – Factors which influence the rate of corrosion - Protection from corrosion – Cathodic protection - Protective coatings: – Metallic (cathodic and anodic) coatings - Methods of application on metals (Galvanizing, Tinning, Electroplating, Electroless plating).
	UNIT IV: CHEMISTRY OF ADVANCED MATERIALS Nano materials:- Introduction – Sol-gel method & chemical reduction method of preparation – Characterization by BET method and TEM methods - Carbon nano tubes and fullerenes: Types, preparation, properties and applications Liquid crystals:- Introduction – Types – Applications Super conductors:-Type –I, Type II – Characteristics and applications Green synthesis:- Principles - 3or 4 methods of synthesis with examples – R4M4 principles	UNIT - IV: Chemistry of Advanced Materials: Nano materials:-Introduction – Sol-gel method - Carbon nano tubes and fullerenes: Types, preparation, properties and applications. Super conductors:-Type – I, Type II – Characteristics and applications Semi conductors: - Preparation of semiconductors, working of diodes and transistors. Green synthesis:-Principles Liquid crystals:-Introduction – Types – Applications Fuel cells: - Introduction - cell representation, H2-O2fuel cell: Design and working, advantages and Limitations. Types of fuel cells: methanol-oxygen fuel cells.
	UNIT V: WATER TECHNOLOGY Hard water:- Reasons for hardness – units of hardness - determination of hardness and alkalinity - Water for steam generation - Boiler troubles – Priming and	UNIT - V: Water Technology Hard water:- Reasons for hardness – units of hardness - determination of hardness andalkalinity - Water for steam generation - Boiler troubles – Priming and Foaming, Scale

	Foaming, Scale formation, Boiler corrosion, Caustic embrittlement - Internal treatments - Softening of Hard water : Lime – Soda process, Zeolite process and numerical problems based on these processes and Ion Exchange process - Water for drinking purposes- Purification – Sterilization and disinfection : Chlorination, Break point chlorination and other methods – Reverse Osmosis and Electro Dialysis.	formation, Boiler corrosion, Caustic embrittlement - Internal treatments - Softening of Hard water : Lime – Soda process, Zeolite process and numerical problems based on these processes and Ion Exchange process - Water for drinking purposes- Purification – Sterilization and disinfection : Chlorination, Break point chlorination and other methods – Reverse Osmosis and Electro Dialysis.
	UNIT VI: CHEMISTRY OF ENGINEERING MATERIALS AND FUEL CELLS Refractories: - Definition, characteristics, classification, properties, failure of refractories Lubricants: - Definition, function, Theory and mechanism of lubricants, properties (Definition and importance) Cement: - Constituents, manufacturing, hardening and setting, deterioration of cement Insulators: - Thermal and electrical insulators Fuel cells: - Hydrogen Oxygen fuel cells – Methanol Oxygen fuel cells	

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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Engineering/Applied Chemistry Lab	Engineering Chemistry Lab
Course Code	R161227/ R161118	171BS1L01
Syllabus	1. Introduction to Chemistry laboratory – Molarity, Normality, Primary, secondary standard solutions, Volumetric titrations, Quantitative analysis, Qualitative analysis, etc....	Exercise 1: Introduction to Chemistry laboratory – Molarity, Normality, Primary, secondary standard solutions, Volumetric titrations, Quantitative analysis, Qualitative analysis, etc.
	2. Trial experiment - Determination of HCl using standard Na2CO3 solution	Exercise 2: Trial experiment - Determination of HCl using standard Na2CO3 solution.
	3. Determination of alkalinity of a sample containing Na2CO3 and NaOH.	Exercise 3: Preparation of Phenol - Formaldehyde resin (Bakelite).
	..4. Determination of KMnO4 using standard Oxalic acid solution	Exercise 4: Determination of KMnO4 using standard Oxalic acid solution.
	5. Determination of Ferrous iron using standard K2Cr2O7 solution	Exercise 5: Determination of ferrous iron using standard K2Cr2O7 solution.
	6. Determination of Copper using standard K2Cr2O7 solution	Exercise 6: Preparation of Bio-Diesel.
	7. Determination of temporary and permanent hardness of water using standard EDTA solution.	Exercise 7: Determination of temporary and permanent hardness of water using standard EDTA solution.
	8. Determination of Copper using standard EDTA solution	Exercise 8: Determination of Copper using standard EDTA solution.
	9. Determination of Iron by a Colorimetric method using thiocynate as reagent.	Exercise 9: Determination of Iron by a Colorimetric method using thiocynate as reagent.
	10. Determination of pH of the given sample solution using pH meter.	Exercise 10: Determination of pH of the given sample solution using pH meter.
	11. Conductometric titration between strong acid and strong base.	Exercise 11: Conduct metric titration between strong acid and strong base.
	12. Conductometric titration between strong acid and weak base.	Exercise 12: Conduct metric titration between strong acid and weak base.
	13. Potentiometric titration between strong acid and strong base.	Exercise 13: Potentiometric titration between strong acid and strong base.
	14. Potentiometric titration between	Exercise 14: Potentiometric titration

	strong acid and weak base.	between strong acid and weak base.
	15. Determination of Zinc using standard EDTA solution.	Exercise 15: Determination of Zinc using standard EDTA solution.
	16. Determination of Vitamin – C.	Exercise 16: Determination of Vitamin – C.

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Department of Computer Science and Engineering

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Computer Programming Lab	Computer Programming Lab
Course Code	R161119	171ES1L01
Syllabus	**Exercise - 1** Basics a) What is an OS Command, Familiarization of Editors - vi, Emacs b) Using commands like mkdir, ls, cp, mv, cat, pwd, and man c) C Program to Perform Adding, Subtraction, Multiplication and Division of two numbers From Command line	**Exercise - 1** Introduction to C Programming 1.1) Introduction about Editors –Turbo, vi, Emacs 1.2) C Program to Perform Addition, Subtraction, Multiplication and Division of two numbers from Command line 1.3) Write a C Program to Calculate area of a Triangle using Heron's formula.
	Exercise - 2 Basic Math a) Write a C Program to Simulate 3 Laws at Motion b) Write a C Program to convert Celsius to Fahrenheit and vice versa	**Exercise – 2:** Basic Math 2.1) Write a C Program to Find Whether the Given Year is a Leap Year or not. 2.2) Write a C Program to convert Celsius to Fahrenheit and vice versa. 2.3) Write a C Program to find largest of three numbers using ternary operator.
	Exercise - 3 Control Flow - I a) Write a C Program to Find Whether the Given Year is a Leap Year or not. b) Write a C Program to Add Digits & Multiplication of a number	**Exercise – 3:** Control Flow - I 3.1) Write a C program to find the roots of a Quadratic Equation. 3.2) Write a C Program to make a simple Calculator to Add, Subtract, Multiply or Divide Using switch…case. 3.3) Scenario - 1 ATM PIN GENERATION: Aditya purchased a credit card. He has to generate a PIN number to access the ATM and Net banking for which OTP was sent to his registered mobile number. Using this OTP number he has

		to generate ATM PIN number. After generating PIN number, he can use it for further transactions. Maximum login he can make is 3 times. Sample Input: OTP: 6732 If valid Enter PIN: 8858 Confirm your PIN: 8858 Sample output: valid/Invalid PIN generated successfully. Note: OTP is hard coded. 3.4) Scenario - 2 RESET PASSWORD: Sindhuja was using Syndicate Bank's Online Account. She wanted to pay her bills through Online. But she forget her password. Now she has to reset the password. For resetting the password, she has to select reset option from the Menu. NOTE: using switch case. Sample input: 1. Fast withdrawal 2. Mini Statement. 3. Balance Enquiry 4. Reset Password Enter your choice: 4 Sample Output: Reset password: New password: ***** Confirm password: *****
	Exercise – 4 Control Flow - II a) Write a C Program to Find Whether the Given Number is i) Prime Number ii) Armstrong Number b) Write a C program to print Floyd Triangle c) Write a C Program to print Pascal Triangle	**Exercise –4:** Control Flow - II 4.1) Write a C Program to Find Whether the Given Number is i) Prime Number ii) Armstrong Number 4.2) Write a C program to print Floyd Triangle 4.3) Write a C Program to print Pascal Triangle
	Exercise – 5 Functions a) Write a C Program demonstrating of parameter passing in Functions and	**Exercise – 5:** Control Flow – III 5.1) Write a C program to find the sum

	returning values. b) Write a C Program illustrating Fibonacci, Factorial with Recursion without Recursion.	of individual digits of a positive integer. 5.2) Write a C program to check whether given number is palindrome or not. 5.3) Write a C program to read two numbers, x and n, and then compute the sum of the geometric progression 1+x+x2 +x3 +.....+xn. 5.4) Scenario - 3 Student Attendance report Generation: Some of the school staff had failed to maintain the attendance of the students, causing lack of essential records related to students attendance that should be submitted in a parents meet. The school management has decided to automate the process in order to maintain the attendance of every student effectively. You are asked to write a program to the above scenario and display whether the student is allowed to write the Exam or not.
	Exercise – 6 Control Flow - III a) Write a C Program to make a simple Calculator to Add, Subtract, Multiply or Divide Using switch…case b) Write a C Program to convert decimal to binary and hex (using switch call function the function)	**Exercise 6:** Arrays Demonstration of arrays 6.1) Linear Search. 6.2) Bubble Sort. 6.3) Operations on Matrix. 6.4) Scenario – 4 Celebrity of the Week: Red FM has launched a program called Celebrity of the week in their channel. Listeners are given a toll free number where they can listen to list of celebrities. Listeners can choose their favourite celebrity from the list and vote for him/her. The votes are validated from Monday to Saturday. The one with highest votes is called as "Celebrity of the Week" and his/her songs are played in the program, which is aired on Sundays. Now write a program to find the celebrity of the week.
	Exercise – 7 Functions - Continued Write a C Program to compute the values ofsin x and cos x and e^x values using Series	**Exercise – 7:** Functions 7.1) Write a C Program to demonstrate parameter passing in Functions and

	expansion. (use factorial function)	returning values. 7.2) Write a C Program to find Fibonacci, Factorial of a number with Recursion and without Recursion. 7.3) Scenario – 5 SELF DRIVE RENTAL Sadiq and his friends are going to Banglore. But they don't have a vehicle in Banglore. For that they go to rental cars to take car for rent. You have find out what is total amount of car's rent. The car's rentals and rules are as follows. i) Minimum booking is 4. ii) There are 3 types of cars iii) There are 3 categories in cars rental FOR SWIFT, • • In LTTE 5 kms are free for one hour and Rs.70 per one hour, if they exceed 5kmph, then Rs.12 per km. • • In CLASS, 10 kms are free for one hour and Rs.90 per one hour, if they exceed 10kmph, then Rs.12 per km. • • In XL, 15 kms are free for one hour and Rs.110 per one hour, if they exceed 15kmph, then Rs.12 per km.
	Exercise – 8 Arrays Demonstration of arrays a) Search-Linear. b) Sorting-Bubble, Selection. c) Operations on Matrix.	**Exercise – 8:** Strings 8.1) Implementation of string manipulation operations with library function. 8.2) Implementation of string manipulation operations without library function. i. copy ii. concatenate iii. length iv. compare i. copy ii. concatenate iii. length iv. compare 8.3) Verify whether the given string is a palindrome or not 8.4) Scenario – 6 Word with

		Obesity: Jeeth is a fun loving and active boy. He likes to play with words and numbers. One day Jeeth and his friends attended a seminar, which was conducted in his school. The Seminar was about "Causes of obesity in children and its effects". Jeeth and his friend Ram are not interested in listening to the seminar, so he thought of giving a puzzle to Ram. Jeeth gave some words to Ram and wanted him to find the word with Obesity. Ram was confused and asking your help. Write a program to find the weights of the words and display the word with highest weight (word with obesity).
	Exercises - 9 Structures a)Write a C Program to Store Information of a Movie Using Structure b)Write a C Program to Store Information Using Structures with Dynamically Memory Allocation c) Write a C Program to Add Two Complex Numbers by Passing Structure to a Function	**Exercise – 9:** Arrays and Pointers 9.1) Write a C Program to Access Elements of an Array Using Pointer 9.2) Write a C Program to find the sum of numbers with arrays and pointers.
	Exercise - 10 Arrays and Pointers a)Write a C Program to Access Elements of an Array Using Pointer b) Write a C Program to find the sum of numbers with arrays and pointers.	**Exercise – 10:** Dynamic Memory Allocations 10.1) Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using malloc () function. 10.2)Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using calloc () function. Understand the difference between the above two programs
	Exercise – 11 Dynamic Memory Allocations a) Write a C program to find sum of n elements entered by user. To perform this program,	**Exercises – 11:** **Structures:** 11.1) Write a C Program to Store Information of a book Using Structure 11.2) Write a C Program to Store

	allocate memory dynamically using malloc () function. b) Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using calloc () function. Understand the difference between the above two programs	Information Using Structures with Dynamically Memory Allocation 11.3) Write a C Program to Add Two Complex Numbers by Passing Structure to a Function 11.4) Scenario – 7 Library Management Shilpa student of PGEC got the Library Card. She wants to lend the books from the Library. The college gave two cards to each and every student. The students can lend only two books at a time and it has to be returned back after 15 days. If the books are not returned late fee will be collected for no. of days the books were returned after the due date. Late fee per day is Rs.50/- Sample Input. Enter the name of student, Roll No. Branch, Section, Year, DOL, DOR, Sample output No. of days returned after the due date = 5 Late fee per day = Rs. 50 Fine paid by the student is 5 * 50 =250.
	Exercise – 12 Strings a) Implementation of string manipulation operations with library function. i) copy ii) concatenate iii) length iv) compare b) Implementation of string manipulation operations without library function. i) copy ii) concatenate iii) length iv) compare	**Exercise -12:** Files 12.1) Write a C program to open a file and to print the contents of the file on screen. 12.2) Write a C program to copy content of one file to another file. 12.3) Write a C program to merge two files and store content in another file. 12.4) Scenario – 8 Student Information System Using Files: Lakshya International school was recently established and having large no of admissions. The school management wanted the Student information to be computerized and wanted to maintain in a simple and in effective manner. You are asked to develop Student Information System using Files to perform the following tasks 1. Add New Student 2. Update Existing Student

		3. Delete Existing Student 4. Retrieve A Particular/All Students Sample Input: Choose the task you want to perform: 1. Add 2. Update 3. Delete 4. Retrieve Your choice: 1 Enter student details: Name: Akhil Age: 5 Class: 1 Sample Output: Student details added
	Exercise -13 Files a)Write a C programming code to open a file and to print it contents on screen. b)Write a C program to copy files	
	Exercise - 14 Files Continued a) Write a C program merges two files and stores their contents in another file. b) Write a C program to delete a file.	
	Exercise – 15 a) System Assembling, Disassembling and identification of Parts / Peripherals. b) Operating System Installation-Install Operating Systems like Windows, Linux along with necessaryDevice Drivers.	
	Exercise – 16 a) MS-Office / Open Office i) Word - Formatting, Page Borders, Reviewing, Equations, symbols. ii) SpreadSheet - organize data, usage of formula, graphs, charts. iii) Powerpoint - features of power point, guidelines for preparing an effectivepresentation. b) Network Configuration & Software Installation-Configuring TCP/IP, Proxy, and firewallsettings. Installing application software, system software & tools.	

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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	English -I	English-II
Course Code	R161101	171HS2T03
Syllabus	UNIT I: 1. 'Human Resources' from English for Engineers and Technologists. 2. 'An Ideal Family' from Panorama: A Course on Reading	UNIT-I: 1. TECHNOLOGY WITH A HUMAN FACE (Detailed) 2. AN IDEAL FAMILY (Non-Detailed)
	UNIT 2: 1. ' Transport: Problems and Solutions' from English for Engineers and Technologists. 2. 'War' from 'Panorama : A Course on Reading'	UNIT-II: 1. CLIMATE CHANGE AND HUMAN STRATEGY (Detailed) 2. WAR (Non-Detailed)
	UNIT 3: 1. 'Evaluating Technology' from English for Engineers and Technologists. 2. 'The Verger' from 'Panorama : A Course on Reading	UNIT-III: 1. EMERGING TECHNOLOGIES (Detailed) 2. THE VERGER (Non-Detailed)
	UNIT 4: 1. 'Alternative Sources of Energy' from English for Engineers and Technologists. 2. ' The Scarecrow' from Panorama : A Course on Reading	UNIT-IV: 1. THE SECRET OF WORK (Detailed) 2. THE SCARECROW (Non-Detailed)
	UNIT 5: 1. 'Our Living Environment' from English for Engineers and Technologists. 2. 'A Village Host to Nation' from Panorama : A Course on Reading	UNIT-V: 1. WORK BRINGS SOLACE (Detailed) 2. A VILLAGE LOST TO THE NATION (Non-Detailed)
	UNIT 6: 1. ' Safety and Training' from English for Engineers and Technologists. 2. 'Martin Luther King and Africa' from Panorama : A Course on Reading	

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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Mathematics-III	Mathematics-III
Course Code	R161203	171BS2T06
Syllabus	UNIT I: Linear systems of equations: Rank-Echelon form-Normal form – Solution of linear systems – Gauss elimination - Gauss Jordon- Gauss Jacobi and Gauss Seidal methods. Applications: Finding the current in electrical circuits.	UNIT - I: Laplace transforms: Laplace transforms of standard functions-First Shifting theorem, Change of scale, Multiplication with t, Division by t - Transforms of derivatives and integrals – Unit step function –Dirac's delta function, Periodic functions.
	UNIT II: Eigen values - Eigen vectors and Quadratic forms: Eigen values - Eigen vectors– Properties – Cayley-Hamilton theorem - Inverse and powers of a matrix by using Cayley-Hamilton theorem- Diagonalization- Quadratic forms- Reduction of quadratic form to canonical form – Rank - Positive, negative and semi definite - Index – Signature. Applications: Free vibration of a two-mass system.	UNIT- II: Inverse Laplace transforms: Inverse Laplace transforms – Convolution theorem (without proof), Second shifting theorem. *(MATLAB Exercise: Computing Laplace transform off (t) using symbolic toolbox, Solving initial value problems using 'dsolve') Applications: Evaluating improper integrals, solving initial value problems using Laplace transforms.
	UNIT III: Multiple integrals: Curve tracing: Cartesian, Polar and Parametric forms. Multiple integrals: Double and triple integrals – Change of variables – Change of order of integration. Applications: Finding Areas and Volumes.	UNIT - III: Multiple integrals and Beta, Gamma functions: Multiple integrals: Double and triple integrals – Change of variables – Change of order of integration, Beta and Gamma functions- Properties - Relation between Beta and Gamma functions Applications: Finding Areas and Volumes.
	UNIT IV: Special functions: Beta and Gamma functions- Properties - Relation between Beta and Gamma functions. Evaluation of improper integrals. Applications: Evaluation of integrals.	UNIT - IV: Vector Differentiation: Gradient - Directional Derivatives - Divergence- Curl - Laplacian operator - Vector identities. Applications: Equation of continuity, potential surfaces
	UNIT V: Vector Differentiation: Gradient- Divergence- Curl - Laplacian and second order operators -Vector identities.	UNIT - V: Vector Integration: Line integral – Work done - Surface and volume integrals, Green's Theorem, Stokes Theorem and

	Applications: Equation of continuity, potential surfaces	Gauss Divergence theorem (without proof) and related problems.
	UNIT VI: Vector Integration: Line integral – Work done – Potential function – Area- Surface and volume integrals Vector integral theorems: Greens, Stokes and Gauss Divergence theorems (without proof) and related problems. Applications: Work done, Force.	

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	English Communication Skills Lab-II	English Communication Skills Lab-II
Course Code	R161221	171HS2L02
Syllabus	UNIT 1: 1. Debating Practice work	PRACTICE 1: Body Language
	UNIT 2: 1. Group Discussions Practice work	PRACTICE 2: Dialogues
	UNIT 3: 1. Presentation Skills Practice work	PRACTICE 3: Presentation Skills
	UNIT 4: 1. Interview Skills Practice work	PRACTICE 4: Group Discussion
	UNIT 5: 1. Email, 2. Curriculum Vitae Practice work	PRACTICE 5: Interviews and Telephonic Interviews.
	UNIT 6: 1. Idiomatic Expressions 2. Common Errors in English Practice work	PRACTICE 6: Debates

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Program Name : B.Tech. in Electronics and Communication Engineering

Syllabus Revision for the Academic Year 2017-18

S.No	Semester	Course Code	Course Name	% of content revised for the existing year
1	I	171HS1T01	English - I	65
2	I	171BS1T01	Mathematics – I	40
3	I	171BS1T02	Mathematics - II	60
4	I	171BS1T04	Applied Physics	20
5	I	171ES1T03	Engineering Drawing	5
6	I	171ES1T01	Computer Programming	10
7	I	171HS1L01	English Communication Skills Lab - I	0
8	I	171BS1L04	Applied Physics Lab	0
9	I	171ES1L01	Computer Programming Lab	40
10	II	171HS2T03	English – II	55
11	II	171BS2T06	Mathematics – III	40
12	II	171HS2T02	Environmental Studies	20
13	II	171BS2T05	Applied Chemistry	25
14	II	171ES2T06	Electrical and Mechanical Technology	0
15	II	171CS2T01	Data Structures through c	15
16	II	171HS2L02	English Communication Skills Lab – II	40
17	II	171BS2L03	Applied Chemistry Lab	20
18	II	171ES2L02	Engineering Workshop And IT Workshop	10
19	III	R1621041	Electronic Devices and Circuits	0
20	III	R1621042	Switching Theory and Logic Design	0
21	III	R1621043	Signals and Systems	0
22	III	R1621044	Network Analysis	0
23	III	R1621045	Random Variables and Stochastic Process	0
24	III	R1621026	Managerial Economics & Financial Analysis	0
25	III	R1621046	Electronic Devices and Circuits Lab	0
26	III	R1621047	Networks & Electrical Technology Lab	0

S.No	Semester	Course Code	Course Name	% of content revised for the existing year
27	IV	R1622041	Electronic Circuit Analysis	0
28	IV	R1622042	Control Systems	40
29	IV	R1622043	Electromagnetic Waves and Transmission Lines	0
30	IV	R1622044	Analog Communications	0
31	IV	R1622045	Pulse and Digital Circuits	0
32	IV	R1622026	Management Science	50
33	IV	R1622046	Electronic Circuit Analysis Lab	0
34	IV	R1622047	Analog Communications Lab	0
35	V	RT31041	Pulse & Digital Circuits	0
36	V	RT31042	Linear IC Applications	0
37	V	RT31043	Control Systems	0
38	V	RT31044	Digital System Design & Digital IC Applications	0
39	V	RT31045	Antennas and Wave Propagation	0
40	V	RT31047	Pulse & Digital Circuits Lab	0
41	V	RT31048	LIC Applications Lab	0
42	V	RT31049	Digital System Design & DICA Lab	0
43	V	RT31016	IPR& Patents	0
44	VI	1RT32041	Microprocessors and Microcontrollers	0
45	VI	1RT32042	Digital Signal Processing	0
46	VI	1RT32043	Digital Communications	0
47	VI	1RT32044	Microwave Engineering	0
48	VI	RT32045A	Open Elective--Bio Medical Engineering	0
49	VI	RT32046	Microprocessors and Microcontrollers Lab	0
50	VI	RT32047	Digital Communications Lab	0
51	VI	RT32048	Digital Signal Processing Lab	0
52	VI	RT32049	Seminar	0
53	VII	RT41041	VLSI Design	0
54	VII	RT41042	Computer Networks	0
55	VII	RT41043	Digital Image Processing	0
56	VII	RT41044	Computer Architecture & Organization	0
57	VII	RT41045	1. Electronic Switching Systems	0
58	VII	RT41046	2. Analog IC Design	0
59	VII	RT41047	3. Object Oriented Programming & O S	0

S.No	Semester	Course Code	Course Name	% of content revised for the existing year
60	VII	RT41048	4. Radar Systems	0
61	VII	RT41049	5. Advanced Computer Architecture	0
62	VII	RT4104A	1. Optical Communication	0
63	VII	RT4104B	2. Digital IC Design	0
64	VII	RT4104C	3. Speech Processing	0
65	VII	RT4104D	4. Artificial Neural Network & Fuzzy Logic	0
66	VII	RT4104E	5. Network Security & Cryptography	0
67	VII	RT4104L	V L S I Lab	0
68	VII	RT4104M	Microwave Engineering Lab	0
69	VIII	RT42041	Cellular Mobile Communication	0
70	VIII	RT42042	Electronic Measurements and Instrumentation	0
71	VIII	RT42043A	1. Satellite Communication	0
72	VIII	RT42043B	2. Mixed signal Design	0
73	VIII	RT42043C	3. Embedded systems	0
74	VIII	RT42043D	4. RF Circuit Design	0
75	VIII	RT42043E	5. Cloud Computing	0
76	VIII	RT42044A	1.Wireless Sensors and Networks	0
77	VIII	RT42044B	2.System on Chip	0
78	VIII	RT42044C	3.Low Power IC Design	0
79	VIII	RT42044D	4.Bio-Medical Instrumentation	0
80	VIII	RT42044E	5.EMI/EMC	0
81	VIII	RT42045	Project & Seminar	0

Total number of courses in the academic year 2017-18	= 81
Number of courses having revision in syllabus content >/= 20% in the academic year 2017-18	= 13
Percentage of syllabus revision carried out in the academic year 2017-18 = (13/81)*100	16%

A Kavi

Program Coordinator

Head of the Department

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PROGRAM STRUCTURE

I SEMESTER

Course Code	Course Title	Course Component	Total Number of contact hours				Credits (C)
			Lecture (L)	Tutorial (T)	Practical (P)	Total Hours	
171HS1T01	English - I	HSS	3	1	0	4	3
171BS1T01	Mathematics – I	BS	3	1	2	6	3
171BS1T02	Mathematics - II	BS	3	1	0	4	3
171BS1T04	Applied Physics	BS	3	1	0	4	3
171ES1T03	Engineering Drawing	ES	3	0	3	6	3
171ES1T01	Computer Programming	ES	3	1	0	4	3
171HS1L01	English Communication Skills Lab - I	HSS	0	0	3	3	2
171BS1L04	Applied Physics Lab	BS	0	0	3	3	2
171ES1L01	Computer Programming Lab	ES	0	0	3	3	2
		Total	18	5	14	37	24

II SEMESTER

Course Code	Course Title	Course Component	Total Number of contact hours				Credits (C)
			Lecture (L)	Tutorial (T)	Practical (P)	Total Hours	
171HS2T03	English – II	HSS	3	1	0	4	3
171BS2T06	Mathematics – III	BS	3	1	2	6	3
171HS2T02	Environmental Studies	HSS	2	1	0	3	2
171BS2T05	Applied Chemistry	BS	3	1	0	4	3
171ES2T06	Electrical and Mechanical Technology	ES	3	1	0	4	3
171CS2T01	Data Structures through C	ES	3	1	2	6	3
171HS2L02	English Communication Skills Lab – II	HSS	0	0	3	3	2
171BS2L03	Applied Chemistry Lab	BS	0	0	3	3	2
171ES2L02	Engineering Workshop And IT Workshop	ES	0	0	3	3	2
		Total	17	6	13	36	23

BS: Basic Sciences; HSS: Humanities and Social Sciences; ES: Engineering Sciences; PC: Professional Core; PE: Professional Elective; OE: Open Elective; SS: Self Study Course; PR: Project.

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II Year - I Semester

S.No.	Subjects	L	T	P	Credits
1	Electronic Devices and Circuits	4	--	--	3
2	Switching Theory and Logic Design	4	--	--	3
3	Signals and Systems	4	--	--	3
4	Network Analysis	4	--	--	3
5	Random Variables and Stochastic Process	4	--	--	3
6	Managerial Economics & Financial Analysis	4	--	--	3
7	Electronic Devices and Circuits Lab	--	--	3	2
8	Networks & Electrical Technology Lab	--	--	3	2
	Total Credits				**22**

II Year - II Semester

S.No.	Subjects	L	T	P	Credits
1	Electronic Circuit Analysis	4	--	--	3
2	Control Systems	4	--	--	3
3	Electromagnetic Waves and Transmission Lines	4	--	--	3
4	Analog Communications	4	--	--	3
5	Pulse and Digital Circuits	4	--	--	3
6	Management Science	4	--	--	3
7	Electronic Circuit Analysis Lab	--	--	3	2
8	Analog Communications Lab	--	--	3	2
	Total Credits				**22**

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III Year – I SEMESTER

S. No.	Subject	T	P	Credits
1	Pulse & Digital Circuits	3+1	-	3
2	Linear IC Applications	3+1	-	3
3	Control Systems	3+1	-	3
4	Digital System Design & Digital IC Applications	3+1	-	3
5	Antennas and Wave Propagation	3+1	-	3
6	Pulse & Digital Circuits Lab		3	2
7	LIC Applications Lab	-	3	2
8	Digital System Design & DICA Lab		3	2
9	IPR& Patents	3		2
Total Credits				**23**

III Year – II SEMESTER

S. No.	Subject	T	P	Credits
1	Microprocessors and Microcontrollers	3+1	-	3
2	Digital Signal Processing	3+1	-	3
3	Digital Communications	3+1	-	3
4	Microwave Engineering	3+1	-	3
5	**Open Elective**	3+1	-	3
6	Microprocessors and Microcontrollers Lab	-	3	2
7	Digital Communications Lab	-	3	2
8	Digital Signal Processing Lab		3	2
9	Seminar		2	1
Total Credits				**22**

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IV Year – I SEMESTER

S. No.	Subject	T	P	Credits
1	VLSI Design	3+1	-	3
2	Computer Networks	3+1	-	3
3	Digital Image Processing	3+1	-	3
4	Computer Architecture & Organization	3+1	-	3
5	**Elective – I** 1. Electronic Switching Systems 2. Analog IC Design 3. Object Oriented Programming & O S 4. Radar Systems 5. Advanced Computer Architecture	3+1	-	3
6	**Elective – II** 1. Optical Communication 2. Digital IC Design 3. Speech Processing 4. Artificial Neural Network & Fuzzy Logic 5. Network Security & Cryptography	3+1	-	3
7	V L S I Lab	-	3	2
8	Microwave Engineering Lab	-	3	2
	Total Credits			**22**

IV Year – II SEMESTER

S. No.	Subject	T	P	Credits
1	Cellular Mobile Communication	3+1		3
2	Electronic Measurements and Instrumentation	3+1		3
3	**Elective III** 1. Satellite Communication 2. Mixed signal Design 3. Embedded systems 4. RF Circuit Design 5. Cloud Computing	3+1		3
4	**Elective IV** 1.Wireless Sensors and Networks 2.System on Chip 3.Low Power IC Design 4.Bio-Medical Instrumentation 5.EMI/EMC	3+1		3
5	Project & Seminar			9
	Total Credits			**21**

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Total course credits = 48+ 44 + 45 + 43 = 180

Open Electives:

1. Bio Medical Engineering
2. Fuzzy & Neural Networks
3. Image Processing (not for ECE Students)
4. Principles of Signals, Systems and Communications (Not for ECE Students)
5. Electronic Instrumentation (Not for ECE Students)

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ENGLISH – I
(Common to all branches)

I Semester	L	T	P	C
Course Code: 171HS1T01	3	1	0	3

Introduction:

In view of the growing importance of English as a tool for global communication and the consequent emphasis on training the students to acquire communicative competence, the syllabus has been designed to develop linguistic and communicative competence of the students of Engineering. As far as the detailed textbooks are concerned, the focus should be on the skills of Listening, Speaking, Reading and Writing. The non-detailed textbooks are meant for extensive reading both to instruct and delight. Hence the focus in the syllabus is primarily on the development of communicative skills and fostering of ideas about the essence of English Communication.

Course Outcomes:
At the end of the Course, Student will be able to:

CO 1: Summarize how Gandhi grew in introspection and the conditions to achieve a higher quality of life, strength and sovereignty of a developed nation.
CO 2: Identify that all men can come together and avert the peril.
CO 3: Comprehend texts from a literary perspective and familiarise the students with Figures of Speech.
CO 4: Explain the characteristic traits of renowned scientists who contributed enormously to the scientific advancement of India.
CO 5: Demonstrate Writing and basic concepts of Grammar skills.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	-	-	-	-	-	-	-	-	-	3	-	-
CO2	-	-	-	-	-	-	-	-	-	3	-	-
CO3	-	-	-	-	-	-	-	-	-	3	-	-
CO4	-	-	-	-	-	-	-	-	-	3	-	-
CO5	-	-	-	-	-	-	-	-	-	3	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

Methodology:

1. The class is to be learner-centred where the learners are to read the texts to get a comprehensive idea of those texts on their own with the help of the peer group and the teacher.
2. Integrated skill development methodology has to be adopted with focus on individual language skills as per the tasks/exercise.
3. The tasks/exercises at the end of each unit should be completed by the learners only and the teacher intervention is permitted as per the complexity of the task/exercise.

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4. The teacher is expected to use supplementary material wherever necessary and also generate activities/tasks as per the requirement.
5. The teacher is permitted to use lecture method when a completely new concept is introduced in the class.

Recommended Topics:

UNIT-I:
1. IN LONDON: M.K.GANDHI (Detailed)
2. G.D. NAIDU (Non-Detail)

UNIT-II:
1. THE KNOWLEDGE SOCIETY- APJ ABDUL KALAM (Detailed)
2. G.R. GOPINATH (Non-Detail)

UNIT-III:
1. THE SCIENTIFIC POINT OF VIEW- J.B.S. HALDANE (Detailed)
2. J.C. BOSE (Non-Detail)

UNIT-IV:

1. MAN'S PERIL-BERTRAND RUSSELL (Detailed)
2. HOMI JEHANGIR BHABHA (Non-Detail)

UNIT-V:

1. LUCK—MARK TWAIN (Detailed)
2. A SHADOW (Non-Detail)

Textbooks:
Detailed Text Book: 'English Essentials' by Ravindra Publications.

Non Detailed Text Book: 'Modern Trail Blazers' by Orient Black Swan Pvt. Ltd. Publishers.

Web Links:
1. https://en.wikipedia.org/wiki/Gopalswamy_Doraiswamy_Naidu
2. https://englishforundergraduates.wordpress.com/2016/09/25/the-knowledge-society-from-ignited-minds-a-p-j-abdul-kalam/
3. http://btechenglish.blogspot.in/2014/01/the-scientific-point-of-view-j-b-s.html
4. https://www.famousscientists.org/jagadish-chandra-bose/
5. https://www.thebetterindia.com/37339/homi-jehangir-bhabha/

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MATHEMATICS-I
(Common to all branches)

I Semester	**L**	**T**	**P**	**C**
Course Code: 171BS1T01	**3**	**1**	**0**	**3**

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Associate linear differential equations of first order to solve various physical problems involving differential equations of first order
CO 2: Solve linear differential equations of higher order.
CO 3: Solve linear systems of equations using the concept of rank, Gauss elimination, Gauss Seidal method.
CO 4: Find the eigen values and eigen vectors of matrices.
CO 5: Associate the concepts of Partial Differentiation to maxima and minima of functions of several variables and to solve Partial differential equations.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	-
CO5	3	2	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT I:

Differential equations of first order and first degree:

Linear differential equations - Bernoulli differential equation - Exact differential equations-Equations reducible to exact (Type-1, Type-2, Type-3, Type-4)

Applications:

Newton's Law of cooling-Law of natural growth and decay-Orthogonal trajectories.

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UNİT II:

Linear differential equations of higher order:

Linear differential equations of higher order with constant coefficients with RHS term of the type e^{ax}, sin ax, cos ax, polynomials in x, e^{ax} V(x), xV(x)- Method of Variation of parameters, Method of undetermined coefficients.

*(MATLAB Exercise: Introduction to MAT LAB commands and Solution of Initial Value Problems using the command 'dsolve')

Applications:

Electric circuits, simple harmonic motion.

UNIT III:

Linear systems of equations:

Rank of a matrix - Echelon form-Normal form – Solution of linear systems – Gauss elimination method - Gauss Seidal method.

Applications:

Finding the current in electrical circuits.

UNIT IV:

Eigen values - Eigen vectors and Quadratic forms:

Eigen values - Eigen vectors– Properties of eigen values (without proof) – Cayley -Hamilton theorem (without proof) - Inverse and powers of a matrix by using Cayley -Hamilton theorem- Diagonalization- Quadratic forms- Reduction of quadratic form to canonical form using orthogonal transformation– Nature of the quadratic form.

*(MATLAB Exercise: All Basic Operations on matrices are to be implemented using MATLAB including computation of rank, computation of eigen values and eigen vectors)

UNIT V:

Partial differentiation and Partial differential equations

Homogeneous function-Euler's theorem-Total derivative-Chain rule-Taylor's and Maclaurin's series expansion of functions of two variables– Functional dependence-Jacobian.

Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions –solutions of first order linear (Lagrange) equation, nonlinear (standard types) equations.

Applications: Maxima and Minima of functions of two variables without constraints and Lagrange's method (with constraints).

*(MATLAB Exercise: To Plot graphs of various single and multivariable functions using MATLAB and analyze their maxima and minima graphically).

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Text Books:

1. B.S.Grewal, Higher Engineering Mathematics, 43rdEdition, Khanna Publishers.
2. Dr.T.K.V. Iyengar, Engineering Mathematics, S. Chand publications

Reference Books:

1. Erwin Kreyszig, Advanced Engineering Mathematics, 10thEdition, Wiley-India.
2. D.G.Zill, MICHAIL R CULTER, Advanced Engineering Mathematics Third Edition Norosa Publications 2009.
3. Dean G. Duffy, Advanced engineering mathematics with MATLAB, CRC Press.
4. Peter O'neil, Advanced Engineering Mathematics, Cengage Learning.
5. Glyn James, Advanced modern engineering mathematics, Pearson education.
6. MATLAB by Rudra Pratap, Getting started with MATLAB, Oxford Publication.

Web Links:

1. https://en.wikipedia.org/wiki/Portal:Mathematics
2. http://mathworld.wolfram.com
3. https://www.khanacademy.org
4. http://nptel.ac.in/courses/122104017

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MATHEMATICS - II
(Common to ECE, CSE & IT)

I Semester	L	T	P	C
Course Code: 171BS1T02	3	1	0	3

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Apply various numerical methods to find roots of equations and interpolating polynomials.
CO 2: Apply numerical methods to initial value problems and problems involving integration.
CO 3: Find the Fourier series of a given function and study the convergence of the series.
CO 4: Find the Fourier transforms for given functions.
CO 5: Apply method of separation of variables to solve one dimensional heat equation and wave equation and two dimensional Laplace equations.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	-
CO5	3	2	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT I:

Solution of Algebraic and Transcendental Equations and Interpolation:

Introduction- Bisection method – Method of false position – Iteration method – Newton - Raphson method.

Errors in polynomial interpolation – Finite differences- Forward differences-Backward differences –Central differences – Relation between operators - Differences of a polynomial-Newton's formulae for interpolation – Interpolation with unequal intervals - Lagrange's interpolation formula.

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UNIT II:

Numerical Integration and solution of Ordinary Differential equations:

Trapezoidal rule- Simpson's $1/3^{rd}$ and $3/8^{th}$ rule-Solution of ordinary differential equations by Taylor's series-Picard's method of successive approximations-Euler's method, Modified Euler's method – Runge - Kutta method (fourth order).

UNIT III:

Fourier Series:

Fourier series of periodic function - Dirichlet's conditions for Fourier expansion - Functions having points of discontinuities–Change of interval – Even and odd functions – Half-range series.

UNIT IV:

Fourier Transforms:

Fourier integral theorem (without proof) – Fourier sine and cosine integrals - sine and cosine transforms – properties – inverse transforms – Finite Fourier transforms.

UNIT V:

Applications of Partial Differential Equations:

Classification of Higher order P.D.E - Method of separation of Variables- Solution of One dimensional Wave equation, Heat equation and two-dimensional Laplace equation.

Text Books:

1. B.S.Grewal, Higher Engineering Mathematics, 43^{rd}Edition, Khanna Publishers.
2. V. Ravindranath and P. Vijayalakshmi, Mathematical Methods, Himalaya PublishingHouse.

Reference Books:

1. Dean G. Duffy, Advanced engineering mathematics with MATLAB, CRC Press.
2. Erwin Kreyszig, Advanced Engineering Mathematics, 10^{th}Edition, Wiley-India.
3. Dass H.K., Rajnish Verma. Er., Higher Engineering Mathematics, S. Chand Co. Pvt. Ltd,Delhi.
4. Higher engineering mathematics by John Bird, 5^{th} edition Elsevier Limited, 2006.
5. Advance engineering mathematics by SRK Iyengar, Alpha Sciences International Publication.

Web Links:

1. https://en.wikipedia.org/wiki/Portal:Mathematics
2. http://mathworld.wolfram.com
3. https://www.khanacademy.org
4. http://nptel.ac.in/courses/122104017

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APPLIED PHYSICS
(Common to ECE, CSE & IT)

I Semester	L	T	P	C
Course Code: 171BS1T04	3	1	0	3

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Make use of the basic concepts of interference and relate to the principle of interferometer.

CO 2: Relate the basic concepts of diffraction to illustrate the principle of optical instruments like Telescope & microscope.

CO 3: Explain the basic concepts of polarization, principle of polarimeter and the method of producing high intensity light beams.

CO 4: Interpret the wave nature of microscopic particles by using quantum mechanics and explain the electrical conductivity of materials.

CO 5: Explain the behaviour of materials to classify using the band theory of solids and the basic concepts of semiconductors.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	2	1	-	-	-	-	-	-	-	-	-	-
CO3	2	1	-	-	-	-	-	-	-	-	-	-
CO4	2	1	-	-	-	-	-	-	-	-	-	-
CO5	2	2	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT-I:

Interference:

Principle of Superposition – Coherence– Interference in thin films (reflection geometry) – Newton's rings – construction and working principle of Interferometer.

UNIT-II:

Diffraction:

Fraunhofer diffraction at single slit – Cases of double slit, N-slits, & circular aperture, Grating equation – Rayleigh criterion of resolving power-Resolving power of a grating, Telescope and Microscopes

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UNIT-III:

Polarization:

Types of Polarization – Methods of production – Nicol Prism –Quarter wave plate and Half Wave plate- working principle of polarimeter (Sacharimeter).

LASERS: Characteristics– Stimulated emission – Einstein's Transition Probabilities-Pumping schemes- Ruby laser – Helium Neon laser-CO_2 Laser-Applications

UNIT-IV:

Quantum Mechanics:

Introduction –Matter waves – Schrödinger Time Independent and Time Dependent wave equations – Particle in a box.

FREE ELECTRON THEORY: Defects of classical free electron theory –Quantum Free electron theory – concept of Fermi Energy.

UNIT-V:

Band Theory of Solids:

Bloch's theorem (qualitative) – Kronig – Penney model (Qualitative) – energy bandsin crystalline solids – classification of crystalline solids– effective mass of electron & concept of hole.

Semiconductor Physics:

Conduction – Density of carriers in Intrinsic and Extrinsic semiconductors – Drift & Diffusion – relevance of Einstein's equation- Hall effect in semiconductors.

Text Books:

1. Applied Physics – by M.N.Avadhanulu and T.V.S. Arun Murthy, S. Chand & Company Ltd.,
2. Engineering Physics by D. K. Bhattacharya and Poonam Tandon, Oxford press (2015).

Reference Books:

1. Applied Physics by P. K. Palanisamy, Scitech publications (2014)
2. Concepts of Modern Physics, Arthur Beiser, Tata McGraw-Hill Education, (2003) Engineering Physics by M. Arumugam, Anuradha Publication (2014).

Web Links:

1. http://nptel.ac.in/courses/122107035/11
2. http://nptel.ac.in/courses/115102023/
3. https://phet.colorado.edu/en/simulations/category/physics
4. http://physicsgecg.blogspot.in/p/reading-materials.html
5. https://sites.google.com/site/physicsbysureshsaganti/home

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COMPUTER PROGRAMMING LAB
(Common to all branches)

I Semester L T P C
Course Code: 171ES1L01 0 0 3 2

Course Outcomes:
At the end of the Course, Student will be able to:

CO 1: Implement basic programs in C.
CO 2: Use Conditional and Iterative statements to solve real time scenarios in C.
CO 3: Implement the concept of Arrays and Modularity.
CO 4: Apply the Dynamic Memory Allocation functions using pointers.
CO 5: Develop programs using structures, and Files.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	-	2	-	-	2	-	-	-	-	-	-	-
CO2	-	2	2	3	2	-	-	-	-	-	-	-
CO3	-	3	2	2	2	-	-	-	-	-	-	-
CO4	-	2	2	3	2	-	-	-	-	-	-	-
CO5	-	2	2	2	2	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

Exercise – 1:
Introduction to C Programming
1.1) Introduction about Editors –Turbo, vi, Emacs
1.2) C Program to Perform Addition, Subtraction, Multiplication and Division of two numbers from Command line
1.3) Write a C Program to Calculate area of a Triangle using Heron's formula.

Exercise – 2:
Basic Math
2.1) Write a C Program to Find Whether the Given Year is a Leap Year or not.
2.2) Write a C Program to convert Celsius to Fahrenheit and vice versa.
2.3) Write a C Program to find largest of three numbers using ternary operator.

Exercise – 3:
Control Flow - I
3.1) Write a C program to find the roots of a Quadratic Equation.
3.2) Write a C Program to make a simple Calculator to Add, Subtract, Multiply or Divide Using switch...case.
3.3) Scenario - 1 ATM PIN GENERATION:
Aditya purchased a credit card. He has to generate a PIN number to access the ATM and Net banking for which OTP was sent to his registered mobile number. Using this OTP number he

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has to generate ATM PIN number. After generating PIN number, he can use it for further transactions. Maximum login he can make is 3 times.
Sample Input:
OTP: 6732
If valid
Enter PIN: 8858
Confirm your PIN: 8858
Sample output:
valid/Invalid
PIN generated successfully.
Note: OTP is hard coded.
3.4) Scenario - 2 RESET PASSWORD:
Sindhuja was using Syndicate Bank's Online Account. She wanted to pay her bills through Online. But she forget her password. Now she has to reset the password. For resetting the password, she has to select reset option from the Menu.
NOTE: using switch case.
Sample input:
1. Fast withdrawal
2. Mini Statement.
3. Balance Enquiry
4. Reset Password
Enter your choice: 4
Sample Output: Reset password: New password: ***** Confirm password: *****

Exercise –4:
Control Flow - II
4.1) Write a C Program to Find Whether the Given Number is
i) Prime Number
ii) Armstrong Number
4.2) Write a C program to print Floyd Triangle
4.3) Write a C Program to print Pascal Triangle

Exercise – 5:
Control Flow – III
5.1) Write a C program to find the sum of individual digits of a positive integer.
5.2) Write a C program to check whether given number is palindrome or not.
5.3) Write a C program to read two numbers, x and n, and then compute the sum of the geometric progression $1+x+x^2+x^3+\ldots\ldots\ldots\ldots+x^n$.
5.4) Scenario - 3 Student Attendance report Generation:
Some of the school staff had failed to maintain the attendance of the students, causing lack of essential records related to students attendance that should be submitted in a parents meet. The school management has decided to automate the process in order to maintain the attendance of every student effectively. You are asked to write a program to the above scenario and display whether the student is allowed to write the Exam or not.

percentage<65	detained
>=65 and <75	should pay condonation to appear for Exams
>=75	allowed for Exams

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Sample Input:
Enter no of students: 5
Enter Students Details:

Rno:1	Name: Kalyan	attendance(%):67	Should pay condonation to appear for Exams
Rno:2	Name: laxman	attendance(%):56	
Rno:3	Name: Yamini	attendance(%):79	
Rno:4	Name: Aryan	attendance(%):60	
Rno:5	Name: Raghav	attendance(%):88	

Sample Output:

Rno	Name	Attendance (%)	Remarks
1	Kalyan	67	should pay condonation to appear for Exams
2	Laxman	56	detained
3	Yamini	79	allowed for Exams
4	Aryan	60	detained
5	Raghav	88	allowed for Exams

Exercise 6:

Arrays

Demonstration of arrays

6.1) Linear Search.

6.2) Bubble Sort.

6.3) Operations on Matrix.

6.4) Scenario – 4 Celebrity of the Week:

Red FM has launched a program called Celebrity of the week in their channel. Listeners are given a toll free number where they can listen to list of celebrities. Listeners can choose their favourite celebrity from the list and vote for him/her. The votes are validated from Monday to Saturday. The one with highest votes is called as "Celebrity of the Week" and his/her songs are played in the program, which is aired on Sundays. Now write a program to find the celebrity of the week.

Sample Input:

1. Nagachaithanya
2. Nithin
3. Prabhas
4. Ram
5. Thamanna
6. Samantha
7. Regina
8. Sruthihasan

Enter no of listeners: 10
Enter your favourite: 3
Enter your favourite: 8

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Enter your favourite: 4
Enter your favourite: 3
Enter your favourite: 4
Enter your favourite: 2
Enter your favourite: 7
Enter your favourite: 3
Enter your favourite: 1
Enter your favourite: 5
Sample Output:
"Celebrity of the Week" is PRABHAS

Exercise – 7:
Functions

7.1) Write a C Program to demonstrate parameter passing in Functions and returning values.
7.2) Write a C Program to find Fibonacci, Factorial of a number with Recursion and without Recursion.
7.3) Scenario – 5 SELF DRIVE RENTAL
Sadiq and his friends are going to Banglore. But they don't have a vehicle in Banglore. For that they go to rental cars to take car for rent. You have find out what is total amount of car's rent. The car's rentals and rules are as follows.
i) Minimum booking is 4.
ii) There are 3 types of cars
A) SWIFT
B) SCORPIO
C) INNOVA
iii) There are 3 categories in cars rental

A) LTTE
B) CLASS
C) XL
FOR SWIFT,

- In LTTE 5 kms are free for one hour and Rs.70 per one hour, if they exceed 5kmph, then Rs.12 per km.
- In CLASS, 10 kms are free for one hour and Rs.90 per one hour, if they exceed 10kmph, then Rs.12 per km.
- In XL, 15 kms are free for one hour and Rs.110 per one hour, if they exceed 15kmph, then Rs.12 per km.

FOR SCORPIO,

- In LTTE, 5 kms are free for one hour and Rs.90 per one hour, if they exceed 5kmph, then Rs.15 per km.
- In CLASS, 10 kms are free for one hour and Rs.110 per one hour, if they exceed 10kmph, then Rs.15 per km.
- In XL, 15 kms are free for one hour and Rs.130 per one hour, if they exceed 15kmph, then Rs.15 per km.

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FOR INNOVA

- In LTTE, 5 kms are free for one hour and Rs.110 per one hour, if they exceed 5kmph, then Rs.18 per km.
- In CLASS, 10 kms are free for one hour and Rs.130 per one hour, if they exceed 10kmph, then Rs.18 per km.
- In XL, 15 kms are free for one hour and Rs.150 per one hour, if they exceed 15kmph, then Rs.18 per km.

SAMPLE INPUT:
ENTER NO.OF DAYS AND HOURS FOR CAR: 01 02 (I.E 1 DAY 2 HOURS = 26 HOURS)
1. SWIFT
2. SCORPIO
3. INNOVA
SELECT A CAR: 2
1. LTTE
2. CLASS
3. XL
SELECT RENTAL TYPE: 2
TOTAL KMS COVERED: 300

SAMPLE OUTPUT:

TOTAL HOURS:	26
CAR NAME:	SCORPIO
RENTAL TYPE:	CLASS
AMOUNT:	2860
EXCEED AMOUNT (40KM *15):	600
GRAND TOTAL:	3460

Exercise – 8:
Strings
8.1) Implementation of string manipulation operations with library function.
i) copy
ii) concatenate
iii) length
iv) compare
8.2) Implementation of string manipulation operations without library function.
i) copy
ii) concatenate
iii) length
iv) compare
8.3) Verify whether the given string is a palindrome or not
8.4) Scenario – 6 Word with Obesity:
Jeeth is a fun loving and active boy. He likes to play with words and numbers. One day Jeeth and his friends attended a seminar, which was conducted in his school. The Seminar was about "Causes of obesity in children and its effects". Jeeth and his friend Ram are not interested in listening to the seminar, so he thought of giving a puzzle to Ram. Jeeth gave some words to Ram and wanted him to find the word with Obesity. Ram was confused and

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asking your help. Write a program to find the weights of the words and display the word with highest weight (word with obesity).

Sample Input:
Enter no of words: 3
Enter 3 words: apple banana carrot

Sample Output:
Word with Obesity is carrot

Exercise – 9:
Arrays and Pointers
9.1) Write a C Program to Access Elements of an Array Using Pointer
9.2) Write a C Program to find the sum of numbers with arrays and pointers.

Exercise – 10:
Dynamic Memory Allocations

10.1) Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using malloc () function.
10.2)Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using calloc () function. Understand the difference between the above two programs

Exercises – 11:
Structures
11.1) Write a C Program to Store Information of a book Using Structure
11.2) Write a C Program to Store Information Using Structures with Dynamically Memory Allocation
11.3) Write a C Program to Add Two Complex Numbers by Passing Structure to a Function
11.4) Scenario – 7 Library Management
Shilpa student of PGEC got the Library Card. She wants to lend the books from the Library. The college gave two cards to each and every student. The students can lend only two books at a time and it has to be returned back after 15 days. If the books are not returned late fee will be collected for no. of days the books were returned after the due date. Late fee per day is Rs.50/-
Sample Input.
Enter the name of student, Roll No. Branch, Section, Year, DOL, DOR,
Sample output
No. of days returned after the due date = 5
Late fee per day = Rs. 50
Fine paid by the student is 5 * 50 =250.

Exercise -12:
Files
12.1) Write a C program to open a file and to print the contents of the file on screen.
12.2) Write a C program to copy content of one file to another file.
12.3) Write a C program to merge two files and store content in another file.
12.4) Scenario – 8 Student Information System Using Files:

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Lakshya International school was recently established and having large no of admissions. The school management wanted the Student information to be computerized and wanted to maintain in a simple and in effective manner. You are asked to develop Student Information System using Files to perform the following tasks

1. Add New Student
2. Update Existing Student
3. Delete Existing Student
4. Retrieve A Particular/All Students

Sample Input:
Choose the task you want to perform:
1. Add
2. Update
3. Delete
4. Retrieve
Your choice: 1
Enter student details:
Name: Akhil
Age: 5
Class: 1
Sample Output:
Student details added

Reference Books:

1. Let Us C by Yashwanth Kanetkar.
2. Programming in C A-Practial Approach by Ajay Mittal.
3. The C programming Language, Dennis Richie and Brian Kernighan, Pearson Education.

Web Links:

1. https://www.hackerrank.com/
2. https://www.codechef.com/
3. https://www.topcoder.com/
4. https://code-cracker.github.io/

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ENGLISH – II
(Common to all branches)

	L	T	P	C
II Semester				
Course Code: 171HS2T03	3	1	0	3

Introduction:

In view of the growing importance of English as a tool for global communication and the consequent emphasis on training the students to acquire communicative competence, the syllabus has been designed to develop linguistic and communicative competence of the students of Engineering.As far as the detailed textbooks are concerned, the focus should be on the skills of Listening, Speaking, Reading and Writing. The non-detailed textbooks are meant for extensive reading both to instruct and delight. Hence the focus in the syllabus is primarily on the development of communicative skills and fostering of ideas about the essence of English Communication.

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Compare the difference between traditional and modern technologies.

CO 2: Identify the causes for climate change.

CO 3: Infer professional work habits, necessary for effective collaboration and cooperation.

CO 4: Develop competency in writing for political, social and religious documents.

CO 5: Demonstrate writing and basic concepts of grammar skills.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	-	-	-	-	1	-	-	-	-	3	-	-
CO2	-	-	-	-	-	-	-	-	-	3	-	-
CO3	-	-	-	-	-	-	1	-	-	3	-	-
CO4	-	-	-	-	-	-	1	-	-	3	-	-
CO5	-	-	-	-	-	-	-	-	-	3	-	-

Mapping of Course Outcomes with Program Specific Outcomes:

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

Methodology:

1 The class is to be learner-centred where the learners are to read the texts to get a comprehensive idea of those texts on their own with the help of the peer group and the teacher.

2 Integrated skill development methodology has to be adopted with focus on individual language skills as per the tasks/exercise.

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3 The tasks/exercises at the end of each unit should be completed by the learners only and the teacher intervention is permitted as per the complexity of the task/exercise.
4 The teacher is expected to use supplementary material wherever necessary and also generate activities/tasks as per the requirement.
5 The teacher is permitted to use lecture method when a completely new concept is introduced in the class.

Recommended Topics:

UNIT-I:

1. TECHNOLOGY WITH A HUMAN FACE (Detailed)
2. AN IDEAL FAMILY (Non-Detailed)

UNIT-II:

1. CLIMATE CHANGE AND HUMAN STRATEGY (Detailed)
2. WAR (Non-Detailed)

UNIT-III:

1. EMERGING TECHNOLOGIES (Detailed)
2. THE VERGER (Non-Detailed)

UNIT-IV:

1. THE SECRET OF WORK (Detailed)
2. THE SCARECROW (Non-Detailed)

UNIT-V:

1. WORK BRINGS SOLACE (Detailed)
2. A VILLAGE LOST TO THE NATION (Non-Detailed)

Prescribed Text Books:

Detailed Text Book: 'Sure Outcomes' by Orient Black Swan Pvt. Ltd. Publishers.

Non Detailed Text Book : Panorama- A course on Reading by Oxford University Press Pvt. Ltd. Publishers.

Web Links:

1. http://www.cooperative-individualism.org/schumacher-e-f_technology-with-a-human-face-1973.htm
2. http://www.sinden.org/verger.html
3. http://btechenglish.blogspot.in/2015/05/work-brings-solace-sure-out-comes-b.html
4. http://www.ramakrishnavivekananda.info/vivekananda/volume_1/karma-yoga/secret_of_work.htm
5. https://en.wikipedia.org/wiki/Solar_power_in_Spain

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MATHEMATICS-III
(Common to all branches)

II Semester	L	T	P	C
Course Code: 171BS2T06	3	1	0	3

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Compute Laplace transform of various functions.
CO 2: Apply Laplace transform to solve initial value problems.
CO 3: Discuss about beta and gamma function, double integral over a region and triple integral over a volume.
CO 4: Find the gradient of a scalar function, divergence and curl of a vector function.
CO 5: Apply line, surface and volume integrals to find work done by a force, flux.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	-
CO5	3	2	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT - I:

Laplace transforms:

Laplace transforms of standard functions-First Shifting theorem, Change of scale, Multiplication with t, Division by t - Transforms of derivatives and integrals – Unit step function –Dirac's delta function, Periodic functions.

UNIT- II:

Inverse Laplace transforms:

Inverse Laplace transforms – Convolution theorem (without proof), Second shifting theorem. *(MATLAB Exercise: Computing Laplace transform off(t) using symbolic toolbox, Solving initial value problems using 'dsolve')

Applications:

Evaluating improper integrals, solving initial value problems using Laplace transforms.

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UNIT - III:

Multiple integrals and Beta, Gamma functions:

Multiple integrals: Double and triple integrals – Change of variables – Change of order of integration, Beta and Gamma functions- Properties - Relation between Beta and Gamma functions-

Applications:

Finding Areas and Volumes.

UNIT - IV:

Vector Differentiation:

Gradient - Directional Derivatives - Divergence- Curl - Laplacian operator - Vector identities.

Applications:

Equation of continuity, potential surfaces

UNIT - V:

Vector Integration:

Line integral – Work done - Surface and volume integrals, Green's Theorem, Stokes Theorem and Gauss Divergence theorem (without proof) and related problems.

Text Books:

1. B.S.Grewal, Higher Engineering Mathematics, 43rd Edition, Khanna Publishers.
2. Dr. T K V Iyengar, Engineering Mathematics, S. Chand Publications.

Reference Books:

1. George B. Thomas, D, Weir and J. Hass. Thomas Calculus, 12th edition, 2010 Pearson Education
2. Greenberg, Advanced Engineering Mathematics, 2nd edition, Pearson Education.
3. Erwin Kreyszig, Advanced Engineering Mathematics, 10th Edition, Wiley-India.
4. W. Jordan and T. Smith, Mathematical Techniques, Oxford University Press.

Web Links:

1. https://en.wikipedia.org/wiki/Portal:Mathematics
2. http://mathworld.wolfram.com
3. https://www.khanacademy.org
4. http://nptel.ac.in/courses/122104017

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ENVIRONMENTAL STUDIES
(Common to ECE, CSE &IT)

I Semester	L	T	P	C
Course Code: 171HS2T02	2	1	0	2

Course Outcomes:
At the end of the Course, Student will be able to:

CO 1:	Identifytheneedforprotectingtheproducersandconsumersinvariousecosystemsand their rolein thefoodweb.
CO 2:	Outlinethenaturalresourcesandtheirimportanceforthesustenanceofthelife.
CO 3:	Listoutthebiodiversityof India,threats anditsconservationmethods.
CO 4:	Explain the different types of pollutions and their control technologies, Waste water treatment, Bio medical waste management etc.
CO 5:	Explain EIA- Environmental Impact Assessment, Sustainable developmental activities, environmental policies and regulations.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	-	-	-	-	-	1	3	-	-	-	-	-
CO2	-	-	-	-	-	2	3	-	-	-	-	-
CO3	-	-	-	-	-	1	3	-	-	-	-	-
CO4	-	-	2	-	-	2	3	-	-	-	-	-
CO5	-	-	2	-	-	2	3	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT –I:
Ecosystems:
Scope of environmental studies, Structure- Producers, consumers and decomposers.
Function – Food chain, Food web, Tropic structure and Energy flow in the ecosystem.
Ecological pyramids, nutrient recycling, primary and secondary production, ecosystem regulation. Ecological succession Terrestrial ecosystem and aquatic ecosystem - Introduction, types, characteristic features.

UNIT – II:
Natural Resources:
Natural resources and associated problems Forest resources – Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people.
Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems.
Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources.
Food resources: World food problems, changes caused by non-agriculture activities-effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity

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Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources vs oil and natural gas extraction.
Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

UNIT – III:
Biodiversity and its conservation:
Definition: genetic, species and ecosystem diversity classification Value of biodiversity: consumptive use, productive use, social-Biodiversity at national and local levels. India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts - Endangered and endemic species of India – Conservation of biodiversity.

UNIT – IV:
Environmental Pollution:
Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies, Sustainable Life Style.
Solid Waste Management: Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.

UNIT – V:
Social Issues and the Environment
Urban problems related to energy -Water conservation, rain water harvesting-Resettlement and rehabilitation of people; its problems and concerns. Global challenges
Environmental ethics: Issues and possible solutions. Environmental Protection Act -Air (Prevention and Control of Pollution) Act. –Water (Prevention and control of Pollution) Act - Wildlife Protection Act - Forest Conservation Act-Issues involved in enforcement of environmental legislation. - Public awareness and Environmental management.

Text Books:

1. Environmental Studies, K.V. S. G. Murali Krishna, VGS Publishers, Vijayawada
2. Environmental Studies, R. Rajagopalan, 2nd Edition, 2011, Oxford University Press.
3. Environmental Studies, P.N. Palanisamy, P. Manikandan, A. Geetha, and K. Manjula Rani; Pearson Education, Chennai

Reference Books:

1. Text Book of Environmental Studies, Deeshita Dave & P. Udaya Bhaskar, Cengage Learning.
2. A Textbook of Environmental Studies, Shaashi Chawla, TMH, New Delhi.
3. Environmental Studies, Benny Joseph, Tata McGraw Hill Co, New Delhi.
4. "Perspectives in Environment Studies" Anubha Kaushik, C P Kaushik, New Age International Publishers, 2014.

Web Links:

1. https://www.youtube.com/watch?v=7G3eXI_DPn8
2. www.nptel.ac.in/courses/122102006/
3. www.nptel.ac.in/courses/120108002/
4. https://www.youtube.com/watch?v=4AuwG2G_ERU
5. www.nptelvideos.in/2012/12/fundamentals-of-environmental-pollution.html
6. www.nptel.ac.in/courses/120108004/

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APPLIED CHEMISTRY
(Common to ECE, CSE & IT)

II Semester	**L**	**T**	**P**	**C**
Course Code: 171BS2T05	**3**	**1**	**0**	**3**

Course Outcomes
At the end of the Course, Student will be able to:

CO 1: Explain polymeric materials their uses and moulding techniques of plastics.
CO 2: Analyse fuel characteristics using Calorific value, knocking characteristics and flue gas analysis.
CO 3: Explain the working principle of Electro chemical cells and corrosion characteristics.
CO 4: Explain the properties and applications of Nano, Superconductors, Semiconductors, Liquid crystals and fuel cells.
CO 5: Summarize non-conventional energy sources and their applications.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	2	-	-	-	-	-	-	-	-	-	-	-
CO2	2	-	-	-	-	-	-	-	-	-	-	-
CO3	3	-	-	-	-	-	-	-	-	-	-	-
CO4	3	-	-	-	-	-	-	-	-	-	-	-
CO5	2	-	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes:

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT - I:

High Polymers and Plastics:
Polymerisation: Introduction- Mechanism of polymerization - Stereo regular polymers - Physical and mechanical properties – Plastics as engineering materials: advantages and limitations – Thermoplastics and Thermosetting plastics – Compounding and fabrication (compression moulding, injection moulding, extrusion moulding and transfer moulding techniques)- Preparation, properties and applications of polyethene, PVC, Bakelite and polycarbonates. Elastomers – Natural rubber- compounding and vulcanization – Synthetic rubbers: Buna S, Buna N, Thiokol – Applications of elastomers. Biodegradable polymers.

UNIT - II:
Fuel Technology:
Fuels:- Introduction – Classification – Calorific value - HCV and LCV – Dulong's formula – Coal — Proximate and ultimate analysis – Significance of the analyses – Liquid fuels – Petroleum- Refining – Cracking – Synthetic petrol –Petrol knocking – Diesel knocking -

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Octane and Cetane ratings – Anti-knock agents – Power alcohol – Bio-diesel – Gaseous fuels – Natural gas. LPG and CNG – Combustion – Calculation of air for the combustion of a fuel – Flue gas analysis – Orsat apparatus.

UNIT - III:

Electrochemical Cells And Corrosion:

Galvanic cells - Reversible and irreversible cells – Single electrode potential- Electro chemical series and uses of this series- Standard electrodes (Hydrogen and Calomel electrodes) - Concentration Cells – Batteries: Dry Cell - Li cells - Zinc – air cells.

Corrosion:- Definition – Theories of Corrosion (electrochemical) – Formation of galvanic cells by different metals, by concentration cells, by differential aeration and waterline corrosion – Passivity of metals – Pitting corrosion - Galvanic series – Factors which influence the rate of corrosion - Protection from corrosion – Cathodic protection - Protective coatings: – Metallic (cathodic and anodic) coatings - Methods of application on metals (Galvanizing, Tinning, Electroplating, Electroless plating).

UNIT - IV:

Chemistry of Advanced Materials:

Nano materials:-Introduction – Sol-gel method - Carbon nano tubes and fullerenes: Types, preparation, properties and applications.

Super conductors:-Type –I, Type II – Characteristics and applications

Semi conductors:- Preparation of semiconductors, working of diods and transistors.

Green synthesis:-Principles

Liquid crystals:-Introduction – Types – Applications

Fuel cells:- Introduction - cell representation, H_2-O_2fuel cell: Design and working, advantages and Limitations. Types of fuel cells: methanol-oxygen fuel cells.

UNIT - V:

Non Conventional Energy Sources :

Solar Energy: - Introduction, application of solar energy, conversion of solar energy (Thermal conversion & photo conversion) – photovoltaic cell: design, working and its importance Non-conventional energy sources:

(i) Hydropower include setup a hydropower plant (schematic diagram).
(ii) Geothermal energy: Introduction-schematic diagram of a geothermal power plant.
(iii) Tidal and wave power: Introduction- Design and working-movement of tides and their effect on sea level.

(iv) Ocean thermal energy: Introduction, closed-cycle, ocean thermal energy conversion (OTEC), open cycle OTEC, hybrid OTEC, schematic diagram and explanation.
(v) Biomass and biofuels.

Text Books:

1. Engineering Chemistry by Jain and Jain; Dhanpat Rai Publicating Co.
2. A Text books of Applied Chemistry by Dr. Bharathi kumari Yalamananchili, VGS publications.
3. Engineering Chemistry by Shikha Agarwal; Cambridge University Press, 2015 edition.

Reference Books:

1. Engineering Chemistry by PrasanthRath, Cengage Learning, 2015 edition.
2. A text book of engineering Chemistry by S. S. Dara; S. Chand & Co Ltd., Latest Edition

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3. Applied Chemistry by H.D. Gesser, Springer Publishers
4. Text book of Nano-science and nanotechnology by B.S. Murthy, P. Shankar and others, University Press, IIM

Web Links:

1. http://www.nptelvideos.in/2012/11/chemistry-of-materials
2. http://www.nptelvideos.com/lecture.php?id=2946
3. http://www.nptelvideos.com/lecture.php?id=2922
4. http://www.nptelvideos.com/lecture.php?id=2954

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ENGLISH COMMUNICATION SKILLS LAB - II

(Common to all branches)

II Semester	L	T	P	C
Course Code: 171HS2L02	0	0	3	2

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Make effective use of Body language in all situations and contexts to enhance effective communication in all aspects.

CO 2: Identify communicative competency to respond to others in different situations.

CO 3: Make use of effective delivery strategies to select, compile and synthesize information for oral presentation.

CO 4: Demonstratein mock interviews, group discussion and public speaking.

CO 5: Illustrate interpersonal skills using English language confidently and effectively for personal and professional growth.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	-	-	-	-	-	-	-	-	-	3	-	2
CO2	-	-	-	-	-	-	-	-	-	3	-	2
CO3	-	-	-	-	-	-	-	-	-	3	-	2
CO4	-	-	-	-	-	-	-	-	-	3	-	2
CO5	-	-	-	-	-	-	-	-	-	3	-	2

Mapping of Course Outcomes with Program Specific Outcomes:

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

PRACTICE 1:
Body Language

PRACTICE 2:
Dialogues

PRACTICE 3:
Presentation Skills

PRACTICE 4:
Group Discussion

PRACTICE 5:
Interviews and Telephonic Interviews.

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PRACTICE 6:
Debates

Reference Books:

1. Strengthen your Communication Skills by Dr.M.Hari Prasad, Dr.Salivendra J.Raju and Dr.G.Suvarna Lakshmi, Maruthi Publications.
2. English for Professionals by Prof Eliah, B.S Publications, Hyderabad.
3. A Handbook of English for Professionals by Prof Eliah, B.S Publications.
4. Effective Technical Communication by M. Ashraf Rizvi, Tata Mcraw – Hill Publishing Company.
5. Cornerstone, Developing soft skills, Pearson Education.

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APPLIED CHEMISTRY LAB
(Common to ECE, CSE & IT)

II Semester	**L**	**T**	**P**	**C**
Course Code: 171BS2L03	**0**	**0**	**3**	**2**

Course Outcomes:
At the end of the Course, Student will be able to:

CO 1: Demonstrate Acid – Base, Complexometric titrations by volumetric analysis.
CO 2: Demonstrate Acid – Base titrations by instrumental analysis.
CO 3: Estimate Vitamin C using volumetric analysis
CO 4: Prepare polymer like Bakelite.
CO5: Prepare alternative fuel like Bio-Diesel.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	2	-	-	-	-	-	-	-	-	-	-	-
CO2	2	-	-	-	-	-	-	-	-	-	-	-
CO3	2	-	-	-	-	-	-	-	-	-	-	-
CO4	2	-	-	-	-	-	-	-	-	-	-	-
CO5	2	-	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

Exercise 1:
Introduction to Chemistry laboratory – Molarity, Normality, Primary, secondary standard solutions, Volumetric titrations, Quantitative analysis, Qualitative analysis, etc.

Exercise 2:
Trial experiment - Determination of HCl using standard Na_2CO_3 solution.

Exercise 3:
Preparation of Phenol - Formaldehyde resin (Bakelite).

Exercise 4:
Determination of $KMnO_4$ using standard Oxalic acid solution.

Exercise 5:
Determination of ferrous iron using standard $K_2Cr_2O_7$ solution.

Exercise 6:
Preparation of Bio-Diesel.

Exercise 7:

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Determination of temporary and permanent hardness of water using standard EDTA solution.

Exercise 8:
Determination of Copper using standard EDTA solution.

Exercise 9:
Determination of Iron by a Colorimetric method using thiocynate as reagent.

Exercise 10:
Determination of pH of the given sample solution using pH meter.

Exercise 11:
Conduct metric titration between strong acid and strong base.

Exercise 12:
Conduct metric titration between strong acid and weak base.

Exercise 13:
Potentiometric titration between strong acid and strong base.

Exercise 14:
Potentiometric titration between strong acid and weak base.

Exercise 15:
Determination of Zinc using standard EDTA solution.

Exercise 16:
Determination of Vitamin – C.

Reference Books:

1. A Textbook of Quantitative Analysis, Arthur J. Vogel.
2. Dr.Jyotsna Cherukuris (2012) Laboratory Manual of engineering chemistry - II, VGS Techno Series.
3. Chemistry Practical Manual, Lorven Publications K. Mukkanti (2009). Practical Engineering Chemistry, B.S.Publication.

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II Year - II Semester

L	T	P	C
4	0	0	3

CONTROL SYSTEMS

Course objectives

1. To introduce the concepts of open loop and closed loop systems, mathematical models of mechanical and electrical systems, and concepts of feedback
2. To study the characteristics of the given system in terms of the transfer function and introducing various approaches to reduce the overall system for necessary analysis
3. To develop the acquaintance in analyzing the system response in time-domain and frequency domain in terms of various performance indices
4. To analyze the system in terms of absolute stability and relative stability by different approaches
5. To design different control systems for different applications as per given specifications
6. To introduce the concepts of state variable analysis, design and also the concepts of controllability and observability

UNIT-1

Introduction

System Control System, Open Loop Control System, Closed loop Control System, Different Examples

Mathematical models of Physical Systems

Differential equations of physical systems, Transfer functions, Block diagram Algebra, Signal flow graphs with illustrative examples

Effects of Feedback

Feedback Characteristics and its advantages, Linearizing effect of feedback

UNIT-2

Controller Components

DC Servomotor (Armature Controlled and Field Controlled) with necessary derivation for transfer function, AC Servomotor and its transfer function, AC Tachometer, Potentiometer, Synchros, AC Position Control Systems

Time Response Analysis

Standard test Signals, Time response of first and second order systems, steady state errors and error constants, Effect of adding a zero to a system, Design specifications of second order systems, Performance indices

UNIT-3

Concepts of Stability and Algebraic Criteria

The concept of Stability, Necessary Conditions for Stability, Routh-Hurwitz Srability Criterion, Relative stability analysis,

The Root Locus Technique

Introduction, The Root Locus concepts, Construction of Root Loci

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UNIT-4

Frequency response analysis

Introduction, Correlation between time and frequency response, Polar Plots, Bode Plots, Nyquist Stability Criterion

UNIT-5

Introduction to Design

The design problem, Preliminary consideration of classical design, Realization of basic Compensators, Cascade compensation in time domain and frequency domain, Tuning of PID Controllers

UNIT-6

State Variable Analysis and Design

Introduction, Concepts of State, State Variables and State models, State models for linear continuous-time systems, State variables and linear discrete-time systems, Solution of state equations and Concepts of Controllability and Observability.

Text Book

I.J.Nagarath and M.Gopal, " **Control System Engineering,"** New Age International Publishers, Fifth Edition

Reference Books

1. Katsuhiko Ogata, "Modern Control Engineering," Pearson, Fifth Edition
2. S. Salivahanan, R. Rengaraj, and G. R. Venkata Krishnan, " Control Systems Engineering," Pearson, First Impression
3. Benjamin C. Kuo, Frarid Golnaraghi, " Automatic Control Systems," Wiley Student Edition, Eigth Edition
4. PadmaRaju and Reddy , " Instrumentation and Control Systems ", McGrawHill Education ,2016

Course Outcomes

1. This course introduces the concepts of feedback and its advantages to various control systems
2. The performance metrics to design the control system in time-domain and frequency domain are introduced.
3. Control systems for various applications can be designed using time-domain and frequency domain analysis.
4. In addition to the conventional approach, the state space approach for the analysis of control systems is also introduced.

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II Year - II Semester

L	T	P	C
4	0	0	3

MANAGEMENT SCIENCE

Course Objectives:

***To familiarize with the process of management and to provide basic insight into select contemporary management practices**

***To provide conceptual knowledge on functional management and strategic management.**

UNIT I

Introduction to Management: Concept –nature and importance of Management –Generic Functions of Management – Evaluation of Management thought- Theories of Motivation – Decision making process-Designing organization structure- Principles of organization – Organizational typology- International Management: Global Leadership and Organizational behavior Effectiveness(GLOBE) structure

UNIT II

Operations Management: Principles and Types of Management – Work study- Statistical Quality Control- Control charts (P-chart, R-chart, and C-chart) Simple problems- Material Management: Need for Inventory control- EOQ, ABC analysis (simple problems) and Types of ABC analysis (HML, SDE, VED, and FSN analysis).

UNIT III

Functional Management: Concept of HRM, HRD and PMIR- Functions of HR Manager- Wage payment plans(Simple Problems) – Job Evaluation and Merit Rating - Marketing Management- Functions of Marketing – Marketing strategies based on product Life Cycle, Channels of distributions. Operationlizing change through performance management.

UNIT IV

Project Management: (PERT/CPM): Development of Network – Difference between PERT and CPM Identifying Critical Path- Probability- Project Crashing (Simple Problems)

UNIT V

Strategic Management: Vision, Mission, Goals, Strategy – Elements of Corporate Planning Process – Environmental Scanning – SWOT analysis- Steps in Strategy Formulation and Implementation, Generic Strategy Alternatives. Global strategies, theories of Multinational Companies.

UNIT VI

Contemporary Management Practice: Basic concepts of MIS, MRP, Justin- Time(JIT) system, Total Quality Management(TQM), Six sigma and Capability Maturity Model(CMM) Levies, Supply Chain Management , Enterprise Resource Planning (ERP), Business Process outsourcing (BPO), Business process Re-engineering and Bench Marking, Balanced Score Card.

Course Outcome:

***After completion of the Course the student will acquire the knowledge on management functions, global leadership and organizational behavior.**

***Will familiarize with the concepts of functional management project management and strategic management.**

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Text Books

1. Dr. P. Vijaya Kumar & Dr. N. Appa Rao, '*Management Science'* Cengage, Delhi, 2012.
2. Dr. A. R. Aryasri, *Management Science'* TMH 2011.

References

1. Koontz & Weihrich: 'Essentials *of management'* TMH 2011
2. Seth & Rastogi: Global Management Systems, Cengage learning , Delhi, 2011
3. Robbins: Organizational Behaviour, Pearson publications, 2011
4. Kanishka Bedi: Production & Operations Management, Oxford Publications, 2011
5. Philip Kotler & Armstrong: Principles of Marketing, Pearson publications
6. Biswajit Patnaik: Human Resource Management, PHI, 2011
7. Hitt and Vijaya Kumar: Starategic Management, Cengage learning
8. Prem Chadha: Performance Management, Trinity Press(An imprint of Laxmi Publications Pvt. Ltd.) Delhi 2015.
9. Anil Bhat& Arya Kumar : Principles of Management, Oxford University Press, New Delhi, 2015.

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Department of Electronics and communication Engineering

Syllabus revision Index

2017-18

S.No	Name of the course	Percentage of syllabus change
1	English-I	65%
2	Mathematics – I	40%
3	Mathematics – II	60%
4	Applied Physics	20%
5	Computer Programming Lab	40%
6	English-II	55%
7	Mathematics – III	40%
8	Environmental Studies	20%
9	Applied Chemistry	25%
10	English Communication Skills Lab-II	40%
11	Applied Chemistry Lab	20%
12	Control Systems	40%
13	Management Science	50%

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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	English-II	English-I
Course Code	R161201	171HSIT01
Syllabus	UNIT 1: 1. ' The Greatest Resource-Education' from English Encounters 2. ' A P J Abdul Kalam' from The Great Indian Scientists.	UNIT-I: 1. IN LONDON: M.K.GANDHI (Detailed) 2. G.D. NAIDU (Non-Detailed)
	UNIT 2: 1. ' A Dilemma' from English Encounters 2. 'C V Raman' from The Great Indian Scientists.	UNIT-II: 1. THE KNOWLEDGE SOCIETY- APJ ABDUL KALAM (Detailed) 2. G.R. GOPINATH (Non-Detailed)
	UNIT 3: 1. 'Cultural Shock': Adjustments to new Cultural Environments from English Encounters. 2. 'Homi Jehangir Bhabha' from The Great Indian Scientists.	UNIT-III: 1. THE SCIENTIFIC POINT OF VIEW-J.B.S. HALDANE (Detailed) 2. J.C. BOSE (Non-Detailed)
	. UNIT 4: 1. 'The Lottery' from English Encounters. 2. 'Jagadish Chandra Bose' from The Great Indian Scientists.	UNIT-IV: 1. MAN'S PERIL-BERTRAND RUSSELL (Detailed) 2. HOMI JEHANGIR BHABHA (Non-Detailed)
	UNIT 5: 1. ' The Health Threats of Climate Change' from English Encounters 2. ' Prafulla Chandra Ray' from The Great Indian Scientists.	UNIT-V: 1. LUCK—MARK TWAIN (Detailed) 2. A SHADOW (Non-Detailed)
	UNIT 6: 1. ' The Chief Software Architect' from English Encounters 2. ' Srinivasa Ramanujan' from The Great Indian Scientists.	

Signature of the course coordinator

Signature of the HOD

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Mathematics-I	Mathematics-I
Course Code	R161102	171BS1T01
Syllabus	UNIT I: Differential equations of first order and first degree: Linear-Bernoulli-Exact-Reducible to exact. Applications: Newton's Law of cooling-Law of natural growth and decay-Orthogonal trajectories- Electrical circuits- Chemical reactions.	UNIT I: Differential equations of first order and first degree: Linear differential equations - Bernoulli differential equation - Exact differential equationsEquations reducible to exact (Type-1, Type-2, Type-3, Type-4) Applications: Newton's Law of cooling-Law of natural growth and decay-Orthogonal trajectories.
	UNIT II: Linear differential equations of higher order: Non-homogeneous equations of higher order with constant coefficients with RHS term of the type eax, sin ax, cos ax, polynomials in x, eax V(x), xV(x)- Method of Variation of parameters. Applications: LCR circuit, Simple Harmonic motion.	UNIT II: Linear differential equations of higher order: Linear differential equations of higher order with constant coefficients with RHS term of the type eax, sin ax, cos ax, polynomials in x, eax V(x), xV(x)- Method of Variation of parameters, Method of undetermined coefficients. *(MATLAB Exercise: Introduction to MAT LAB commands and Solution of Initial Value Problems using the command 'dsolve') Applications: Electric circuits, simple harmonic motion.
	UNIT III: Laplace transforms: Laplace transforms of standard functions-Shifting theorems - Transforms of derivatives and integrals – Unit step function –Dirac's delta function- Inverse Laplace transforms– Convolution theorem (with out proof). Applications: Solving ordinary differential equations (initial value problems) using Laplace transforms.	UNIT III: Linear systems of equations: Rank of a matrix - Echelon form-Normal form – Solution of linear systems – Gauss elimination method - Gauss Seidal method. Applications: Finding the current in electrical circuits.
	UNIT IV: Partial differentiation: Introduction- Homogeneous function-Euler's theorem-Total derivative-Chain ruleGeneralized Mean value theorem for	UNIT IV: Eigen values - Eigen vectors and Quadratic forms: Eigen values - Eigen vectors– Properties of eigen values (without proof) – Cayley -Hamilton

	single variable (without proof)-Taylor's and Mc Laurent's series expansion of functions of two variables– Functional dependence- Jacobian. Applications: Maxima and Minima of functions of two variables without constraints and Lagrange's method (with constraints).	theorem (without proof) - Inverse and powers of a matrix by using Cayley - Hamilton theorem- Diagonalization- Quadratic forms- Reduction of quadratic form to canonical form using orthogonal transformation– Nature of the quadratic form. *(MATLAB Exercise: All Basic Operations on matrices are to be implemented using MATLAB including computation of rank, computation of eigen values and eigen vectors)
	UNIT V: First order Partial differential equations: Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions –solutions of first order linear (Lagrange) equation and nonlinear (standard types) equations.	UNIT V: Partial differentiation and Partial differential equations: Homogeneous function-Euler's theorem-Total derivative-Chain rule-Taylor's and Maclaurin's series expansion of functions of two variables– Functional dependence Jacobian. Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions –solutions of first order linear (Lagrange) equation, nonlinear (standard types) equations. Applications: Maxima and Minima of functions of two variables without constraints and Lagrange's method (with constraints). *(MATLAB Exercise: To Plot graphs of various single and multivariable functions using MATLAB and analyze their maxima and minima graphically).
	UNIT VI: Higher order Partial differential equations: Solutions of Linear Partial differential equations with constant coefficients. RHS term of the type e^(ax+by) , sin(ax+by), cos(ax+by), x^m y^n Classification of second order partial differential equation	

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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Environmental Studies	Environmental Studies
Course Code	R161108	171HS1T02/171HS2T02
Syllabus	UNIT – I Multidisciplinary nature of Environmental Studies: Definition, Scope and Importance –Sustainability: Stockholm and Rio Summit–Global Environmental Challenges: Global warming and climate change, Carbon Credits, acid rains, ozone layer depletion, population growth and explosion, effects. Role of information Technology in Environment and human health. Ecosystems: Concept of an ecosystem. - Structure and function of an ecosystem. - Producers, consumers and decomposers. - Energy flow in the ecosystem - Ecological succession. – Food chains, food webs and ecological pyramids. - Introduction, types, characteristic features, structure and function of Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems.	UNIT –I: Ecosystems: Scope of environmental studies, Structure- Producers, consumers and decomposers Function – Food chain, Food web, Tropic structure and Energy flow in the ecosystem Ecological pyramids, nutrient recycling, primary and secondary production, ecosystem regulation. Ecological succession Terrestrial ecosystem and aquatic ecosystem - Introduction, types, characteristic features.
	UNIT – II Natural Resources: Natural resources and associated problems Forest resources – Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems Mineral resources: Use and exploitation, environmental	UNIT – II: Natural Resources: Natural resources and associated problems Forest resources – Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources

	effects of extracting and using mineral resources, Sustainable mining of Granite, Literate, Coal, Sea and River sands. Food resources: World food problems, changes caused by non-agriculture activities-effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources Vs Oil and Natural Gas Extraction. Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.	Food resources: World food problems, changes caused by non-agriculture activities effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources vs oil and natural gas extraction. Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.
	UNIT – III Biodiversity and its conservation: Definition: genetic, species and ecosystem diversity- classification - Value of biodiversity: consumptive use, productive use, social IBiodiversity at national and local levels. India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts - Endangered and endemic species of India – Conservation of biodiversity: conservation of biodiversity.	UNIT – III: Biodiversity and its conservation: Definition: genetic, species and ecosystem diversity classification Value of biodiversity: consumptive use, productive use, social-Biodiversity at national and local levels. India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts - Endangered and endemic species of India – Conservation of biodiversity
	UNIT – IV Environmental Pollution: Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies, Sustainable Life Studies. Impact of Fire Crackers on Men and his well being. Solid Waste Management: Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.	UNIT – IV: Environmental Pollution: Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies, Sustainable Life Style. Solid Waste Management: Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.
	UNIT – V Social Issues and the Environment: Urban problems related to energy -Water conservation, rain water harvesting-Resettlement and	UNIT – V: Social Issues and the Environment Urban problems related to energy -Water conservation, rain water harvesting Resettlement and rehabilitation

	rehabilitation of people; its problems and concerns. Environmental ethics: Issues and possible solutions. Environmental Protection Act -Air (Prevention and Control of Pollution) Act. –Water (Prevention and control of Pollution) Act - Wildlife Protection Act -Forest Conservation Act-Issues involved in enforcement of environmental legislation. -Public awareness.	of people; its problems and concerns. Global challenges Environmental ethics: Issues and possible solutions. Environmental Protection Act - Air (Prevention and Control of Pollution) Act. – Water (Prevention and control of Pollution) Act -Wildlife Protection Act - Forest Conservation Act-Issues involved in enforcement of environmental legislation. - Public awareness and Environmental management.
	UNIT – VI Environmental Management: Impact Assessment and its significance various stages of EIA, preparation of EMP and EIS, Environmental audit. Ecotourism, Green Campus – Green business and Green politics. The student should Visit an Industry / Ecosystem and submit a report individually on any issues related to Environmental Studies course and make a power point presentation.	

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Signature of the HOD

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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Mathematics-II (NMCV)	Mathematics-II (for ECE)
Course Code	R161110	171BS2T02
Syllabus	UNIT I: Solution of Algebraic and Transcendental Equations: Introduction-Bisection method – Method of false position – Iteration method – Newton-Raphson method (One variable and simultaneous Equations).	UNIT I: Solution of Algebraic and Transcendental Equations and Interpolation: Introduction- Bisection method – Method of false position – Iteration method – Newton - Raphson method. Errors in polynomial interpolation – Finite differences- Forward differences-Backward differences –Central differences – Relation between operators - Differences of a polynomial-Newton's formulae for interpolation – Interpolation with unequal intervals - Lagrange's interpolation formula.
	UNIT II: Interpolation: Introduction-Errors in polynomial interpolation – Finite differences- Forward differences-Backward differences –Central differences – Symbolic relations and separation of symbols - Differences of a polynomial-Newton's formulae for interpolation – Interpolation with unequal intervals - Lagrange's interpolation formula	UNIT II: Numerical Integration and solution of Ordinary Differential equations: Trapezoidal rule- Simpson's 1/3rd and 3/8th rule-Solution of ordinary differential equations by Taylor's series-Picard's method of successive approximations-Euler's method, Modified Euler's method – Runge - Kutta method (fourth order).
	UNIT III: Numerical Integration and solution of Ordinary Differential equations: Trapezoidal rule- Simpson's 1/3rd and 3/8th rule-Solution of ordinary differential equations by Taylor's series-Picard's method of successive approximations-Euler's method - Runge-Kutta method (second and fourth order).	UNIT III: Fourier Series: Fourier series of periodic function - Dirichlet's conditions for Fourier expansion - Functions having points of discontinuities–Change of interval – Even and odd functions – Half-range series.
	Unit-IV: Functions of a complex variable Complex function , Real and Imaginary parts of Complex function, Limit,	UNIT IV: Fourier Transforms: Fourier integral theorem (without proof) – Fourier sine and cosine integrals - sine and cosine

	Continuity and Derivative of complex function, Cauchy-Riemann equations, Analytic function, entire function, singular point, conjugate function, C – R equations in polar form, Harmonic functions, Milne-Thomson method, Simple applications to flow problems,	transforms – properties – inverse transforms – Finite Fourier transforms.
	Unit-V: Series Expansion and Complex Integration Line integral of a complex function, Cauchy's theorem(only statement) , Cauchy's Integral Formula. Absolutely convergent and uniformly convergent of series of complex terms, Radius of convergence, Taylor's series, Maclaurin's series expansion, Laurent's series.	UNIT V: Applications of Partial Differential Equations: Classification of Higher order P.D.E - Method of separation of Variables- Solution of One dimensional Wave equation, Heat equation and two-dimensional Laplace equation.
	Unit-VI: Singularities and Residue Theorem Zeros of an analytic function, Singularity, Isolated singularity, Removable singularity, Essential singularity, pole of order m, simple pole, Residues, Residue theorem, Calculation of residues, Residue at a pole of order m, Evaluation of real definite integrals: Integration around the unit circle, Integration around semi circle, Indenting the contours having poles on the real axis.	

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	English -I	English-II
Course Code	R161101	171HS2T03
Syllabus	UNIT I: 1. 'Human Resources' from English for Engineers and Technologists. 2. 'An Ideal Family' from Panorama: A Course on Reading	UNIT-I: 1. TECHNOLOGY WITH A HUMAN FACE (Detailed) 2. AN IDEAL FAMILY (Non-Detailed)
	UNIT 2: 1. ' Transport: Problems and Solutions' from English for Engineers and Technologists. 2. 'War' from 'Panorama : A Course on Reading'	UNIT-II: 1. CLIMATE CHANGE AND HUMAN STRATEGY (Detailed) 2. WAR (Non-Detailed)
	UNIT 3: 1. 'Evaluating Technology' from English for Engineers and Technologists. 2. 'The Verger' from 'Panorama : A Course on Reading	UNIT-III: 1. EMERGING TECHNOLOGIES (Detailed) 2. THE VERGER (Non-Detailed)
	UNIT 4: 1. 'Alternative Sources of Energy' from English for Engineers and Technologists. 2. ' The Scarecrow' from Panorama : A Course on Reading	UNIT-IV: 1. THE SECRET OF WORK (Detailed) 2. THE SCARECROW (Non-Detailed)
	UNIT 5: 1. 'Our Living Environment' from English for Engineers and Technologists. 2. 'A Village Host to Nation' from Panorama : A Course on Reading	UNIT-V: 1. WORK BRINGS SOLACE (Detailed) 2. A VILLAGE LOST TO THE NATION (Non-Detailed)
	UNIT 6: 1. ' Safety and Training' from English for Engineers and Technologists. 2. 'Martin Luther King and Africa' from Panorama : A Course on Reading	

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Applied Physics	Applied Physics
Course Code	R161207	171BS1T04/171BS2T04
Syllabus	UNIT-I INTERFERENCE: Principle of Superposition – Coherent Sources – Interference in thin films (reflection geometry) – Newton's rings – construction and basic principle of Interferometers.	UNIT-I: Interference: Principle of Superposition – Coherence– Interference in thin films (reflection geometry) – Newton's rings – construction and working principle of Interferometer.
	UNIT-II DIFFRACTION: Fraunhofer diffraction at single slit - Cases of double slit, N-slits & Circular Aperture (Qualitative treatment only)-Grating equation - Resolving power of a grating, Telescope and Microscopes.	UNIT-II: Diffraction: Fraunhofer diffraction at single slit – Cases of double slit, N-slits, & circular aperture, grating equation – Rayleigh criterion of resolving power- Resolving power of a grating, Telescope and Microscopes
	UNIT-III POLARIZATION: Types of Polarization – Methods of production - Nicol Prism -Quarter wave plate and Half Wave plate – Working principle of Polarimeter (Sacharimeter). LASERS: Characteristics– Stimulated emission – Einstein's Transition Probabilities Pumping schemes - Ruby laser – Helium Neon laser.	UNIT-III: Polarization: Types of Polarization – Methods of production – Nicol Prism – Quarter wave plate and Half Wave plate- working principle of polarimeter (Sacharimeter). LASERS: Characteristics– Stimulated emission – Einstein's Transition ProbabilitiesPumping schemes- Ruby laser – Helium Neon laser-CO2 Laser-Applications
	UNIT-IV ELECTROMAGNETIC FIELDS: Scalar and Vector Fields – Electric Potential- Gradient, Divergence of fields – Gauss and Stokes theorems-Propagation of EM waves through dielectric medium.	UNIT-IV: Quantum Mechanics: Introduction –Matter waves – Schrödinger Time Independent and Time Dependent wave equations – Particle in a box. FREE ELECTRON THEORY: Defects of classical free electron theory –Quantum Free electron theory – concept of Fermi Energy..
	UNIT-V QUANTUM MECHANICS: Introduction - Matter waves – Schröedinger Time Independent and Time Dependent wave equations – Particle in a box. FREE ELECTRON	UNIT-V: Band Theory of Solids: Bloch's theorem (qualitative) – Kronig – Penney model (Qualitative) – energy bands in crystalline solids – classification of crystalline solids– effective mass of

	THEORY: Defects of Classical free electron theory –Quantum Free electron theory - concept of Fermi Energy.	electron & concept of hole. Semiconductor Physics: Conduction – Density of carriers in Intrinsic and Extrinsic semiconductors – Drift & Diffusion – relevance of Einstein's equation- Hall effect in semiconductors.–
	UNIT-VI BAND THEORY OF SOLIDS: Bloch's theorem (qualitative) – Kronig – Penney model – energy bands in crystalline solids – classification of crystalline solids– effective mass of electron & concept of hole. SEMICONDUCTOR PHYSICS: Conduction – Density of carriers in Intrinsic and Extrinsic semiconductors – Drift & Diffusion – relevance of Einstein's equation- Hall effect in semiconductors	

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Applied Chemistry	Applied Chemistry
Course Code	R161106/R161221	171BS1T05/ 171BS2T05
Syllabus	UNIT I: HIGH POLYMERS AND PLASTICS Polymerisation : Introduction- Mechanism of polymerization - Stereo regular polymers – methods of polymerization (emulsion and suspension) -Physical and mechanical properties – Plastics as engineering materials : advantages and limitations – Thermoplastics and Thermosetting plastics – Compounding and fabrication (4/5 techniques)- Preparation, properties and applications of polyethene, PVC, Bakelite Teflon and polycarbonates Elastomers – Natural rubber- compounding and vulcanization – Synthetic rubbers : Buna S, Buna N, Thiokol and polyurethanes – Applications of elastomers. Composite materials & Fiber reinforced plastics – Biodegradable polymers – Conducting polymers.	UNIT - I: High Polymers and Plastics: Polymerization: Introduction- Mechanism of polymerization - Stereo regular polymers - Physical and mechanical properties – Plastics as engineering materials: advantages and limitations – Thermoplastics and Thermosetting plastics – Compounding and fabrication (compression moulding, injection moulding, extrusion moulding and transfer moulding techniques)- Preparation, properties and applications of polyethene, PVC, Bakelite and polycarbonates. Elastomers – Natural rubber- compounding and vulcanization – Synthetic rubbers: Buna S, Buna N, Thiokol – Applications of elastomers. Biodegradable polymers.
	UNIT II: FUEL TECHNOLOGY Fuels:- Introduction – Classification – Calorific value - HCV and LCV – Dulong's formula – Bomb calorimeter – Numerical problems – Coal — Proximate and ultimate analysis – Significance of the analyses – Liquid fuels – Petroleum- Refining – Cracking – Synthetic petrol –Petrol knocking – Diesel knocking - Octane and Cetane ratings – Anti-knock agents – Power alcohol – Bio-diesel – Gaseous fuels – Natural gas. LPG and CNG – Combustion – Calculation of air for the combustion of a fuel – Flue gas	UNIT - II: Fuel Technology: Fuels:- Introduction – Classification – Calorific value - HCV and LCV – Dulong's formula – Coal — Proximate and ultimate analysis – Significance of the analyses – Liquid fuels – Petroleum- Refining – Cracking – Synthetic petrol –Petrol knocking – Diesel knocking - Octane and Cetane ratings – Anti-knock agents – Power alcohol – Bio-diesel – Gaseous fuels – Natural gas. LPG and CNG – Combustion – Calculation of air for the combustion of a fuel – Flue gas analysis – Orsat apparatus.

	analysis – Orsat apparatus – Numerical problems on combustion. Explosives:- Introduction, classification, examples: RDX, TNT and ammonium nitrite - rocket fuels	
	UNIT III: ELECTROCHEMICAL CELLS AND CORROSION Galvanic cells - Reversible and irreversible cells – Single electrode potential – Electro chemical series and uses of this series- Standard electrodes (Hydrogen and Calomel electrodes) - Concentration Cells – Batteries: Dry Cell - Ni-Cd cells - Ni-Metal hydride cells - Li cells - Zinc – air cells. Corrosion:- Definition – Theories of Corrosion (electrochemical) – Formation of galvanic cells by different metals, by concentration cells, by differential aeration and waterline corrosion – Passivity of metals – Pitting corrosion - Galvanic series – Factors which influence the rate of corrosion - Protection from corrosion – Design and material selection – Cathodic protection - Protective coatings: – Surface preparation – Metallic (cathodic and anodic) coatings - Methods of application on metals (Galvanizing, Tinning, Electroplating, Electroless plating)	UNIT - III: Electrochemical Cells and Corrosion: Galvanic cells - Reversible and irreversible cells – Single electrode potential- Electro chemical series and uses of this series- Standard electrodes (Hydrogen and Calomel electrodes) - Concentration Cells – Batteries: Dry Cell - Li cells - Zinc – air cells. Corrosion:- Definition – Theories of Corrosion (electrochemical) – Formation of galvanic cells by different metals, by concentration cells, by differential aeration and waterline corrosion – Passivity of metals – Pitting corrosion - Galvanic series – Factors which influence the rate of corrosion - Protection from corrosion – Cathodic protection - Protective coatings: – Metallic (cathodic and anodic) coatings - Methods of application on metals (Galvanizing, Tinning, Electroplating, Electroless plating).
	UNIT IV: CHEMISTRY OF ADVANCED MATERIALS Nano materials:- Introduction – Sol-gel method & chemical reduction method of preparation – Characterization by BET method and TEM methods - Carbon nano tubes and fullerenes: Types, preparation, properties and applications Liquid crystals:- Introduction – Types – Applications Superconductors :- Type-I & Type-2, properties &applications Green synthesis:- Principles - 3or 4 methods of synthesis with examples – R4M4 principles	UNIT - IV: Chemistry of Advanced Materials: Nano materials:-Introduction – Sol-gel method - Carbon nano tubes and fullerenes: Types, preparation, properties and applications. Super conductors: -Type – I, Type II – Characteristics and applications Semiconductors: - Preparation of semiconductors, working of diods and transistors. Green synthesis: -Principles Liquid crystals:-Introduction – Types – Applications Fuel cells: - Introduction - cell representation, H2-O2fuel cell: Design and working, advantages and Limitations. Types of fuel cells: methanol-oxygen fuel cells.
	UNIT V: SOLID STATE CHEMISTRY Types of solids - close packing of atoms and ions - BCC , FCC, structures of rock salt - cesium chloride- spinel - normal and inverse spinels, Non-elemental	UNIT - V: Non-Conventional Energy Sources: Solar Energy: - Introduction, application of solar energy, conversion of solar energy (Thermal conversion & photo conversion) – photovoltaic cell: design,

	semiconducting Materials:- Stoichiometric, controlled valency & Chalcogen photo/semiconductors, Preparation of Semiconductors - Semiconductor Devices:- p-n junction diode as rectifier – junction transistor. Insulators (electrical and electronic applications) Magnetic materials:- Ferro and ferri magnetism. Hall effect and its applications.	working and its importance Non-conventional energy sources: (i) Hydropower include setup a hydropower plant (schematic diagram) (ii) Geothermal energy: Introduction-schematic diagram of a geothermal power plant (iii) Tidal and wave power: Introduction- Design and working-movement of tides and their effect on sea level. (iv) Ocean thermal energy: Introduction, closed-cycle, ocean thermal energy conversion (OTEC), open cycle OTEC, hybrid OTEC, schematic diagram and explanation. (v) Biomass and biofuels.
	UNIT VI: NON CONVENTIONAL ENERGY SOURCES AND STORAGE DEVICES Solar Energy: - Introduction, application of solar energy, conversion of solar energy (Thermal conversion & photo conversion) – photovoltaic cell: design, working and its importance Non-conventional energy sources: (i) Hydropower include setup a hydropower plant (schematic diagram) (ii) Geothermal energy: Introduction-schematic diagram of a geothermal power plant (iii) Tidal and wave power: Introduction- Design and working-movement of tides and their effect on sea level. (iv) Ocean thermal energy: Introduction, closed-cycle, ocean thermal energy conversion (OTEC), open cycle OTEC, hybrid OTEC, schematic diagram and explanation. (v) Biomass and biofuels Fuel cells:- Introduction - cell representation, H2-O2 fuel cell: Design and working, advantages and limitations. Types of fuel cells: Alkaline fuel cell - methanol-oxygen - phosphoric acid fuel cells - molten carbonate fuel cells.	

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Mathematics-III	Mathematics-III
Course Code	R161203	171BS2T06
Syllabus	UNIT I: Linear systems of equations: Rank-Echelon form-Normal form – Solution of linear systems – Gauss elimination - Gauss Jordon- Gauss Jacobi and Gauss Seidal methods. Applications: Finding the current in electrical circuits.	UNIT - I: Laplace transforms: Laplace transforms of standard functions-First Shifting theorem, Change of scale, Multiplication with t, Division by t - Transforms of derivatives and integrals – Unit step function –Dirac's delta function, Periodic functions.
	UNIT II: Eigen values - Eigen vectors and Quadratic forms: Eigen values - Eigen vectors– Properties – Cayley-Hamilton theorem - Inverse and powers of a matrix by using Cayley-Hamilton theorem- Diagonalization- Quadratic forms- Reduction of quadratic form to canonical form – Rank - Positive, negative and semi definite - Index – Signature. Applications: Free vibration of a two-mass system.	UNIT- II: Inverse Laplace transforms: Inverse Laplace transforms – Convolution theorem (without proof), Second shifting theorem. *(MATLAB Exercise: Computing Laplace transform off (t) using symbolic toolbox, Solving initial value problems using 'dsolve') Applications: Evaluating improper integrals, solving initial value problems using Laplace transforms.
	UNIT III: Multiple integrals: Curve tracing: Cartesian, Polar and Parametric forms. Multiple integrals: Double and triple integrals – Change of variables – Change of order of integration. Applications: Finding Areas and Volumes.	UNIT - III: Multiple integrals and Beta, Gamma functions: Multiple integrals: Double and triple integrals – Change of variables – Change of order of integration, Beta and Gamma functions- Properties - Relation between Beta and Gamma functions Applications: Finding Areas and Volumes.
	UNIT IV: Special functions: Beta and Gamma functions- Properties - Relation between Beta and Gamma functions. Evaluation of improper integrals. Applications: Evaluation of integrals.	UNIT - IV: Vector Differentiation: Gradient - Directional Derivatives - Divergence- Curl - Laplacian operator - Vector identities. Applications: Equation of continuity, potential surfaces
	UNIT V: Vector Differentiation: Gradient- Divergence- Curl - Laplacian and second order operators -Vector identities.	UNIT - V: Vector integration: Line integral – Work done - Surface and volume integrals, Green's Theorem, Stokes Theorem and

	Applications: Equation of continuity, potential surfaces	Gauss Divergence theorem (without proof) and related problems.
	UNIT VI: Vector Integration: Line integral – Work done – Potential function – Area- Surface and volume integrals Vector integral theorems: Greens, Stokes and Gauss Divergence theorems (without proof) and related problems. Applications: Work done, Force.	

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	• Engineering/Applied Chemistry Lab	Engineering Chemistry Lab
Course Code	R161227/ R161118	171BS1L01
Syllabus	1. Introduction to Chemistry laboratory – Molarity, Normality, Primary, secondary standard solutions, Volumetric titrations, Quantitative analysis, Qualitative analysis, etc....	Exercise 1: Introduction to Chemistry laboratory – Molarity, Normality, Primary, secondary standard solutions, Volumetric titrations, Quantitative analysis, Qualitative analysis, etc.
	2. Trial experiment - Determination of HCl using standard Na2CO3 solution	Exercise 2: Trial experiment - Determination of HCl using standard Na2CO3 solution.
	3. Determination of alkalinity of a sample containing Na2CO3 and NaOH.	Exercise 3: Preparation of Phenol - Formaldehyde resin (Bakelite).
	..4. Determination of KMnO4 using standard Oxalic acid solution	Exercise 4: Determination of KMnO4 using standard Oxalic acid solution.
	5. Determination of Ferrous iron using standard K2Cr2O7 solution	Exercise 5: Determination of ferrous iron using standard K2Cr2O7 solution.
	6. Determination of Copper using standard K2Cr2O7 solution	Exercise 6: Preparation of Bio-Diesel.
	7. Determination of temporary and permanent hardness of water using standard EDTA solution.	Exercise 7: Determination of temporary and permanent hardness of water using standard EDTA solution.
	8. Determination of Copper using standard EDTA solution	Exercise 8: Determination of Copper using standard EDTA solution.
	9. Determination of Iron by a Colorimetric method using thiocynate as reagent.	Exercise 9: Determination of Iron by a Colorimetric method using thiocynate as reagent.
	10. Determination of pH of the given sample solution using pH meter.	Exercise 10: Determination of pH of the given sample solution using pH meter.
	11. Conductometric titration between strong acid and strong base.	Exercise 11: Conduct metric titration between strong acid and strong base.
	12. Conductometric titration between strong acid and weak base.	Exercise 12: Conduct metric titration between strong acid and weak base.
	13. Potentiometric titration between strong acid and strong base.	Exercise 13: Potentiometric titration between strong acid and strong base.
	14. Potentiometric titration between	Exercise 14: Potentiometric titration

	strong acid and weak base.	between strong acid and weak base.
	15. Determination of Zinc using standard EDTA solution.	Exercise 15: Determination of Zinc using standard EDTA solution.
	16. Determination of Vitamin – C.	Exercise 16: Determination of Vitamin – C.

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	English Communication Skills Lab-II	English Communication Skills Lab-II
Course Code	R161221	171HS2L02
Syllabus	UNIT 1: 1. Debating Practice work	PRACTICE 1: Body Language
	UNIT 2: 1. Group Discussions Practice work	PRACTICE 2: Dialogues
	UNIT 3: 1. Presentation Skills Practice work	PRACTICE 3: Presentation Skills
	UNIT 4: 1. Interview Skills Practice work	PRACTICE 4: Group Discussion
	UNIT 5: 1. Email, 2. Curriculum Vitae Practice work	PRACTICE 5: Interviews and Telephonic Interviews.
	UNIT 6: 1. Idiomatic Expressions 2. Common Errors in English Practice work	PRACTICE 6: Debates

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Department of Electronics and communication Engineering

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Control Systems	Control Systems
Course Code	RT31043	R1622042
	UNIT I **INTRODUCTION** Concepts of Control Systems- Open Loop and closed loop control systems and their differences- Different examples of control systems- Classification of control systems, Feed-Back Characteristics, Effects of feedback. Mathematical models – Differential equations, Impulse Response and transfer functions - Translational and Rotational mechanical systems	**UNIT-1** **Introduction** System Control System, Open Loop Control System, Closed loop Control System, Different Examples **Mathematical models of Physical Systems** Differential equations of physical systems, Transfer functions. Block diagram Algebra, Signal flow graphs with illustrative examples **Effects of Feedback** Feedback Characteristics and its advantages, Linearizing effect of feedbac
	UNIT II **TRANSFER FUNCTION REPRESENTATION** Transfer Function of DC Servo motor - AC Servo motor- Synchro transmitter and Receiver, Block diagram representation of systems considering electrical systems as examples -Block diagram algebra – Representation by Signal flow graph - Reduction using mason's gain formula.	**UNIT-2** **Controller Components** DC Servomotor (Armature Controlled and Field Controlled) with necessary derivation for transfer function,AC Servomotor and its transfer function, AC Tachometer, Potentiometer, Synchros, AC Position ControlSystems **Time Response Analysis** Standard test Signals, Time response of first and second order systems, steady state errors and error constants, Effect of adding a zero to a system, Design specifications of second order systems, Performanceindices
	UNIT III **TIME RESPONSE ANALYSIS** Standard test signals - Time response	**UNIT-3** **Concepts of Stability and Algebraic Criteria**

	of first order systems – Characteristic Equation of Feedback control systems, Transient response of second order systems - Time domain specifications – Steady state response - Steady state errors and error constants – Effects of proportional derivative, proportional integral systems.	The concept of Stability, Necessary Conditions for Stability, Routh-Hurwitz Srability Criterion, Relative stability analysis, **The Root Locus Technique** Introduction, The Root Locus concepts, Construction of Root Loci
	UNIT IV **STABILITY ANALYSIS IN S-DOMAIN** The concept of stability – Routh's stability criterion – qualitative stability and conditional stability – limitations of Routh's stability. **Root Locus Technique:** The root locus concept - construction of root loci-effects of adding poles and zeros to G(s)H(s) on the root loci.	**UNIT-4** **Frequency response analysis** Introduction, Correlation between time and frequency response, Polar Plots, Bode Plots, Nyquist Stability Criterion
	UNIT V **FREQUENCY RESPONSE ANALYSIS** Introduction, Frequency domain specifications-Bode diagrams-Determination of Frequency domain specifications and transfer function from the Bode Diagram-Phase margin and Gain margin-Stability Analysis from Bode Plots. **STABILITY ANALYSIS IN FREQUENCY DOMAIN:** Polar Plots, Nyquist Plots Stability Analysis.	**UNIT-5** **Introduction to Design** The design problem, Preliminary consideration of classical design, Realization of basic Compensators, Cascade compensation in time domain and frequency domain, Tuning of PID Controllers
	UNIT VI **CLASSICAL CONTROL DESIGN TECHNIQUES** Compensation techniques – Lag, Lead, Lead-Lag Controllers design infrequency Domain, PID Controllers. State Space Analysis of ContinuousSystems Concepts of state, state variables and state model, derivation of state models from block diagrams, Diagonalization- Solving the Time	**UNIT-6** **State Variable Analysis and Design** Introduction, Concepts of State, State Variables and State models, State models for linear continuous-time systems, State variables and linear discrete-time systems, Solution of state equations and Concepts of Controllability and Observability.

	invariantstate Equations- State Transition Matrix and it's Properties – Concepts ofControllability and Observability.	

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Management Science	Management Science
Course Code	RT22043	R1622026
	UNIT – I: **Introduction to Management:** Concept – Nature and Importance of Management, Functions-Evaluation of Management, Motivation Theories – Leadership Styles – Decision Making Process-designing Organization Structure – Principles and types of Organization.	**UNIT I** **Introduction to Management**: Concept –nature and importance of Management –Generic Functions of Management – Evaluation of Management thought-Theories of Motivation – Decision making process-Designing organization structure- Principles of organization – Organizational typology-International Management: Global Leadership and Organizational behaviorEffectiveness(GLOBE) structure
	UNIT – II: **Operations and Project Management:** Work-Study-Statistical Quality Control Through Control Charts-Inventory Control-EOQ & ABC Analysis (Simple Problems) Project Management-PERT/CPM-Project Crashing (Simple Problem).	**UNIT II** **Operations Management**: Principles and Types of Management – Work study- Statistical Quality Control-Control charts (P-chart, R-chart, and C-chart) Simple problems- Material Management: Need for Inventory control- EOQ, ABC analysis (simple problems) and Types of ABC analysis (HML, SDE, VED, and FSN analysis).
	UNIT – III: **Functional Management:** Concept and Functions of Finance, HR, Production, Marketing Management and Services – Job Evolution and Merit Rating – Product Life Cycles – Channels of Distribution	**UNIT III** **Functional Management**: Concept of HRM, HRD and PMIR- Functions of HR Manager- Wage payment plans(Simple Problems) – Job Evaluation and Merit Rating - Marketing Management- Functions of Marketing –

	– Types/Methods of Production.	Marketing strategies based on product Life Cycle. Channels of distributions. Operationlizing change through performance management.
	UNIT – IV: **Strategic Management:** Vision, Mission, Goals, Strategy – Corporate Planning Process – Environmental Scanning – SWOT analysis – Different Steps in Strategy Formulation, Implementation and Evaluation.	**UNIT IV** **Project Management**: (PERT/CPM): Development of Network – Difference between PERT and CPM Identifying Critical Path- Probability- Project Crashing (Simple Problems)
	UNIT – V: **Business Ethics & Communications:** Ethics in Business and Management – Ethics in HRM, Finance & Marketing Management – Business Ethics & Law	**UNIT V** **Strategic Management**: Vision, Mission, Goals, Strategy – Elements of Corporate Planning Process – Environmental Scanning – SWOT analysis- Steps in Strategy Formulation and Implementation, Generic Strategy Alternatives. Global strategies, theories of Multinational Companies.
	UNIT – VI: **Contemporary Management Practices:** Basic concepts of MIS, MRP, Just- In-Time (JIT)System, Total Quality Management (TQM), Six Sigma and Capability Maturity Models (CMM) Levies, Supply Chain Management, Enterprise Resource Planning (ERP), Performance Management, Business Process Outsourcing (BPO), Business Process Re-Engineering and Bench Marking, Balance Score Card.	**UNIT VI** **Contemporary Management Practice**: Basic concepts of MIS, MRP, Justin-Time(JIT) system, Total Quality Management(TQM), Six sigma and Capability Maturity Model(CMM) Levies, Supply Chain Management , Enterprise Resource Planning (ERP), Business Process outsourcing (BPO), Business process Re-engineering and Bench Marking, Balanced Score Card.

Signature of the course coordinator

Signature of the HOD

Head of the Department
Department of E.C.E.
Aditya Engineering College (A9)

ADITYA ENGINEERING COLLEGE

An Autonomous Institution

Approved by AICTE • Permanently Affiliated to JNTUK • Accredited by NAAC with 'A' Grade

Recognised by UGC under sections 2(f) and 12(B) of UGC Act, 1956

Aditya Nagar, ADB Road, Surampalem - 533437, Near Kakinada, E.G.Dt., Ph:99498 76662

Program Name : B.Tech. in Computer Science and Engineering

Syllabus Revision for the Academic Year 2017-2018				
S.No	**Semester**	**Course Code**	**Course Name**	**% of content revised for the existing year**
1	I	171HS1T01	English – I	0
2	I	171BS1T01	Mathematics – I	25
3	I	171BS1T02	Mathematics – II	20
4	I	171BS1T04	Applied Physics	20
5	I	171ES1T03	Engineering Drawing	0
6	I	171ES1T01	Computer Programming	0
7	I	171HS1L01	English Communication Skills Lab – I	80
8	I	171BS1L04	Applied Physics Lab	0
9	I	171ES1L01	Computer Programming Lab	40
10	II	171HS2T03	English – II	0
11	II	171BS2T06	Mathematics – III	20
12	II	171HS2T02	Environmental Studies	20
13	II	171BS2T05	Applied Chemistry	20
14	II	171ES2T02	Engineering Mechanics	0
15	II	171CS2T01	Data Structures through C	100
16	II	171HS2L02	English Communication Skills Lab – II	0
17	II	171BS2L03	Applied Chemistry Lab	0
18	II	171ES2L02	Engineering Workshop & IT Workshop	0
19	III	R1621051	Statistics with R Programming	0
20	III	R1621052	Mathematical Foundations of Computer Science	0
21	III	R1621053	Digital Logic Design	0

S.No	Semester	Course Code	Course Name	% of content revised for the existing year
22	III	R1621054	Python Programming	0
23	III	R1621055	Data Structures through C++	0
24	III	R1621056	Computer Graphics	0
25	III	R1621057	Data Structures through C++Lab	0
26	III	R1621058	Python Programming Lab	0
27	IV	R1622051	Software Engineering	60
28	IV	R1622052	Java Programming	0
29	IV	R1622053	Advanced Data Structures	0
30	IV	R1622054	Computer Organization	50
31	IV	R1622055	Formal Languages and Automata Theory	0
32	IV	R1622056	Principles of Programming Languages	0
33	IV	R1622057	Advanced Data Structures Lab	70
34	IV	R1622058	Java Programming Lab	0
35	V	RT31051	Compiler Design	0
36	V	RT31052	Data Communication	0
37	V	RT31053	Principles Of Programming Languages	0
38	V	RT31054	Data Base Management Systems	0
39	V	RT31055	Operating Systems	0
40	V	RT31056	Compiler Design Lab	0
41	V	RT31057	Operating Systems & Linux Programming Lab	0
42	V	RT31058	Database Management Systems Lab	0
43	V	RT31059	Seminar	0
44	VI	RT32051	Software Engineering	0
45	VI	RT32052	Data Ware housing and Mining	0

S.No	Semester	Course Code	Course Name	% of content revised for the existing year
46	VI	RT32053	Computer Networks	0
47	VI	RT32054	Design and Analysis of Algorithms	0
48	VI	RT32055	Web Technologies	0
49	VI	RT32056	IPR and Patents	0
50	VI	RT32057	Computer Networks And Network Programming Lab	0
51	VI	RT32058	Software Engineering Lab	0
52	VI	RT32059	Web Technologies Lab	0
53	VII	RT41051	CRYPTOGRAPHY AND NETWORK SECURITY	0
54	VII	RT41052	UML AND DESIGN PATTERNS	0
55	VII	RT41053	MOBILE COMPUTING	0
56	VII	RT41054	SOFTWARE TESTING METHODOLOGIES	0
57	VII	RT41055	Simulation Modeling	0
58	VII	RT41056	Information Retrieval Systems	0
59	VII	RT41057	Artificial Intelligence	0
60	VII	RT41058	Multimedia Computing	0
61	VII	RT41059	High Performance Computing	0
62	VII	RT4105A	Digital Forensics	0
63	VII	RT4105B	Hadoop and Big Data	0
64	VII	RT4105C	Software Project Management	0
65	VII	RT4105D	Machine Learning	0
66	VII	RT4105E	Advanced Databases	0
67	VII	RT4105M	Mobile Application Development Lab	0
68	VII	RT4105N	Software Testing Lab	0
69	VII	RT4105O	Hadoop and Bigdata Lab	0
70	VII	RT4105L	UML and Design Patterns Lab	0

S.No	Semester	Course Code	Course Name	% of content revised for the existing year
71	VII	RT42051	Distributed Systems	0
72	VIII	RT42052	Management Science	0
73	VIII	RT42053A	Human Computer Interaction	0
74	VIII	RT42053B	Advanced Operating Systems	0
75	VIII	RT42053C	Mobile Adhoc & Sensor Networks	0
76	VIII	RT42053D	Pattern Recognition	0
77	VIII	RT42053E	Digital Image Processing	0
78	VIII	RT42053F	Micro processers and Multi Core Systems	0
79	VIII	RT42043B	Embedded and Real Time Systems	0
80	VIII	RT42043C	Neural Networks & Soft Computing	0
81	VIII	RT42043D	Social Networks and the Semantic Web	0
82	VIII	RT42043E	Cloud Computing	0
83	VIII	RT42055	PROJECT	0

Total number of courses in the academic year 2017-2018	= 83
Number of courses having revision in syllabus content >/= 20% in the academic year 2017-2018	= 12
Percentage of syllabus revision carried out in the academic year 2017-2018 = (12/83)*100	= 14.46 %

KSP

Program Coordinator

Head of the Department

Head of the Department
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PROGRAM STRUCTURE

I SEMESTER

Course Code	Name of the Course	Course Component	Total Number of contact hours				Credits (C)
			Lecture (L)	Tutorial (T)	Practice (P)	Total Hours	
171HS1T01	English – I	HSS	3	1	---	4	3
171BS1T01	Mathematics – I	BS	3	1	2	6	3
171BS1T02	Mathematics – II	BS	3	1	---	4	3
171BS1T04	Applied Physics	BS	3	1	---	4	3
171ES1T03	Engineering Drawing	ES	3	1	---	4	3
171ES1T01	Computer Programming	ES	3	1	---	4	3
171HS1L01	English Communication Skills Lab – I	HSS	---	---	3	3	2
171BS1L04	Applied Physics Lab	BS	---	---	3	3	2
171ES1L01	Computer Programming Lab	ES	---	---	3	3	2
		TOTAL	18	6	11	35	24

II SEMESTER

Course Code	Name of the Course	Course Component	Total Number of contact hours				Credits (C)
			Lecture (L)	Tutorial (T)	Practice (P)	Total Hours	
171HS2T03	English – II	HSS	3	1	---	4	3
171BS2T06	Mathematics – III	BS	3	1	2	6	3
171HS2T02	Environmental Studies	HSS	2	1	---	3	2
171BS2T05	Applied Chemistry	BS	3	1	---	4	3
171ES2T02	Engineering Mechanics	ES	3	1	---	4	3
171CS2T01	Data Structures through C	PC	3	1	2	6	3
171HS2L02	English Communication Skills Lab – II	HSS	---	---	3	3	2
171BS2L03	Applied Chemistry Lab	BS	---	---	3	3	2
171ES2L02	Engineering Workshop & IT Workshop	ES	---	---	3	3	2
		TOTAL	17	6	13	36	23

BS: Basic Sciences; HSS: Humanities and Social Sciences; ES: Engineering Sciences; PC: Professional Core; PE: Professional Elective; OE: Open Elective; SS: Self Study Course; PR: Project.

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II Year - I Semester

S. No.	Subjects	L	T	P	Credits
1-HS	Statistics with R Programming	4	--	--	3
2	Mathematical Foundations of Computer Science	4	--	--	3
3	Digital Logic Design	4	--	--	3
4	Python Programming	4	--	--	3
5	Data Structures through C++	4	--	--	3
6	Computer Graphics	4	--	--	3
7	Data Structures through C++Lab	--	--	3	2
8	Python Programming Lab	--	--	3	2
	Total Credits				**22**

II Year - II Semester

S. No.	Subjects	L	T	P	Credits
1	Software Engineering	4	--	--	3
2	Java Programming	4	--	--	3
3	Advanced Data Structures	4	--	--	3
4	Computer Organization	4	--	--	3
5	Formal Languages and Automata Theory	4	--	--	3
6	Principles of Programming Languages	4	--	--	3
7	Advanced Data Structures Lab	--	--	3	2
8	Java Programming Lab	--	--	3	2
	Total Credits				**22**

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III Year – I SEMESTER

S. No.	Subject	T	P	Credits
1	Compiler Design	4	-	3
2	Data Communication	4	-	3
3	Principles of Programming Languages	4	-	3
4	Database Management Systems	4	-	3
5	Operating Systems	4	-	3
6	Compiler Design Lab	-	3	2
7	Operating System Lab	-	3	2
8	Database Management Systems Lab		3	2
9	Linux Programming Lab	-	3	2
10	IPR and Patents- 1	2	-	-
11	Seminar	--	--	1
Total Credits				**24**

III Year – II SEMESTER

S. No.	Subject	T	P	Credits
1	Computer Networks	4	-	3
2	Data Ware housing and Mining	4	-	3
3	Design and Analysis of Algorithms	4	-	3
4	Software Engineering	4	-	3
5	Web Technologies	4	-	3
6	Computer Networks Lab	-	3	2
7	Software Engineering Lab	-	3	2
8	Web Technologies Lab	-	3	2
9	IPR and Patents- II	2	--	--
Total Credits				**21**

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IV Year – I SEMESTER

S. No.	Subject	T	P	Credits
1	Cryptography and Network Security	4	-	3
2	UML & Design Patterns	4	-	3
3	Mobile Computing	4	-	3
4	**Elective –I**	4	-	3
5	**Elective – II**	4	-	3
6	UML & Design Patterns Lab	-	3	2
7	Mobile Application Development Lab	-	3	2
8	Software Testing Lab	-	3	2
9	Hadoop & BigData Lab	-	3	2
Total Credits				**23**

IV Year – II SEMESTER

S. No.	Subject	T	P	Credits
1	**Elective – III**	4	-	3
2	**Elective – IV**	4	-	3
3	Distributed Systems	4	-	3
4	Management Science	4	-	3
5	Project	-	-	9
Total Credits				**21**

Elective – I:
i) Software Testing Methodologies
ii) Simulation Modeling
iii) Information Retrieval Systems
iv) Artificial Intelligence
v) Multimedia Computing
vi) High Performance ComputingElective – II:
i. Digital Forensics
ii. Hadoop and Big Data
iii. Software Project Management
iv. Machine Learning
v. Advanced Databases
Elective – III:
i) Human Computer Interaction
ii) Advanced Operating Systems
iii) Mobile Adhoc & Sensor Networks
iv) Pattern Recognition
v) Digital Image Processing
vi) Micro processers and Multi Core Systems
Elective-IV:
i) Embedded and Real Time Systems
ii) Neural Networks & Soft Computing
iii) Social Networks and the Semantic Web
iv) Cloud Computing

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MATHEMATICS-I
(Common to all branches)

I Semester	**L**	**T**	**P**	**C**
Course Code: 171BS1T01	**3**	**1**	**2**	**3**

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: **Associate linear differential equations** of first order to solve various physical problems involving differential equations of first order
CO 2: Solve linear differential equations of higher order.
CO 3: Solve linear systems of equations using the concept of rank, Gauss elimination, Gauss Seidal method.
CO 4: Find the eigen values and eigen vectors of matrices.
CO 5: Associate the concepts of Partial Differentiation to maxima and minima of functions of several variables and to solve Partial differential equations.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	-
CO5	3	2	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT I:

Differential equations of first order and first degree:

Linear differential equations - Bernoulli differential equation - Exact differential equations-Equations reducible to exact (Type-1, Type-2, Type-3, Type-4)

Applications:

Newton's Law of cooling-Law of natural growth and decay-Orthogonal trajectories.

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UNIT II:

Linear differential equations of higher order:

Linear differential equations of higher order with constant coefficients with RHS term of the type e^{ax}, sin ax, cos ax, polynomials in x, e^{ax} V(x), xV(x)- Method of Variation of parameters, Method of undetermined coefficients.

*(MATLAB Exercise: Introduction to MAT LAB commands and Solution of Initial Value Problems using the command 'dsolve')

Applications:

Electric circuits, simple harmonic motion.

UNIT III:

Linear systems of equations:

Rank of a matrix - Echelon form-Normal form – Solution of linear systems – Gauss elimination method - Gauss Seidal method.

Applications:

Finding the current in electrical circuits.

UNIT IV:

Eigen values - Eigen vectors and Quadratic forms:

Eigen values - Eigen vectors– Properties of eigen values (without proof) – Cayley -Hamilton theorem (without proof) - Inverse and powers of a matrix by using Cayley -Hamilton theorem- Diagonalization- Quadratic forms- Reduction of quadratic form to canonical form using orthogonal transformation– Nature of the quadratic form.

*(MATLAB Exercise: All Basic Operations on matrices are to be implemented using MATLAB including computation of rank, computation of eigen values and eigen vectors)

UNIT V:

Partial differentiation and Partial differential equations

Homogeneous function-Euler's theorem-Total derivative-Chain rule-Taylor's and Maclaurin's series expansion of functions of two variables– Functional dependence-Jacobian.

Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions –solutions of first order linear (Lagrange) equation, nonlinear (standard types) equations.

Applications: Maxima and Minima of functions of two variables without constraints, and Lagrange's method (with constraints).

*(MATLAB Exercise: To Plot graphs of various single and multivariable functions using MATLAB and analyze their maxima and minima graphically).

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Text Books:

1. B.S.Grewal, Higher Engineering Mathematics, 43rd Edition, Khanna Publishers.
2. Dr.T.K.V. Iyengar, Engineering Mathematics, S. Chand publications

Reference Books:

1. Erwin Kreyszig, Advanced Engineering Mathematics, 10th Edition, Wiley-India.
2. D.G.Zill, MICHAIL R CULTER, Advanced Engineering Mathematics Third Edition Norosa Publications 2009.
3. Dean G. Duffy, Advanced engineering mathematics with MATLAB, CRC Press.
4. Peter O'neil, Advanced Engineering Mathematics, Cengage Learning.
5. Glyn James, Advanced modern engineering mathematics, Pearson education.
6. MATLAB by Rudra Pratap, Getting started with MATLAB, Oxford Publication.

Web Links:

1. https://en.wikipedia.org/wiki/Portal:Mathematics
2. http://mathworld.wolfram.com
3. https://www.khanacademy.org
4. http://nptel.ac.in/courses/122104017

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MATHEMATICS - II
(Common to ECE, CSE & IT)

I Semester	L	T	P	C
Course Code: 171BS1T02	3	1	0	3

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Apply various numerical methods to find roots of equations and interpolating polynomials.
CO 2: Apply numerical methods to initial value problems and problems involving integration.
CO 3: Find the Fourier series of a given function and study the convergence of the series.
CO 4: Find the Fourier transforms for given functions.
CO 5: Apply method of separation of variables to solve one dimensional heat equation and wave equation and two dimensional laplace equations.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	-
CO5	3	2	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT I:

Solution of Algebraic and Transcendental Equations and Interpolation:

Introduction- Bisection method – Method of false position – Iteration method – Newton - Raphson method.

Errors in polynomial interpolation – Finite differences- Forward differences-Backward differences –Central differences – Relation between operators - Differences of a polynomial-Newton's formulae for interpolation – Interpolation with unequal intervals - Lagrange's interpolation formula.

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UNIT II:

Numerical Integration and solution of Ordinary Differential equations:

Trapezoidal rule- Simpson's $1/3^{rd}$ and $3/8^{th}$ rule-Solution of ordinary differential equations by Taylor's series-Picard's method of successive approximations-Euler's method, Modified Euler's method – Runge - Kutta method (fourth order).

UNIT III:

Fourier Series:

Fourier series of periodic function - Dirichlet's conditions for Fourier expansion - Functions having points of discontinuities–Change of interval – Even and odd functions – Half-range series.

UNIT IV:

Fourier Transforms:

Fourier integral theorem (without proof) – Fourier sine and cosine integrals - sine and cosine transforms – properties – inverse transforms – Finite Fourier transforms.

UNIT V:

Applications of Partial Differential Equations:

Classification of Higher order P.D.E - Method of separation of Variables- Solution of One dimensional Wave equation, Heat equation and two-dimensional Laplace equation.

Text Books:

1. B.S.Grewal, Higher Engineering Mathematics, 43rdEdition, Khanna Publishers.
2. V. Ravindranath and P. Vijayalakshmi, Mathematical Methods, Himalaya PublishingHouse.

Reference Books:

1. Dean G. Duffy, Advanced engineering mathematics with MATLAB, CRC Press.
2. Erwin Kreyszig, Advanced Engineering Mathematics, 10thEdition, Wiley-India.
3. Dass H.K., Rajnish Verma. Er., Higher Engineering Mathematics, S. Chand Co. Pvt. Ltd,Delhi.
4. Higher engineering mathematics by John Bird, 5th edition Elsevier Limited, 2006.
5. Advance engineering mathematics by SRK Iyengar, Alpha Sciences International Publication.

Web Links:

1. https://en.wikipedia.org/wiki/Portal:Mathematics
2. http://mathworld.wolfram.com
3. https://www.khanacademy.org
4. http://nptel.ac.in/courses/122104017

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APPLIED PHYSICS
(Common to ECE, CSE & IT)

I Semester	L	T	P	C
Course Code: 171BS1T04	3	1	0	3

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Make use of the basic concepts of interference and relate to the principle of interferometer.

CO 2: Relate the basic concepts of diffraction to illustrate the principle of optical instruments like Telescope & microscope.

CO 3: Explain the basic concepts of polarization, principle of polarimeter and the method of producing high intensity light beams.

CO 4: Interpret the wave nature of microscopic particles by using quantum mechanics and explain the electrical conductivity of materials.

CO 5: Explain the behaviour of materials to classify using the band theory of solids and the basic concepts of semiconductors.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	2	1	-	-	-	-	-	-	-	-	-	-
CO3	2	1	-	-	-	-	-	-	-	-	-	-
CO4	2	1	-	-	-	-	-	-	-	-	-	-
CO5	2	2	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT-I:

Interference:

Principle of Superposition – Coherence– Interference in thin films (reflection geometry) – Newton's rings – construction and working principle of Interferometer.

UNIT-II:

Diffraction:

Fraunhofer diffraction at single slit – Cases of double slit, N-slits, & circular aperture, Grating equation – Rayleigh criterion of resolving power-Resolving power of a grating, Telescope and Microscopes

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UNIT-III:

Polarization:

Types of Polarization – Methods of production – Nicol Prism –Quarter wave plate and Half Wave plate- working principle of polarimeter (Sacharimeter).

LASERS: Characteristics– Stimulated emission – Einstein's Transition Probabilities-Pumping schemes- Ruby laser – Helium Neon laser-CO_2 Laser-Applications

UNIT-IV:

Quantum Mechanics:

Introduction –Matter waves – Schrödinger Time Independent and Time Dependent wave equations – Particle in a box.

FREE ELECTRON THEORY: Defects of classical free electron theory –Quantum Free electron theory – concept of Fermi Energy.

UNIT-V:

Band Theory of Solids:

Bloch's theorem (qualitative) – Kronig – Penney model (Qualitative) – energy bandsin crystalline solids – classification of crystalline solids– effective mass of electron & concept of hole.

Semiconductor Physics:

Conduction – Density of carriers in Intrinsic and Extrinsic semiconductors – Drift & Diffusion – relevance of Einstein's equation- Hall effect in semiconductors.

Text Books:

1. Applied Physics – by M.N.Avadhanulu and T.V.S. Arun Murthy, S. Chand & Company Ltd.,
2. Engineering Physics by D. K. Bhattacharya and Poonam Tandon, Oxford press (2015).

Reference Books:

1. Applied Physics by P. K. Palanisamy, Scitech publications (2014)
2. Concepts of Modern Physics, Arthur Beiser, Tata McGraw-Hill Education, (2003) Engineering Physics by M. Arumugam, Anuradha Publication (2014).

Web Links:

1. http://nptel.ac.in/courses/122107035/11
2. http://nptel.ac.in/courses/115102023/
3. https://phet.colorado.edu/en/simulations/category/physics
4. http://physicsgecg.blogspot.in/p/reading-materials.html
5. https://sites.google.com/site/physicsbysureshsaganti/home

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ENGLISH COMMUNICATION SKILLS LAB- I
(Common to all branches)

I Semester	L	T	P	C
Course Code: 171HS1L01	0	0	3	2

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Make use of the concepts to communicate confidently and competently in English Language in all spheres.

CO 2: Express Creative skills to construct Dialogues / Conversations in Spoken and Written forms.

CO 3: Identify Accent for intelligibility.

CO 4: Demonstrate communicative ability in everyday Conversation, JAM Sessions and Public Speaking.

CO 5: Demonstrate nuances of Language through Audio – Visual Experience and group activities.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	-	-	-	-	1	-	-	-	-	3	-	1
CO2	-	-	-	-	1	-	-	-	-	3	-	2
CO3	-	-	-	-	1	-	-	-	-	3	-	2
CO4	-	-	-	-	1	-	-	-	-	3	-	1
CO5	-	-	-	-	1	-	-	-	-	3	-	1

Mapping of Course Outcomes with Program Specific Outcomes:

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

PRACTICE 1:

A. Greeting, Introducing and taking leave

B. Pure Vowels

PRACTICE 2:

A. Giving Information and Asking for Information

B. Diphthongs

PRACTICE 3:

A. Inviting, Accepting and Declining Invitations

B. Consonants

PRACTICE 4:

A. Commands, Instructions and Requests

B. Accent and Rhythm

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PRACTICE 5:

A. Suggestions and Opinions

B. Intonation

Reference Books:

1. Strengthen your Communication Skills by Dr.M.Hari Prasad, Dr.Salivendra J.Raju and Dr.G.Suvarna Lakshmi, Maruthi Publications.
2. English for Professionals by Prof Eliah, B.S Publications, Hyderabad.
3. A Handbook of English for Professionals by Prof Eliah, B.S Publications.
4. Effective Technical Communication by M. Ashraf Rizvi, Tata Mcraw – Hill Publishing Company.
5. Word power made handy, Dr. Shalini verma, S. Chand Company.
6. Let us hear them speak, Jayashree Mohanraj, Sage texts.

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COMPUTER PROGRAMMING LAB
(Common to all branches)

I Semester L T P C
Course Code: 171ES1L01 0 0 3 2

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Implement basic programs in C.
CO 2: Use Conditional and Iterative statements to solve real time scenarios in C.
CO 3: Implement the concept of Arrays and Modularity.
CO 4: Apply the Dynamic Memory Allocation functions using pointers.
CO 5: Develop programs using structures, and Files.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	-	2	-	-	2	-	-	-	-	-	-	-
CO2	-	2	2	3	2	-	-	-	-	-	-	-
CO3	-	3	2	2	2	-	-	-	-	-	-	-
CO4	-	2	2	3	2	-	-	-	-	-	-	-
CO5	-	2	2	2	2	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	2	-
CO2	2	-
CO3	2	-
CO4	2	-
CO5	2	-

Exercise – 1:
Introduction to C Programming

1.1) Introduction about Editors –Turbo, vi, Emacs
1.2) C Program to Perform Addition, Subtraction, Multiplication and Division of two numbers from Command line
1.3) Write a C Program to Calculate area of a Triangle using Heron's formula.

Exercise – 2:
Basic Math

2.1) Write a C Program to Find Whether the Given Year is a Leap Year or not.
2.2) Write a C Program to convert Celsius to Fahrenheit and vice versa.
2.3) Write a C Program to find largest of three numbers using ternary operator.

Exercise – 3:
Control Flow - I

3.1) Write a C program to find the roots of a Quadratic Equation.
3.2) Write a C Program to make a simple Calculator to Add, Subtract, Multiply or Divide Using switch…case.
3.3) Scenario - 1 ATM PIN GENERATION:

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Aditya purchased a credit card. He has to generate a PIN number to access the ATM and Net banking for which OTP was sent to his registered mobile number. Using this OTP number he has to generate ATM PIN number. After generating PIN number, he can use it for further transactions. Maximum login he can make is 3 times.
Sample Input:
OTP: 6732
If valid
Enter PIN: 8858
Confirm your PIN: 8858
Sample output:
valid/Invalid
PIN generated successfully.
Note: OTP is hard coded.
3.4) Scenario - 2 RESET PASSWORD:
Sindhuja was using Syndicate Bank's Online Account. She wanted to pay her bills through Online. But she forget her password. Now she has to reset the password. For resetting the password, she has to select reset option from the Menu.
NOTE: using switch case.
Sample input:
1. Fast withdrawal
2. Mini Statement.
3. Balance Enquiry
4. Reset Password
Enter your choice: 4
Sample Output: Reset password: New password: ***** Confirm password: *****

Exercise –4:
Control Flow - II
4.1) Write a C Program to Find Whether the Given Number is
i) Prime Number
ii) Armstrong Number
4.2) Write a C program to print Floyd Triangle
4.3) Write a C Program to print Pascal Triangle

Exercise – 5:
Control Flow – III
5.1) Write a C program to find the sum of individual digits of a positive integer.
5.2) Write a C program to check whether given number is palindrome or not.
5.3) Write a C program to read two numbers, x and n, and then compute the sum of the geometric progression $1+x+x^2+x^3+\ldots\ldots\ldots\ldots+x^n$.
5.4) Scenario - 3 Student Attendance report Generation:
Some of the school staff had failed to maintain the attendance of the students, causing lack of essential records related to students attendance that should be submitted in a parents meet. The school management has decided to automate the process in order to maintain the attendance of every student effectively. You are asked to write a program to the above scenario and display whether the student is allowed to write the Exam or not.

percentage<65	detained
>=65 and <75	should pay condonation to appear for Exams

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>=75	allowed for Exams

Sample Input:
Enter no of students: 5
Enter Students Details:

Rno:1	Name: Kalyan	attendance(%):67	Should pay condonation to appear for Exams
Rno:2	Name: laxman	attendance(%):56	
Rno:3	Name: Yamini	attendance(%):79	
Rno:4	Name: Aryan	attendance(%):60	
Rno:5	Name: Raghav	attendance(%):88	

Sample Output:

Rno	Name	Attendance (%)	Remarks
1	Kalyan	67	should pay condonation to appear for Exams
2	Laxman	56	detained
3	Yamini	79	allowed for Exams
4	Aryan	60	detained
5	Raghav	88	allowed for Exams

Exercise 6:

Arrays

Demonstration of arrays
6.1) Linear Search.
6.2) Bubble Sort.
6.3) Operations on Matrix.
6.4) Scenario – 4 Celebrity of the Week:

Red FM has launched a program called Celebrity of the week in their channel. Listeners are given a toll free number where they can listen to list of celebrities. Listeners can choose their favourite celebrity from the list and vote for him/her. The votes are validated from Monday to Saturday. The one with highest votes is called as "Celebrity of the Week" and his/her songs are played in the program, which is aired on Sundays. Now write a program to find the celebrity of the week.

Sample Input:
1. Nagachaithanya
2. Nithin
3. Prabhas
4. Ram
5. Thamanna
6. Samantha
7. Regina
8. Sruthihasan
Enter no of listeners: 10
Enter your favourite: 3
Enter your favourite: 8

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Enter your favourite: 4
Enter your favourite: 3
Enter your favourite: 4
Enter your favourite: 2
Enter your favourite: 7
Enter your favourite: 3
Enter your favourite: 1
Enter your favourite: 5
Sample Output:
"Celebrity of the Week" is PRABHAS

Exercise – 7:
Functions

7.1) Write a C Program to demonstrate parameter passing in Functions and returning values.

7.2) Write a C Program to find Fibonacci, Factorial of a number with Recursion and without Recursion.

7.3) Scenario – 5 SELF DRIVE RENTAL

Sadiq and his friends are going to Banglore. But they don't have a vehicle in Banglore. For that they go to rental cars to take car for rent. You have find out what is total amount of car's rent. The car's rentals and rules are as follows:

i) Minimum booking is 4.
ii) There are 3 types of cars
A) SWIFT
B) SCORPIO
C) INNOVA
iii) There are 3 categories in cars rental

A) LTTE
B) CLASS
C) XL

FOR SWIFT,

- In LTTE 5 kms are free for one hour and Rs.70 per one hour, if they exceed 5kmph, then Rs.12 per km.
- In CLASS, 10 kms are free for one hour and Rs.90 per one hour, if they exceed 10kmph, then Rs.12 per km.
- In XL, 15 kms are free for one hour and Rs.110 per one hour, if they exceed 15kmph, then Rs.12 per km.

FOR SCORPIO,

- In LTTE, 5 kms are free for one hour and Rs.90 per one hour, if they exceed 5kmph, then Rs.15 per km.
- In CLASS, 10 kms are free for one hour and Rs.110 per one hour, if they exceed 10kmph, then Rs.15 per km.
- In XL, 15 kms are free for one hour and Rs.130 per one hour, if they exceed 15kmph, then Rs.15 per km.

FOR INNOVA

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- In LTTE, 5 kms are free for one hour and Rs.110 per one hour, if they exceed 5kmph, then Rs.18 per km.
- In CLASS, 10 kms are free for one hour and Rs.130 per one hour, if they exceed 10kmph, then Rs.18 per km.
- In XL, 15 kms are free for one hour and Rs.150 per one hour, if they exceed 15kmph, then Rs.18 per km.

SAMPLE INPUT:
ENTER NO.OF DAYS AND HOURS FOR CAR: 01 02 (I.E 1 DAY 2 HOURS = 26 HOURS)
1. SWIFT
2. SCORPIO
3. INNOVA
SELECT A CAR: 2
1. LTTE
2. CLASS
3. XL
SELECT RENTAL TYPE: 2
TOTAL KMS COVERED: 300

SAMPLE OUTPUT:

TOTAL HOURS:	26
CAR NAME:	SCORPIO
RENTAL TYPE:	CLASS
AMOUNT:	2860
EXCEED AMOUNT (40KM *15):	600
GRAND TOTAL:	3460

Exercise – 8:
Strings
8.1) Implementation of string manipulation operations with library function.
i) copy
ii) concatenate
iii) length
iv) compare
8.2) Implementation of string manipulation operations without library function.
i) copy
ii) concatenate
iii) length
iv) compare
8.3) Verify whether the given string is a palindrome or not
8.4) Scenario – 6 Word with Obesity:
Jeeth is a fun loving and active boy. He likes to play with words and numbers. One day Jeeth and his friends attended a seminar, which was conducted in his school. The Seminar was about "Causes of obesity in children and its effects". Jeeth and his friend Ram are not interested in listening to the seminar, so he thought of giving a puzzle to Ram. Jeeth gave some words to Ram and wanted him to find the word with Obesity. Ram was confused and

asking your help. Write a program to find the weights of the words and display the word with highest weight (word with obesity).

Sample Input:
Enter no of words: 3
Enter 3 words: apple banana carrot

Sample Output:
Word with Obesity is carrot

Exercise – 9:
Arrays and Pointers
9.1) Write a C Program to Access Elements of an Array Using Pointer
9.2) Write a C Program to find the sum of numbers with arrays and pointers.

Exercise – 10:
Dynamic Memory Allocations

10.1) Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using malloc () function.
10.2)Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using calloc () function. Understand the difference between the above two programs

Exercises – 11:
Structures
11.1) Write a C Program to Store Information of a book Using Structure
11.2) Write a C Program to Store Information Using Structures with Dynamically Memory Allocation
11.3) Write a C Program to Add Two Complex Numbers by Passing Structure to a Function
11.4) Scenario – 7 Library Management
Shilpa student of PGEC got the Library Card. She wants to lend the books from the Library. The college gave two cards to each and every student. The students can lend only two books at a time and it has to be returned back after 15 days. If the books are not returned late fee will be collected for no. of days the books were returned after the due date. Late fee per day is Rs.50/-
Sample Input.
Enter the name of student, Roll No. Branch, Section, Year, DOL, DOR,
Sample output
No. of days returned after the due date = 5
Late fee per day = Rs. 50
Fine paid by the student is 5 * 50 =250.

Exercise -12:
Files
12.1) Write a C program to open a file and to print the contents of the file on screen.
12.2) Write a C program to copy content of one file to another file.
12.3) Write a C program to merge two files and store content in another file.
12.4) Scenario – 8 Student Information System Using Files:

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Lakshya International school was recently established and having large no of admissions. The school management wanted the Student information to be computerized and wanted to maintain in a simple and in effective manner. You are asked to develop Student Information System using Files to perform the following tasks

1. Add New Student
2. Update Existing Student
3. Delete Existing Student
4. Retrieve A Particular/All Students

Sample Input:

Choose the task you want to perform:
1. Add
2. Update
3. Delete
4. Retrieve

Your choice: 1
Enter student details:
Name: Akhil
Age: 5
Class: 1

Sample Output:

Student details added

Reference Books:

1. Let Us C by Yashwanth Kanetkar.
2. Programming in C A-Practial Approach by Ajay Mittal.
3. The C programming Language, Dennis Richie and Brian Kernighan, Pearson Education.

Web Links:

1. https://www.hackerrank.com/
2. https://www.codechef.com/
3. https://www.topcoder.com/
4. https://code-cracker.github.io/

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MATHEMATICS-III
(Common to all branches)

II Semester	L	T	P	C
Course Code: 171BS2T06	3	1	2	3

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Compute Laplace transform of various functions.
CO 2: Apply Laplace transform to solve initial value problems.
CO 3: Discuss about beta and gamma function, double integral over a region and triple integral over a volume.
CO 4: Find the gradient of a scalar function, divergence and curl of a vector function.
CO 5: Apply line, surface and volume integrals to find work done by a force, flux.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	-
CO5	3	2	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT - I:

Laplace transforms:

Laplace transforms of standard functions-First Shifting theorem, Change of scale, Multiplication with t, Division by t - Transforms of derivatives and integrals – Unit step function –Dirac's delta function, Periodic functions.

UNIT- II:

Inverse Laplace transforms:

Inverse Laplace transforms – Convolution theorem (without proof), Second shifting theorem. *(MATLAB Exercise: Computing Laplace transform off(t) using symbolic toolbox, Solving initial value problems using 'dsolve')

Applications:

Evaluating improper integrals, solving initial value problems using Laplace transforms.

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UNIT - III:

Multiple integrals and Beta, Gamma functions:

Multiple integrals: Double and triple integrals – Change of variables – Change of order of integration, Beta and Gamma functions- Properties - Relation between Beta and Gamma functions-

Applications:

Finding Areas and Volumes.

UNIT - IV:

Vector Differentiation:

Gradient - Directional Derivatives - Divergence- Curl - Laplacian operator - Vector identities.

Applications:

Equation of continuity, potential surfaces

UNIT - V:

Vector Integration:

Line integral – Work done - Surface and volume integrals, Green's Theorem, Stokes Theorem and Gauss Divergence theorem (without proof) and related problems.

Text Books:

1. B.S.Grewal, Higher Engineering Mathematics, 43rdEdition, Khanna Publishers.
2. Dr. T K V Iyengar, Engineering Mathematics, S. Chand Publications.

Reference Books:

1. George B. Thomas, D, Weir and J. Hass. Thomas Calculus, 12th edition, 2010 Pearson Education
2. Greenberg, Advanced Engineering Mathematics, 2ndedition, Pearson Education.
3. Erwin Kreyszig, Advanced Engineering Mathematics, 10thEdition, Wiley-India.
4. W. Jordan and T. Smith, Mathematical Techniques, Oxford University Press.

Web Links:

1. https://en.wikipedia.org/wiki/Portal:Mathematics
2. http://mathworld.wolfram.com
3. https://www.khanacademy.org
4. http://nptel.ac.in/courses/122104017

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ENVIRONMENTAL STUDIES
(Common to ECE, CSE &IT)

I Semester	L	T	P	C
Course Code: 171HS2T02	2	1	0	2

Course Outcomes:
At the end of the Course, Student will be able to:

CO 1: Identify the need for protecting the producers and consumers in various ecosystems and their role in the food web.

CO 2: Outline the natural resources and their importance for the sustenance of the life.

CO 3: List out the biodiversity of India, threats and its conservation methods.

CO 4: Explain the different types of pollutions and their control technologies, Waste water treatment, Bio medical waste management etc.

CO 5: Explain EIA- Environmental Impact Assessment, Sustainable developmental activities, environmental policies and regulations.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	-	-	-	-	-	1	3	-	-	-	-	-
CO2	-	-	-	-	-	2	3	-	-	-	-	-
CO3	-	-	-	-	-	1	3	-	-	-	-	-
CO4	-	-	2	-	-	2	3	-	-	-	-	-
CO5	-	-	2	-	-	2	3	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT –I:
Ecosystems:
Scope of environmental studies, Structure- Producers, consumers and decomposers.
Function – Food chain, Food web, Tropic structure and Energy flow in the ecosystem.
Ecological pyramids, nutrient recycling, primary and secondary production, ecosystem regulation. Ecological succession Terrestrial ecosystem and aquatic ecosystem - Introduction, types, characteristic features.

UNIT – II:
Natural Resources:
Natural resources and associated problems Forest resources – Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people.
Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems.

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Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources.
Food resources: World food problems, changes caused by non-agriculture activities-effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity
Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources vs oil and natural gas extraction.
Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

UNIT – III:
Biodiversity and its conservation:
Definition: genetic, species and ecosystem diversity classification Value of biodiversity: consumptive use, productive use, social-Biodiversity at national and local levels. India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts - Endangered and endemic species of India – Conservation of biodiversity.

UNIT – IV:
Environmental Pollution:
Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies, Sustainable Life Style.
Solid Waste Management: Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.

UNIT – V:
Social Issues and the Environment
Urban problems related to energy -Water conservation, rain water harvesting-Resettlement and rehabilitation of people; its problems and concerns. Global challenges
Environmental ethics: Issues and possible solutions. Environmental Protection Act -Air (Prevention and Control of Pollution) Act. –Water (Prevention and control of Pollution) Act - Wildlife Protection Act - Forest Conservation Act-Issues involved in enforcement of environmental legislation. - Public awareness and Environmental management.

Text Books:

1. Environmental Studies, K.V. S. G. Murali Krishna, VGS Publishers, Vijayawada
2. Environmental Studies, R. Rajagopalan, 2nd Edition, 2011, Oxford University Press.
3. Environmental Studies, P.N. Palanisamy, P. Manikandan, A. Geetha, and K. Manjula Rani; Pearson Education, Chennai

Reference Books:

1. Text Book of Environmental Studies, Deeshita Dave & P. Udaya Bhaskar, Cengage Learning.
2. A Textbook of Environmental Studies, Shaashi Chawla, TMH, New Delhi.
3. Environmental Studies, Benny Joseph, Tata McGraw Hill Co, New Delhi.
4. "Perspectives in Environment Studies" Anubha Kaushik, C P Kaushik, New Age International Publishers, 2014.

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Web Links:

1. https://www.youtube.com/watch?v=7G3eXI_DPn8
2. www.nptel.ac.in/courses/122102006/
3. www.nptel.ac.in/courses/120108002/
4. https://www.youtube.com/watch?v=4AuwG2G_ERU
5. www.nptelvideos.in/2012/12/fundamentals-of-environmental-pollution.html
6. www.nptel.ac.in/courses/120108004/

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APPLIED CHEMISTRY
(Common to ECE, CSE & IT)

II Semester	**L**	**T**	**P**	**C**
Course Code: 171BS2T05	**3**	**1**	**0**	**3**

Course Outcomes

At the end of the Course, Student will be able to:

CO 1: Explain polymeric materials their uses and moulding techniques of plastics.

CO 2: Analyse fuel characteristics using Calorific value, knocking characteristics and flue gas analysis.

CO 3: Explain the working principle of Electro chemical cells and corrosion characteristics.

CO 4: Explain the properties and applications of Nano, Superconductors, Semiconductors, Liquid crystals and fuel cells.

CO 5: Summarize non-conventional energy sources and their applications.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	2	-	-	-	-	-	-	-	-	-	-	-
CO2	2	-	-	-	-	-	-	-	-	-	-	-
CO3	3	-	-	-	-	-	-	-	-	-	-	-
CO4	3	-	-	-	-	-	-	-	-	-	-	-
CO5	2	-	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes:

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT - I:

High Polymers and Plastics:

Polymerisation: Introduction- Mechanism of polymerization - Stereo regular polymers - Physical and mechanical properties – Plastics as engineering materials: advantages and limitations – Thermoplastics and Thermosetting plastics – Compounding and fabrication (compression moulding, injection moulding, extrusion moulding and transfer moulding techniques)- Preparation, properties and applications of polyethene, PVC, Bakelite and polycarbonates. Elastomers – Natural rubber- compounding and vulcanization – Synthetic rubbers: Buna S, Buna N, Thiokol – Applications of elastomers. Biodegradable polymers.

UNIT - II:

Fuel Technology:

Fuels:- Introduction – Classification – Calorific value - HCV and LCV – Dulong's formula – Coal — Proximate and ultimate analysis – Significance of the analyses – Liquid fuels – Petroleum- Refining – Cracking – Synthetic petrol –Petrol knocking – Diesel knocking - Octane and Cetane ratings – Anti-knock agents – Power alcohol – Bio-diesel – Gaseous fuels

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– Natural gas. LPG and CNG – Combustion – Calculation of air for the combustion of a fuel – Flue gas analysis – Orsat apparatus.

UNIT - III:

Electrochemical Cells And Corrosion:

Galvanic cells - Reversible and irreversible cells – Single electrode potential- Electro chemical series and uses of this series- Standard electrodes (Hydrogen and Calomel electrodes) - Concentration Cells – Batteries: Dry Cell - Li cells - Zinc – air cells.

Corrosion:- Definition – Theories of Corrosion (electrochemical) – Formation of galvanic cells by different metals, by concentration cells, by differential aeration and waterline corrosion – Passivity of metals – Pitting corrosion - Galvanic series – Factors which influence the rate of corrosion - Protection from corrosion – Cathodic protection - Protective coatings: – Metallic (cathodic and anodic) coatings - Methods of application on metals (Galvanizing, Tinning, Electroplating, Electroless plating).

UNIT - IV:

Chemistry of Advanced Materials:

Nano materials:-Introduction – Sol-gel method - Carbon nano tubes and fullerenes: Types, preparation, properties and applications.

Super conductors:-Type –I, Type II – Characteristics and applications

Semi conductors:- Preparation of semiconductors, working of diods and transistors.

Green synthesis:-Principles

Liquid crystals:-Introduction – Types – Applications

Fuel cells:- Introduction - cell representation, H_2-O_2fuel cell: Design and working, advantages and Limitations. Types of fuel cells: methanol-oxygen fuel cells.

UNIT - V:

Non Conventional Energy Sources :

Solar Energy: - Introduction, application of solar energy, conversion of solar energy (Thermal conversion & photo conversion) – photovoltaic cell: design, working and its importance Non-conventional energy sources:

(i) Hydropower include setup a hydropower plant (schematic diagram).
(ii) Geothermal energy: Introduction-schematic diagram of a geothermal power plant.
(iii) Tidal and wave power: Introduction- Design and working-movement of tides and their effect on sea level.
(iv) Ocean thermal energy: Introduction, closed-cycle, ocean thermal energy conversion (OTEC), open cycle OTEC, hybrid OTEC, schematic diagram and explanation.
(v) Biomass and biofuels.

Text Books:

1. Engineering Chemistry by Jain and Jain; Dhanpat Rai Publicating Co.
2. A Text books of Applied Chemistry by Dr. Bharathi kumari Yalamananchili, VGS publications.
3. Engineering Chemistry by Shikha Agarwal; Cambridge University Press, 2015 edition.

Reference Books:

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1. Engineering Chemistry by PrasanthRath, Cengage Learning, 2015 edition.
2. A text book of engineering Chemistry by S. S. Dara; S. Chand & Co Ltd., Latest Edition
3. Applied Chemistry by H.D. Gesser, Springer Publishers
4. Text book of Nano-science and nanotechnology by B.S. Murthy, P. Shankar and others, University Press, IIM

Web Links:

1. http://www.nptelvideos.in/2012/11/chemistry-of-materials
2. http://www.nptelvideos.com/lecture.php?id=2946
3. http://www.nptelvideos.com/lecture.php?id=2922
4. http://www.nptelvideos.com/lecture.php?id=2954

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II Year – II Semester

L	T	P	C
4	0	0	3

SOFTWARE ENGINEERING

OBJECTIVES

- To understand the software life cycle models.
- To understand the software requirements and SRS document.
- To understand the importance of modeling and modeling languages.
- To design and develop correct and robust software products.
- To understand the quality control and how to ensure good quality software.
- To understand the planning and estimation of software projects.
- To understand the implementation issues, validation and verification procedures.
- To understand the maintenance of software

UNIT-I:

Software and Software Engineering: The Nature of Software, The Unique Nature of WebApps, Software Engineering, Software Process, Software Engineering Practice, Software Myths.

Process Models: A Generic Process Model, Process Assessment and Improvement, Prescriptive Process Models, Specialized Process Models, The Unified Process, Personal and Team Process Models, Process Terminology, Product and Process.

UNIT-II:

Requirements Analysis And Specification: Requirements Gathering and Analysis, Software Requirement Specification (SRS), Formal System Specification.

Software Design: Overview of the Design Process, How to Characterise of a Design?, Cohesion and Coupling, Layered Arrangement of Modules, Approaches to Software Design

UNIT – III:

Function-Oriented Software Design: Overview of SA/SD Methodology, Structured Analysis, Developing the DFD Model of a System, Structured Design, Detailed Design, Design Review, over view of Object Oriented design.

User Interface Design: Characteristics of Good User Interface, Basic Concepts, Types of User Interfaces, Fundamentals of Component-based GUI Development, A User Interface Design Methodology.

UNIT – IV:

Coding And Testing: Coding, Code Review, Software Documentation, Testing, Unit Testing, Black-Box Testing, White-Box Testing, Debugging, Program Analysis Tool, Integration Testing, Testing Object-Oriented Programs, System Testing, Some General Issues Associated with Testing

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UNIT – V:

Software Reliability And Quality Management: Software Reliability, Statistical Testing, Software Quality, Software Quality Management System, ISO 9000, SEI Capability Maturity Model.

Computer Aided Software Engineering: Case and its Scope, Case Environment, Case Support in Software Life Cycle, Other Characteristics of Case Tools, Towards Second Generation CASE Tool, Architecture of a Case Environment

UNIT – VI

Software Maintenance: Software maintenance, Maintenance Process Models, Maintenance Cost, Software Configuration Management.

Software Reuse: what can be reused? Why almost No Reuse So Far? Basic Issues in Reuse Approach, Reuse at Organization Level.

OUTCOMES

- Define and develop a software project from requirement gathering to implementation.
- Obtain knowledge about principles and practices of software engineering.
- Focus on the fundamentals of modeling a software project.
- Obtain knowledge about estimation and maintenance of software systems

TEXT BOOKS:

1. Software engineering A practitioner's Approach, Roger S. Pressman, Seventh Edition McGrawHill International Edition.
2. Fundamentals of Software Engineering, Rajib Mall, Third Edition, PHI.
3. Software Engineering, Ian Sommerville, Ninth edition, Pearson education

REFERENCE BOOKS:

1. Software Engineering : A Primer, Waman S Jawadekar, Tata McGraw-Hill, 2008
2. Software Engineering, A Precise Approach, Pankaj Jalote, Wiley India, 2010.
3. Software Engineering, Principles and Practices, Deepak Jain, Oxford University Press.
4. Software Engineering1: Abstraction and modeling, Diner Bjorner, Springer International edition, 2006.

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II Year - II Semester

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4	0	0	3

COMPUTER ORGANIZATION

OBJECTIVES:

- Understand the architecture of a modern computer with its various processing units. Also the Performance measurement of the computer system.
- In addition to this the memory management system of computer.

UNIT -I:

Basic Structure Of Computers: Functional unit, Basic Operational concepts, Bus structures, System Software, Performance, The history of computer development.

UNIT -II:

Machine Instruction and Programs:

Instruction and Instruction Sequencing: Register Transfer Notation, Assembly Language Notation, Basic Instruction Types,

Addressing Modes, Basic Input/output Operations, The role of Stacks and Queues in computer programming equation. Component of Instructions: Logic Instructions, shift and Rotate Instructions

UNIT -III:

Type of Instructions: Arithmetic and Logic Instructions, Branch Instructions, Addressing Modes, Input/output Operations

UNIT -IV:

INPUT/OUTPUT ORGANIZATION: Accessing I/O Devices, Interrupts: Interrupt Hardware, Enabling and Disabling Interrupts, Handling Multiple Devices, Direct Memory Access,

Buses: Synchronous Bus, Asynchronous Bus, Interface Circuits, Standard I/O Interface: Peripheral Component Interconnect (PCI) Bus, Universal Serial Bus (USB)

UNIT -V:

The MEMORY SYSTEMS: Basic memory circuits, Memory System Consideration, Read-Only Memory: ROM, PROM, EPROM, EEPROM, Flash Memory,

Cache Memories: Mapping Functions, INTERLEAVING

Secondary Storage: Magnetic Hard Disks, Optical Disks,

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UNIT -VI:

Processing Unit: Fundamental Concepts: Register Transfers, Performing An Arithmetic Or Logic Operation, Fetching A Word From Memory,
Execution of Complete Instruction, Hardwired Control,

Micro programmed Control: Microinstructions, Micro program Sequencing, Wide Branch Addressing Microinstructions with next –Address Field

OUTCOMES:

- Students can understand the architecture of modern computer.
- They can analyze the Performance of a computer using performance equation
- Understanding of different instruction types.
- Students can calculate the effective address of an operand by addressing modes
- They can understand how computer stores positive and negative numbers.
- Understanding of how a computer performs arithmetic operation of positive and negative numbers.

TEXT BOOKS:

1. Computer Organization, Carl Hamacher, Zvonks Vranesic, Safea Zaky, 5th Edition, McGraw Hill.
2. Computer Architecture and Organization, John P. Hayes, 3rd Edition, McGraw Hill.

REFERENCE BOOKS:

1. Computer Organization and Architecture – William Stallings Sixth Edition, Pearson/PHI
2. Structured Computer Organization – Andrew S. Tanenbaum, 4th Edition PHI/Pearson
3. Fundamentals or Computer Organization and Design, - Sivaraama Dandamudi Springer Int. Edition.
4. "Computer Organization and Design: The Hardware/Software Interface" by David A. Patterson and John L. Hennessy.
5. J .P. Hayes, "Computer Architecture and Organization", McGraw-Hill, 1998.

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II Year – II Semester

L	T	P	C
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ADVANCED DATA STRUCTURES LAB

OBJECTIVES:

- To understand heap and various tree structures like AVL, Red-black, B and Segment trees
- To understand the problems such as line segment intersection, convex shell and Voronoi diagram

Programming:

1. To perform various operations i.e., insertions and deletions on AVL trees.
2. To implement operations on binary heap.
   i) Vertex insertion
   ii) Vertex deletion
   iii) Finding vertex
   iv) Edge addition and deletion
3. To implement Prim's algorithm to generate a min-cost spanning tree.
4. To implement Krushkal's algorithm to generate a min-cost spanning tree.
5. To implement Dijkstra's algorithm to find shortest path in the graph.
6. To implementation of Static Hashing (Use Linear probing for collision resolution)
7. To implement of Huffmann coding.
8. To implement of B-tree.

OUTCOMES:

- Implement heap and various tree structure like AVL, Red-black, B and Segment trees
- Solve the problems such as line segment intersection, convex shell and Voronoi diagram

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Date: 08-06-2017

Department of Computer Science and Engineering

Syllabus revision Index 2017-2018

S.No	Name of the course	Percentage of syllabus change
1	Mathematics – I	25%
2	Mathematics – II	20%
3	Applied Physics	20%
4	English Communication Skills Lab – I	80%
5	Computer Programming Lab	40%
6	Mathematics – III	20%
7	Environmental Studies	20%
8	Applied Chemistry	20%
9	Software Engineering	60%
10	Computer Organization	50%
11	Advanced Data Structures Lab	70%

Program Coordinator

Head of the Department

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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Mathematics-I	Mathematics-I
Course Code	R161102	171BS1T01
Syllabus	UNIT I: Differential equations of first order and first degree: Linear-Bernoulli-Exact-Reducible to exact. Applications: Newton's Law of cooling-Law of natural growth and decay-Orthogonal trajectories- Electrical circuits- Chemical reactions.	UNIT I: Differential equations of first order and first degree: Linear differential equations - Bernoulli differential equation - Exact differential equationsEquations reducible to exact (Type-1, Type-2, Type-3, Type-4) Applications: Newton's Law of cooling-Law of natural growth and decay-Orthogonal trajectories.
	UNIT II: Linear differential equations of higher order: Non-homogeneous equations of higher order with constant coefficients with RHS term of the type eax, sin ax, cos ax, polynomials in x, eax V(x), xV(x)- Method of Variation of parameters. Applications: LCR circuit, Simple Harmonic motion.	UNIT II: Linear differential equations of higher order: Linear differential equations of higher order with constant coefficients with RHS term of the type eax, sin ax, cos ax, polynomials in x, eax V(x), xV(x)- Method of Variation of parameters, Method of undetermined coefficients. *(MATLAB Exercise: Introduction to MAT LAB commands and Solution of Initial Value Problems using the command 'dsolve') Applications: Electric circuits, simple harmonic motion.
	UNIT III: Laplace transforms: Laplace transforms of standard functions-Shifting theorems - Transforms of derivatives and integrals – Unit step function –Dirac's delta function- Inverse Laplace transforms– Convolution theorem (with out proof). Applications: Solving ordinary differential equations (initial value problems) using Laplace transforms.	UNIT III: Linear systems of equations: Rank of a matrix - Echelon form-Normal form – Solution of linear systems – Gauss elimination method - Gauss Seidal method. Applications: Finding the current in electrical circuits.
	UNIT IV: Partial differentiation: Introduction- Homogeneous function-Euler's theorem-Total derivative-Chain ruleGeneralized Mean value theorem for	UNIT IV: Eigen values - Eigen vectors and Quadratic forms: Eigen values - Eigen vectors– Properties of eigen values (without proof) – Cayley -Hamilton

	single variable (without proof)-Taylor's and Mc Laurent's series expansion of functions of two variables– Functional dependence- Jacobian. Applications: Maxima and Minima of functions of two variables without constraints and Lagrange's method (with constraints).	theorem (without proof) - Inverse and powers of a matrix by using Cayley - Hamilton theorem- Diagonalization- Quadratic forms- Reduction of quadratic form to canonical form using orthogonal transformation– Nature of the quadratic form. *(MATLAB Exercise: All Basic Operations on matrices are to be implemented using MATLAB including computation of rank, computation of eigen values and eigen vectors)
	UNIT V: First order Partial differential equations: Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions –solutions of first order linear (Lagrange) equation and nonlinear (standard types) equations.	UNIT V: Partial differentiation and Partial differential equations: Homogeneous function-Euler's theorem-Total derivative-Chain rule-Taylor's and Maclaurin's series expansion of functions of two variables– Functional dependence Jacobian. Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions –solutions of first order linear (Lagrange) equation, nonlinear (standard types) equations. Applications: Maxima and Minima of functions of two variables without constraints and Lagrange's method (with constraints). *(MATLAB Exercise: To Plot graphs of various single and multivariable functions using MATLAB and analyze their maxima and minima graphically).
	UNIT VI: Higher order Partial differential equations: Solutions of Linear Partial differential equations with constant coefficients. RHS term of the type e^(ax+by) , sin(ax+by), cos(ax+by), x^m y^n Classification of second order partial differential equation	

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Mathematics-II	Mathematics-II (except for ECE)
Course Code	R161202	171BS2T02
Syllabus	UNIT I: Solution of Algebraic and Transcendental Equations: Introduction- Bisection method – Method of false position – Iteration method – Newton Raphson method (One variable and simultaneous Equations).	UNIT I: Solution of Algebraic and Transcendental Equations and Interpolation: Introduction- Bisection method – Method of false position – Iteration method – Newton - Raphson method. Errors in polynomial interpolation – Finite differences- Forward differences- Backward differences –Central differences – Relation between operators - Differences of a polynomial-Newton's formulae for interpolation – Interpolation with unequal intervals - Lagrange's interpolation formula.
	UNIT II: Interpolation: Introduction- Errors in polynomial interpolation – Finite differences- Forward differences, Backward differences –Central differences – Symbolic relations and separation of symbols - Differences of a polynomial-Newton's formulae for interpolation – Interpolation with unequal intervals - Lagrange's interpolation formula.	UNIT II: Numerical Integration and solution of Ordinary Differential equations: Trapezoidal rule- Simpson's 1/3rd and 3/8th rule-Solution of ordinary differential equations by Taylor's series-Picard's method of successive approximations- Euler's method, Modified Euler's method – Runge - Kutta method (fourth order).
	UNIT III: Numerical Integration and solution of Ordinary Differential equations: Trapezoidal rule- Simpson's 1/3rd and 3/8th rule-Solution of ordinary differential equations by Taylor's series-Picard's method of successive approximations-Euler's method - RungeKutta method (second and fourth order).	UNIT III: Fourier Series: Fourier series of periodic function - Dirichlet's conditions for Fourier expansion - Functions having points of discontinuities–Change of interval – Even and odd functions – Half-range series.
	UNIT IV: Fourier Series: Introduction- Periodic functions – Fourier series of -	UNIT IV: Fourier Transforms: Fourier integral theorem (without proof) – Fourier

	periodic function - Dirichlet's conditions – Even and odd functions –Change of interval– Half-range sine and cosine series.	sine and cosine integrals - sine and cosine transforms – properties – inverse transforms – Finite Fourier transforms.
	UNIT V: Applications of PDE: Method of separation of Variables- Solution of One dimensional Wave, Heat and two dimensional Laplace equation.	UNIT V: Applications of Partial Differential Equations: Classification of Higher order P.D.E - Method of separation of Variables- Solution of One dimensional Wave equation, Heat equation and two-dimensional Laplace equation.
	UNIT VI: Fourier Transforms: Fourier integral theorem (without proof) – Fourier sine and cosine integrals - sine and cosine transforms – properties – inverse transforms – Finite Fourier transforms.	

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Applied Physics	Applied Physics
Course Code	R161207	171BS1T04/171BS2T04
Syllabus	UNIT-I INTERFERENCE: Principle of Superposition – Coherent Sources – Interference in thin films (reflection geometry) – Newton's rings – construction and basic principle of Interferometers.	UNIT-I: Interference: Principle of Superposition – Coherence– Interference in thin films (reflection geometry) – Newton's rings – construction and working principle of Interferometer.
	UNIT-II DIFFRACTION: Fraunhofer diffraction at single slit - Cases of double slit, N-slits & Circular Aperture (Qualitative treatment only)-Grating equation - Resolving power of a grating, Telescope and Microscopes.	UNIT-II: Diffraction: Fraunhofer diffraction at single slit – Cases of double slit, N-slits, & circular aperture, grating equation – Rayleigh criterion of resolving power-Resolving power of a grating, Telescope and Microscopes
	UNIT-III POLARIZATION: Types of Polarization – Methods of production - Nicol Prism -Quarter wave plate and Half Wave plate – Working principle of Polarimeter (Sacharimeter). LASERS: Characteristics– Stimulated emission – Einstein's Transition Probabilities Pumping schemes - Ruby laser – Helium Neon laser.	UNIT-III: Polarization: Types of Polarization – Methods of production – Nicol Prism – Quarter wave plate and Half Wave plate-working principle of polarimeter (Sacharimeter). LASERS: Characteristics– Stimulated emission – Einstein's Transition ProbabilitiesPumping schemes- Ruby laser – Helium Neon laser-CO2 Laser-Applications
	UNIT-IV ELECTROMAGNETIC FIELDS: Scalar and Vector Fields – Electric Potential- Gradient, Divergence of fields – Gauss and Stokes theorems-Propagation of EM waves through dielectric medium.	UNIT-IV: Quantum Mechanics: Introduction –Matter waves – Schrödinger Time Independent and Time Dependent wave equations – Particle in a box. FREE ELECTRON THEORY: Defects of classical free electron theory –Quantum Free electron theory – concept of Fermi Energy..
	UNIT-V QUANTUM MECHANICS: Introduction - Matter waves – Schröedinger Time Independent and Time Dependent wave equations – Particle in a box. FREE ELECTRON	UNIT-V: Band Theory of Solids: Bloch's theorem (qualitative) – Kronig – Penney model (Qualitative) – energy bands in crystalline solids – classification of crystalline solids– effective mass of

	THEORY: Defects of Classical free electron theory –Quantum Free electron theory - concept of Fermi Energy.	electron & concept of hole. Semiconductor Physics: Conduction – Density of carriers in Intrinsic and Extrinsic semiconductors – Drift & Diffusion – relevance of Einstein's equation- Hall effect in semiconductors.–
	UNIT-VI BAND THEORY OF SOLIDS: Bloch's theorem (qualitative) – Kronig – Penney model – energy bands in crystalline solids – classification of crystalline solids– effective mass of electron & concept of hole. SEMICONDUCTOR PHYSICS: Conduction – Density of carriers in Intrinsic and Extrinsic semiconductors – Drift & Diffusion – relevance of Einstein's equation- Hall effect in semiconductors	

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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	English Communication Skills Lab -I	English Communication Skills Lab -I
Course Code	R161114	171HS1L01
Syllabus	UNIT 1: 1. WHY study Spoken English? 2. Making Inqueries on the phone, thanking and responding to Thanks Practice work.	PRACTICE 1: A. Greeting, Introducing and taking leave B. Pure Vowels
	UNIT 2: 1. Responding to Requests and asking for Directions Practice work.	PRACTICE 2: A. Giving Information and Asking for Information B. Diphthongs
	UNIT 3: 1. Asking for Clarifications, Inviting, Expressing Sympathy, Congratulating 2. Apologising, Advising, Suggesting, Agreeing and Disagreeing Practice work.	PRACTICE 3: A. Inviting, Accepting and Declining Invitations B. Consonants
	UNIT 4: 1. Letters and Sounds Practice work.	PRACTICE 4: A. Commands, Instructions and Requests B. Accent and Rhythm
	UNIT 5: 1. The Sounds of English Practice work.	PRACTICE 5: A. Suggestions and Opinions B. Intonation
	UNIT 6: 1. Pronunciation 2. Stress and Intonation Practice work	

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Department of Computer Science and Engineering

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Computer Programming Lab	Computer Programming Lab
Course Code	R161119	171ES1L01
Syllabus	**Exercise - 1** Basics a) What is an OS Command, Familiarization of Editors - vi, Emacs b) Using commands like mkdir, ls, cp, mv, cat, pwd, and man c) C Program to Perform Adding, Subtraction, Multiplication and Division of two numbers From Command line	**Exercise - 1** Introduction to C Programming 1.1) Introduction about Editors –Turbo, vi, Emacs 1.2) C Program to Perform Addition, Subtraction, Multiplication and Division of two numbers from Command line 1.3) Write a C Program to Calculate area of a Triangle using Heron's formula.
	Exercise - 2 Basic Math a) Write a C Program to Simulate 3 Laws at Motion b) Write a C Program to convert Celsius to Fahrenheit and vice versa	**Exercise – 2:** Basic Math 2.1) Write a C Program to Find Whether the Given Year is a Leap Year or not. 2.2) Write a C Program to convert Celsius to Fahrenheit and vice versa. 2.3) Write a C Program to find largest of three numbers using ternary operator.
	Exercise - 3 Control Flow - I a) Write a C Program to Find Whether the Given Year is a Leap Year or not. b) Write a C Program to Add Digits & Multiplication of a number	**Exercise – 3:** Control Flow - I 3.1) Write a C program to find the roots of a Quadratic Equation. 3.2) Write a C Program to make a simple Calculator to Add, Subtract, Multiply or Divide Using switch…case. 3.3) Scenario - 1 ATM PIN GENERATION: Aditya purchased a credit card. He has to generate a PIN number to access the ATM and Net banking for which OTP was sent to his registered mobile number. Using this OTP number he has

		to generate ATM PIN number. After generating PIN number, he can use it for further transactions. Maximum login he can make is 3 times. Sample Input: OTP: 6732 If valid Enter PIN: 8858 Confirm your PIN: 8858 Sample output: valid/Invalid PIN generated successfully. Note: OTP is hard coded. 3.4) Scenario - 2 RESET PASSWORD: Sindhuja was using Syndicate Bank's Online Account. She wanted to pay her bills through Online. But she forget her password. Now she has to reset the password. For resetting the password, she has to select reset option from the Menu. NOTE: using switch case. Sample input: 1. Fast withdrawal 2. Mini Statement. 3. Balance Enquiry 4. Reset Password Enter your choice: 4 Sample Output: Reset password: New password: ***** Confirm password: *****
	Exercise – 4 Control Flow - II a) Write a C Program to Find Whether the Given Number is i) Prime Number ii) Armstrong Number b) Write a C program to print Floyd Triangle c) Write a C Program to print Pascal Triangle	**Exercise –4:** Control Flow - II 4.1) Write a C Program to Find Whether the Given Number is i) Prime Number ii) Armstrong Number 4.2) Write a C program to print Floyd Triangle 4.3) Write a C Program to print Pascal Triangle
	Exercise – 5 Functions a) Write a C Program demonstrating of parameter passing in Functions and	**Exercise – 5:** Control Flow – III 5.1) Write a C program to find the sum

	returning values. b) Write a C Program illustrating Fibonacci, Factorial with Recursion without Recursion.	of individual digits of a positive integer. 5.2) Write a C program to check whether given number is palindrome or not. 5.3) Write a C program to read two numbers, x and n, and then compute the sum of the geometric progression 1+x+x2 +x3 +.....+xn. 5.4) Scenario - 3 Student Attendance report Generation: Some of the school staff had failed to maintain the attendance of the students, causing lack of essential records related to students attendance that should be submitted in a parents meet. The school management has decided to automate the process in order to maintain the attendance of every student effectively. You are asked to write a program to the above scenario and display whether the student is allowed to write the Exam or not.
	Exercise – 6 Control Flow - III a) Write a C Program to make a simple Calculator to Add, Subtract, Multiply or Divide Using switch...case b) Write a C Program to convert decimal to binary and hex (using switch call function the function)	**Exercise 6:** Arrays Demonstration of arrays 6.1) Linear Search. 6.2) Bubble Sort. 6.3) Operations on Matrix. 6.4) Scenario – 4 Celebrity of the Week: Red FM has launched a program called Celebrity of the week in their channel. Listeners are given a toll free number where they can listen to list of celebrities. Listeners can choose their favourite celebrity from the list and vote for him/her. The votes are validated from Monday to Saturday. The one with highest votes is called as "Celebrity of the Week" and his/her songs are played in the program, which is aired on Sundays. Now write a program to find the celebrity of the week.
	Exercise – 7 Functions - Continued Write a C Program to compute the values ofsin x and cos x and e^x values using Series	**Exercise – 7:** Functions 7.1) Write a C Program to demonstrate parameter passing in Functions and

	expansion. (use factorial function)	returning values. 7.2) Write a C Program to find Fibonacci, Factorial of a number with Recursion and without Recursion. 7.3) Scenario – 5 SELF DRIVE RENTAL Sadiq and his friends are going to Banglore. But they don't have a vehicle in Banglore. For that they go to rental cars to take car for rent. You have find out what is total amount of car's rent. The car's rentals and rules are as follows. i) Minimum booking is 4. ii) There are 3 types of cars iii) There are 3 categories in cars rental FOR SWIFT, • • In LTTE 5 kms are free for one hour and Rs.70 per one hour, if they exceed 5kmph, then Rs.12 per km. • • In CLASS, 10 kms are free for one hour and Rs.90 per one hour, if they exceed 10kmph, then Rs.12 per km. ◦ ◦ In XL, 15 kms are free for one hour and Rs.110 per one hour, if they exceed 15kmph, then Rs.12 per km.
	Exercise – 8 Arrays Demonstration of arrays a) Search-Linear. b) Sorting-Bubble, Selection. c) Operations on Matrix.	**Exercise – 8:** Strings 8.1) Implementation of string manipulation operations with library function. 8.2) Implementation of string manipulation operations without library function. i. copy ii. concatenate iii. length iv. compare i. copy ii. concatenate iii. length iv. compare 8.3) Verify whether the given string is a palindrome or not 8.4) Scenario – 6 Word with

		Obesity: Jeeth is a fun loving and active boy. He likes to play with words and numbers. One day Jeeth and his friends attended a seminar, which was conducted in his school. The Seminar was about "Causes of obesity in children and its effects". Jeeth and his friend Ram are not interested in listening to the seminar, so he thought of giving a puzzle to Ram. Jeeth gave some words to Ram and wanted him to find the word with Obesity. Ram was confused and asking your help. Write a program to find the weights of the words and display the word with highest weight (word with obesity).
	Exercises - 9 Structures a)Write a C Program to Store Information of a Movie Using Structure b)Write a C Program to Store Information Using Structures with Dynamically Memory Allocation c) Write a C Program to Add Two Complex Numbers by Passing Structure to a Function	**Exercise – 9:** Arrays and Pointers 9.1) Write a C Program to Access Elements of an Array Using Pointer 9.2) Write a C Program to find the sum of numbers with arrays and pointers.
	Exercise - 10 Arrays and Pointers a)Write a C Program to Access Elements of an Array Using Pointer b) Write a C Program to find the sum of numbers with arrays and pointers.	**Exercise – 10:** Dynamic Memory Allocations 10.1) Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using malloc () function. 10.2)Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using calloc () function. Understand the difference between the above two programs
	Exercise – 11 Dynamic Memory Allocations a) Write a C program to find sum of n elements entered by user. To perform this program,	**Exercises – 11:** **Structures:** 11.1) Write a C Program to Store Information of a book Using Structure 11.2) Write a C Program to Store

	allocate memory dynamically using malloc () function. b) Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using calloc () function. Understand the difference between the above two programs	Information Using Structures with Dynamically Memory Allocation 11.3) Write a C Program to Add Two Complex Numbers by Passing Structure to a Function 11.4) Scenario – 7 Library Management Shilpa student of PGEC got the Library Card. She wants to lend the books from the Library. The college gave two cards to each and every student. The students can lend only two books at a time and it has to be returned back after 15 days. If the books are not returned late fee will be collected for no. of days the books were returned after the due date. Late fee per day is Rs.50/- Sample Input. Enter the name of student, Roll No. Branch, Section, Year, DOL, DOR, Sample output No. of days returned after the due date = 5 Late fee per day = Rs. 50 Fine paid by the student is 5 * 50 =250.
	Exercise – 12 Strings a) Implementation of string manipulation operations with library function. i) copy ii) concatenate iii) length iv) compare b) Implementation of string manipulation operations without library function. i) copy ii) concatenate iii) length iv) compare	**Exercise -12:** Files 12.1) Write a C program to open a file and to print the contents of the file on screen. 12.2) Write a C program to copy content of one file to another file. 12.3) Write a C program to merge two files and store content in another file. 12.4) Scenario – 8 Student Information System Using Files: Lakshya International school was recently established and having large no of admissions. The school management wanted the Student information to be computerized and wanted to maintain in a simple and in effective manner. You are asked to develop Student Information System using Files to perform the following tasks 1. Add New Student 2. Update Existing Student

		3. Delete Existing Student 4. Retrieve A Particular/All Students Sample Input: Choose the task you want to perform: 1. Add 2. Update 3. Delete 4. Retrieve Your choice: 1 Enter student details: Name: Akhil Age: 5 Class: 1 Sample Output: Student details added
	Exercise -13 Files a)Write a C programming code to open a file and to print it contents on screen. b)Write a C program to copy files	
	Exercise - 14 Files Continued a) Write a C program merges two files and stores their contents in another file. b) Write a C program to delete a file.	
	Exercise – 15 a) System Assembling, Disassembling and identification of Parts / Peripherals. b) Operating System Installation-Install Operating Systems like Windows, Linux along with necessaryDevice Drivers.	
	Exercise – 16 a) MS-Office / Open Office i) Word - Formatting, Page Borders, Reviewing, Equations, symbols. ii) SpreadSheet - organize data, usage of formula, graphs, charts. iii) Powerpoint - features of power point, guidelines for preparing an effectivepresentation. b) Network Configuration & Software Installation-Configuring TCP/IP, Proxy, and firewallsettings. Installing application software, system software & tools.	

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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Mathematics-III	Mathematics-III
Course Code	R161203	171BS2T06
Syllabus	UNIT I: Linear systems of equations: Rank-Echelon form-Normal form – Solution of linear systems – Gauss elimination - Gauss Jordon- Gauss Jacobi and Gauss Seidal methods. Applications: Finding the current in electrical circuits.	UNIT - I: Laplace transforms: Laplace transforms of standard functions-First Shifting theorem, Change of scale, Multiplication with t, Division by t - Transforms of derivatives and integrals – Unit step function –Dirac's delta function, Periodic functions.
	UNIT II: Eigen values - Eigen vectors and Quadratic forms: Eigen values - Eigen vectors– Properties – Cayley-Hamilton theorem - Inverse and powers of a matrix by using Cayley-Hamilton theorem- Diagonalization- Quadratic forms- Reduction of quadratic form to canonical form – Rank - Positive, negative and semi definite - Index – Signature. Applications: Free vibration of a two-mass system.	UNIT- II: Inverse Laplace transforms: Inverse Laplace transforms – Convolution theorem (without proof), Second shifting theorem. *(MATLAB Exercise: Computing Laplace transform off (t) using symbolic toolbox, Solving initial value problems using 'dsolve') Applications: Evaluating improper integrals, solving initial value problems using Laplace transforms.
	UNIT III: Multiple integrals: Curve tracing: Cartesian, Polar and Parametric forms. Multiple integrals: Double and triple integrals – Change of variables – Change of order of integration. Applications: Finding Areas and Volumes.	UNIT - III: Multiple integrals and Beta, Gamma functions: Multiple integrals: Double and triple integrals – Change of variables – Change of order of integration, Beta and Gamma functions- Properties - Relation between Beta and Gamma functions Applications: Finding Areas and Volumes.
	UNIT IV: Special functions: Beta and Gamma functions- Properties - Relation between Beta and Gamma functions. Evaluation of improper integrals. Applications: Evaluation of integrals.	UNIT - IV: Vector Differentiation: Gradient - Directional Derivatives - Divergence- Curl - Laplacian operator - Vector identities. Applications: Equation of continuity, potential surfaces
	UNIT V: Vector Differentiation: Gradient- Divergence- Curl - Laplacian and second order operators -Vector identities.	UNIT - V: Vector Integration: Line integral – Work done - Surface and volume integrals, Green's Theorem, Stokes Theorem and

	Applications: Equation of continuity, potential surfaces	Gauss Divergence theorem (without proof) and related problems.
	UNIT VI: Vector Integration: Line integral – Work done – Potential function – Area-Surface and volume integrals Vector integral theorems: Greens, Stokes and Gauss Divergence theorems (without proof) and related problems. Applications: Work done, Force.	

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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Environmental Studies	Environmental Studies
Course Code	R161108	171HS1T02/171HS2T02
Syllabus	UNIT – I Multidisciplinary nature of Environmental Studies: Definition, Scope and Importance –Sustainability: Stockholm and Rio Summit–Global Environmental Challenges: Global warming and climate change, Carbon Credits, acid rains, ozone layer depletion, population growth and explosion, effects. Role of information Technology in Environment and human health. Ecosystems: Concept of an ecosystem. - Structure and function of an ecosystem. - Producers, consumers and decomposers. - Energy flow in the ecosystem - Ecological succession. – Food chains, food webs and ecological pyramids. - Introduction, types, characteristic features, structure and function of Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems.	UNIT –I: Ecosystems: Scope of environmental studies, Structure- Producers, consumers and decomposers Function – Food chain, Food web, Tropic structure and Energy flow in the ecosystem Ecological pyramids, nutrient recycling, primary and secondary production, ecosystem regulation. Ecological succession Terrestrial ecosystem and aquatic ecosystem - Introduction, types, characteristic features.
	UNIT – II Natural Resources: Natural resources and associated problems Forest resources – Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems Mineral resources: Use and exploitation, environmental	UNIT – II: Natural Resources: Natural resources and associated problems Forest resources – Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources

	effects of extracting and using mineral resources, Sustainable mining of Granite, Literate, Coal, Sea and River sands. Food resources: World food problems, changes caused by non-agriculture activities-effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources Vs Oil and Natural Gas Extraction. Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.	Food resources: World food problems, changes caused by non-agriculture activities effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources vs oil and natural gas extraction. Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.
	UNIT – III Biodiversity and its conservation: Definition: genetic, species and ecosystem diversity- classification - Value of biodiversity: consumptive use, productive use, social IBiodiversity at national and local levels. India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts - Endangered and endemic species of India – Conservation of biodiversity: conservation of biodiversity.	UNIT – III: Biodiversity and its conservation: Definition: genetic, species and ecosystem diversity classification Value of biodiversity: consumptive use, productive use, social-Biodiversity at national and local levels. India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts - Endangered and endemic species of India – Conservation of biodiversity
	UNIT – IV Environmental Pollution: Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies, Sustainable Life Studies. Impact of Fire Crackers on Men and his well being. Solid Waste Management: Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.	UNIT – IV: Environmental Pollution: Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies, Sustainable Life Style. Solid Waste Management: Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.
	UNIT – V Social Issues and the Environment: Urban problems related to energy -Water conservation, rain water harvesting-Resettlement and	UNIT – V: Social Issues and the Environment Urban problems related to energy -Water conservation, rain water harvesting Resettlement and rehabilitation

	rehabilitation of people; its problems and concerns. Environmental ethics: Issues and possible solutions. Environmental Protection Act -Air (Prevention and Control of Pollution) Act. –Water (Prevention and control of Pollution) Act - Wildlife Protection Act -Forest Conservation Act-Issues involved in enforcement of environmental legislation. -Public awareness.	of people; its problems and concerns. Global challenges Environmental ethics: Issues and possible solutions. Environmental Protection Act - Air (Prevention and Control of Pollution) Act. – Water (Prevention and control of Pollution) Act -Wildlife Protection Act - Forest Conservation Act-Issues involved in enforcement of environmental legislation. - Public awareness and Environmental management.
	UNIT – VI Environmental Management: Impact Assessment and its significance various stages of EIA, preparation of EMP and EIS, Environmental audit. Ecotourism, Green Campus – Green business and Green politics. The student should Visit an Industry / Ecosystem and submit a report individually on any issues related to Environmental Studies course and make a power point presentation.	

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Department of Humanities & Basic Sciences

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Applied Chemistry	Applied Chemistry
Course Code	R161106/R161221	171BS1T05/ 171BS2T05
Syllabus	UNIT I: HIGH POLYMERS AND PLASTICS Polymerisation : Introduction- Mechanism of polymerization - Stereo regular polymers – methods of polymerization (emulsion and suspension) -Physical and mechanical properties – Plastics as engineering materials : advantages and limitations – Thermoplastics and Thermosetting plastics – Compounding and fabrication (4/5 techniques)- Preparation, properties and applications of polyethene, PVC, Bakelite Teflon and polycarbonates Elastomers – Natural rubber- compounding and vulcanization – Synthetic rubbers : Buna S, Buna N, Thiokol and polyurethanes – Applications of elastomers. Composite materials & Fiber reinforced plastics – Biodegradable polymers – Conducting polymers.	UNIT - I: High Polymers and Plastics: Polymerization: Introduction- Mechanism of polymerization - Stereo regular polymers - Physical and mechanical properties – Plastics as engineering materials: advantages and limitations – Thermoplastics and Thermosetting plastics – Compounding and fabrication (compression moulding, injection moulding, extrusion moulding and transfer moulding techniques)- Preparation, properties and applications of polyethene, PVC, Bakelite and polycarbonates. Elastomers – Natural rubber- compounding and vulcanization – Synthetic rubbers: Buna S, Buna N, Thiokol – Applications of elastomers. Biodegradable polymers.
	UNIT II: FUEL TECHNOLOGY Fuels:- Introduction – Classification – Calorific value - HCV and LCV – Dulong's formula – Bomb calorimeter – Numerical problems – Coal — Proximate and ultimate analysis – Significance of the analyses – Liquid fuels – Petroleum- Refining – Cracking – Synthetic petrol –Petrol knocking – Diesel knocking - Octane and Cetane ratings – Anti-knock agents – Power alcohol – Bio-diesel – Gaseous fuels – Natural gas. LPG and CNG – Combustion – Calculation of air for the combustion of a fuel – Flue gas	UNIT - II: Fuel Technology: Fuels:- Introduction – Classification – Calorific value - HCV and LCV – Dulong's formula – Coal — Proximate and ultimate analysis – Significance of the analyses – Liquid fuels – Petroleum- Refining – Cracking – Synthetic petrol –Petrol knocking – Diesel knocking - Octane and Cetane ratings – Anti-knock agents – Power alcohol – Bio-diesel – Gaseous fuels – Natural gas. LPG and CNG – Combustion – Calculation of air for the combustion of a fuel – Flue gas analysis – Orsat apparatus.

	analysis – Orsat apparatus – Numerical problems on combustion. Explosives:- Introduction, classification, examples: RDX, TNT and ammonium nitrite - rocket fuels	
	UNIT III: ELECTROCHEMICAL CELLS AND CORROSION Galvanic cells - Reversible and irreversible cells – Single electrode potential – Electro chemical series and uses of this series- Standard electrodes (Hydrogen and Calomel electrodes) - Concentration Cells – Batteries: Dry Cell - Ni-Cd cells - Ni-Metal hydride cells - Li cells - Zinc – air cells. Corrosion:- Definition – Theories of Corrosion (electrochemical) – Formation of galvanic cells by different metals, by concentration cells, by differential aeration and waterline corrosion – Passivity of metals – Pitting corrosion - Galvanic series – Factors which influence the rate of corrosion - Protection from corrosion – Design and material selection – Cathodic protection - Protective coatings: – Surface preparation – Metallic (cathodic and anodic) coatings - Methods of application on metals (Galvanizing, Tinning, Electroplating, Electroless plating)	UNIT - III: Electrochemical Cells and Corrosion: Galvanic cells - Reversible and irreversible cells – Single electrode potential- Electro chemical series and uses of this series- Standard electrodes (Hydrogen and Calomel electrodes) - Concentration Cells – Batteries: Dry Cell - Li cells - Zinc – air cells. Corrosion:- Definition – Theories of Corrosion (electrochemical) – Formation of galvanic cells by different metals, by concentration cells, by differential aeration and waterline corrosion – Passivity of metals – Pitting corrosion - Galvanic series – Factors which influence the rate of corrosion - Protection from corrosion – Cathodic protection - Protective coatings: – Metallic (cathodic and anodic) coatings - Methods of application on metals (Galvanizing, Tinning, Electroplating, Electroless plating).
	UNIT IV: CHEMISTRY OF ADVANCED MATERIALS Nano materials:- Introduction – Sol-gel method & chemical reduction method of preparation – Characterization by BET method and TEM methods - Carbon nano tubes and fullerenes: Types, preparation, properties and applications Liquid crystals:- Introduction – Types – Applications Superconductors :- Type-I & Type-2, properties &applications Green synthesis:- Principles - 3or 4 methods of synthesis with examples – R4M4 principles	UNIT - IV: Chemistry of Advanced Materials: Nano materials:-Introduction – Sol-gel method - Carbon nano tubes and fullerenes: Types, preparation, properties and applications. Super conductors: -Type – I, Type II – Characteristics and applications Semiconductors: - Preparation of semiconductors, working of diods and transistors. Green synthesis: -Principles Liquid crystals:-Introduction – Types – Applications Fuel cells: - Introduction - cell representation, H2-O2fuel cell: Design and working, advantages and Limitations. Types of fuel cells: methanol-oxygen fuel cells.
	UNIT V: SOLID STATE CHEMISTRY Types of solids - close packing of atoms and ions - BCC , FCC, structures of rock salt - cesium chloride- spinel - normal and inverse spinels, Non-elemental	UNIT - V: Non-Conventional Energy Sources: Solar Energy: - Introduction, application of solar energy, conversion of solar energy (Thermal conversion & photo conversion) – photovoltaic cell: design,

	semiconducting Materials:- Stoichiometric, controlled valency & Chalcogen photo/semiconductors, Preparation of Semiconductors - Semiconductor Devices:- p-n junction diode as rectifier – junction transistor. Insulators (electrical and electronic applications) Magnetic materials:- Ferro and ferri magnetism. Hall effect and its applications.	working and its importance Non-conventional energy sources: (i) Hydropower include setup a hydropower plant (schematic diagram) (ii) Geothermal energy: Introduction-schematic diagram of a geothermal power plant (iii) Tidal and wave power: Introduction- Design and working-movement of tides and their effect on sea level. (iv) Ocean thermal energy: Introduction, closed-cycle, ocean thermal energy conversion (OTEC), open cycle OTEC, hybrid OTEC, schematic diagram and explanation. (v) Biomass and biofuels.
	UNIT VI: NON CONVENTIONAL ENERGY SOURCES AND STORAGE DEVICES Solar Energy: - Introduction, application of solar energy, conversion of solar energy (Thermal conversion & photo conversion) – photovoltaic cell: design, working and its importance Non-conventional energy sources: (i) Hydropower include setup a hydropower plant (schematic diagram) (ii) Geothermal energy: Introduction-schematic diagram of a geothermal power plant (iii) Tidal and wave power: Introduction- Design and working-movement of tides and their effect on sea level. (iv) Ocean thermal energy: Introduction, closed-cycle, ocean thermal energy conversion (OTEC), open cycle OTEC, hybrid OTEC, schematic diagram and explanation. (v) Biomass and biofuels Fuel cells:- Introduction - cell representation, H2-O2 fuel cell: Design and working, advantages and limitations. Types of fuel cells: Alkaline fuel cell - methanol-oxygen - phosphoric acid fuel cells - molten carbonate fuel cells.	

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Department of Computer Science and Engineering

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Software Engineering	Software Engineering
Course Code	RT32051	R1622051
Syllabus	**UNIT-I:** Introduction to Software Engineering: Software, Software Crisis, Software Engineering definition, Evolution of Software Engineering Methodologies, Software Engineering Challenges. Software Processes: Software Process, Process Classification, Phased development life cycle, Software Development Process Models-Process, use, applicability and Advantages/limitations	**UNIT-I:** Software and Software Engineering: The Nature of Software, The Unique Nature of WebApps, Software Engineering, Software Process, Software Engineering Practice, Software Myths. Process Models: A Generic Process Model, Process Assessment and Improvement, Prescriptive Process Models, Specialized Process Models, The Unified Process, Personal and Team Process Models, Process Terminology, Product and Process.
	UNIT-II: **Requirements Engineering:** Software Requirements, Requirements engineering Process, Requirements elicitation, Requirements Analysis, Structured Analysis, Data Oriented Analysis, Object oriented Analysis, Prototyping Analysis, Requirements Specification, Requirements Validation, requirement Management.	**UNIT-II:** Requirements Analysis And Specification: Requirements Gathering and Analysis, Software Requirement Specification (SRS), Formal System Specification. Software Design: Overview of the Design Process, How to Characterise of a Design?, Cohesion and Coupling, Layered Arrangement of Modules, Approaches to Software Design
	UNIT-III: Software Design: Software Design Process, Characteristics of Good Software Design, Design Principles, Modular Design, Design Methodologies, Structured Design, Structured Design Methodology, Transform Vs Transaction Analysis. Object-Oriented Design: Object	**UNIT-III:** **Function-Oriented Software Design:** Overview of SA/SD Methodology, Structured Analysis, Developing the DFD Model of a System, Structured Design, Detailed Design, Design Review, over view of Object Oriented design. **User Interface Design:** Characteristics

	oriented Analysis and Design Principles	of Good User Interface, Basic Concepts, Types of User Interfaces, Fundamentals of Component-based GUI Development, A User Interface Design Methodology.
	UNIT-IV: **Implementation:** Coding Principles, Coding Process, Code verification, Code documentation **Software Testing:** Testing Fundamentals, Test Planning, Black Box Testing, White Box Testing, Levels of Testing, Usability Testing, Regression testing, Debugging approaches	**UNIT-IV:** Coding And Testing: Coding, Code Review, Software Documentation, Testing, Unit Testing, Black-Box Testing, White-Box Testing, Debugging, Program Analysis Tool, Integration Testing, Testing Object-Oriented Programs, System Testing, Some General Issues Associated with Testing
	UNIT-V: **Software Project Management:** Project Management Essentials, What is Project management, Software Configuration Management. **Project Planning and Estimation:** Project Planning activities, Software Metrics and measurements, Project Size Estimation, Effort Estimation Techniques. .	**UNIT-V:** Software Reliability And Quality Management: Software Reliability, Statistical Testing, Software Quality, Software Quality Management System, ISO 9000, SEI Capability Maturity Model. Computer Aided Software Engineering: Case and its Scope, Case Environment, Case Support in Software Life Cycle, Other Characteristics of Case Tools, Towards Second Generation CASE Tool, Architecture of a Case Environment
	UNIT-VI Software Quality: Software Quality Factors, Verification & Validation, Software Quality Assurance, The Capability Maturity Model Software Maintenance: Software maintenance, Maintenance Process Models, Maintenance Cost, Reengineering, Reengineering activities, Software Reuse.	**UNIT-VI** Software Maintenance: Software maintenance, Maintenance Process Models, Maintenance Cost, Software Configuration Management. Software Reuse: what can be reused? Why almost No Reuse So Far? Basic Issues in Reuse Approach, Reuse at Organization Level.

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Department of Computer Science and Engineering

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Computer Organization	Computer Organization
Course Code	RT22054	R1622054
Syllabus	**UNIT-I:** **Basic Structure of Computers :** Computer Types, Functional unit, Basic Operational concepts, Bus structures, Data Representation: Data types, Complements, Fixed Point Representation. Floating – Point Representation. Other Binary Codes, Error Detection codes.	**UNIT-I:** **Basic Structure Of Computers:** Functional unit, Basic Operational concepts, Bus structures, System Software, Performance, The history of computer development.
	UNIT-II: **Register Transfer Language and Microoperations:** Register Transfer language. Register Transfer Bus and memory transfers, Arithmetic Micro operations, logic micro operations, shift micro operations, Arithmetic logic shift unit. **Basic Computer Organization and Design :** Instruction codes, Computer Register Computer instructions, Timing and control, Instruction cycle, Memory – Reference Instructions. Input – Output and Interrupt, Design of basic computer, Design of Accumulator Logic.	**UNIT-II:** **Machine Instruction and Programs:** Instruction and Instruction Sequencing: Register Transfer Notation, Assembly Language Notation, Basic Instruction Types, Addressing Modes, Basic Input/output Operations, The role of Stacks and Queues in computer programming equation. Component of Instructions: Logic Instructions, shift and Rotate Instructions
	UNIT-III: **Central Processing Unit :** General Register Organization, STACK organization. Instruction formats. Addressing modes. DATA Transfer and manipulation. Program control. Reduced Instruction set computer.**Micro Programmed**	**UNIT-III:** Type of Instructions: Arithmetic and Logic Instructions, Branch Instructions, Addressing Modes, Input/output Operations

	Control : Control memory, Address sequencing, micro program example, design of control unit	
	UNIT-IV: **Computer Arithmetic :** Addition and subtraction, multiplication Algorithms, Division Algorithms, Floating – point Arithmetic operations. Decimal Arithmetic unit, Decimal Arithmetic operations.	**UNIT-IV:** **Input/Output Organization:** Accessing I/O Devices, Interrupts: Interrupt Hardware, Enabling and Disabling Interrupts, Handling Multiple Devices, Direct Memory Access, Buses: Synchronous Bus, Asynchronous Bus, Interface Circuits, Standard I/O Interface: Peripheral Component Interconnect (PCI) Bus, Universal Serial Bus (USB)
	UNIT-V: **The Memory System :** Memory Hierarchy, Main memory, Auxiliary memory, Associative Memory, Cache Memory, Virtual Memory.	**UNIT-V:** **The Memory Systems:** Basic memory circuits, Memory System Consideration, Read- Only Memory: ROM, PROM, EPROM, EEPROM, Flash Memory, Cache Memories: Mapping Functions, INTERLEAVING **Secondary Storage:** Magnetic Hard Disks, Optical Disks,
	UNIT-VI Input-Output Organization : Peripheral Devices, Input-Output Interface, Asynchronous data transfer, Modes of Transfer, Priority Interrupts, Direct memory Access. Multi Processors :Introduction, Characteristics or Multiprocessors, Interconnection Structures, Inter processor Arbitration.	**UNIT-VI** Processing Unit: Fundamental Concepts: Register Transfers, Performing An Arithmetic Or Logic Operation, Fetching A Word From Memory, Execution of Complete Instruction, Hardwired Control, Micro programmed Control: Microinstructions, Micro program Sequencing, Wide Branch Addressing Microinstructions with next –Address Field

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Department of Computer Science and Engineering

1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Advanced Data Structures Lab	Advanced Data Structures Lab
Course Code	RT22056	R1622057
Syllabus	1. To perform various operations i.e., insertions and deletions on AVL trees. 2. To implement operations on binary heap. i) Vertex insertion ii) Vertex deletion iii) Finding vertex iv) Edge addition and deletion 3. To implement Prim's algorithm to generate a min-cost spanning tree. 4. To implement Krushkal's algorithm to generate a min-cost spanning tree. 5. To implement Dijkstra's algorithm to find shortest path in the graph. 6. To implementation of Static Hashing (Use Linear probing for collision resolution) 7. To implement of Huffmann coding. 8. To implement of B-tree.	1. To implement functions of Dictionary using Hashing (division method, Multiplication method, Universal hashing) 2. To perform various operations i.e, insertions and deletions on AVL trees 3. To perform various operations i.e., insertions and deletions on 2-3 trees. 4. To implement operations on binary heap. 5. To implement operations on graphs i) vertex insertion ii) Vertex deletion iii) finding vertex iv)Edge addition and deletion 6. To implement Depth First Search for a graph non recursively. 7. To implement Breadth First Search for a graph non recursively. 8. To implement Prim's algorithm to generate a min-cost spanning tree. 9. To implement Krushkal's algorithm to generate a min-cost spanning tree. 10. To implement Dijkstra's algorithm to find shortest path in the graph. 11. To implement pattern matching using Boyer-Moore algorithm. 12. To implement Knuth-Morris-Pratt algorithm for pattern matching.

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Program Name : B.Tech. in Information Technology

Syllabus Revision for the Academic Year 2017-2018

S.No	Semester	Course Code	Course Name	% of content revised for the existing year
1	I	171HS1T01	English – I	0
2	I	171BS1T01	Mathematics – I	25
3	I	171BS1T02	Mathematics – II	20
4	I	171BS1T04	Applied Physics	20
5	I	171ES1T03	Engineering Drawing	0
6	I	171ES1T01	Computer Programming	0
7	I	171HS1L01	English Communication Skills Lab – I	80
8	I	171BS1L04	Applied Physics Lab	0
9	I	171ES1L01	Computer Programming Lab	40
10	II	171HS2T03	English – II	0
11	II	171BS2T06	Mathematics – III	20
12	II	171HS2T02	Environmental Studies	20
13	II	171BS2T05	Applied Chemistry	20
14	II	171ES2T02	Engineering Mechanics	0
15	II	171CS2T01	Data Structures through C	0
16	II	171HS2L02	English Communication Skills Lab – II	0
17	II	171BS2L03	Applied Chemistry Lab	0
18	II	171ES2L02	Engineering Workshop & IT Workshop	0
19	III	R1621051	Statistics with R Programming	0
20	III	R1621052	Mathematical Foundations of Computer Science	0
21	III	R1621053	Digital Logic Design	0
22	III	R1621054	Python Programming	0
23	III	R1621055	Data Structures through C++	0
24	III	R1621057	Data Structures through C++ Lab	0
25	III	R1621058	Python Programming Lab	0
26	IV	R1622121	Computer Graphics	100
27	IV	R1622052	Java Programming	0
28	IV	R1622122	E-Commerce	100
29	IV	R1622054	Computer Organization	50
30	IV	R1622123	Object Oriented Analysis and Design using UML	100
31	IV	R1622056	Principles of Programming Languages	0
32	IV	R1622124	Unified Modeling Languages Lab	0
33	IV	R1622058	Java Programming Lab	0
34	V	RT31121	Software Engineering	0

35	V	RT31052	Data Communication	0
36	V	RT31123	Advanced JAVA	0
37	V	RT31054	Database Management Systems	0
38	V	RT31055	Operating Systems	0
39	V	RT31126	Advanced JAVA Lab	0
40	V	RT31127	Operating System Lab	0
41	V	RT31128	Database Management Systems Lab	0
42	V	RT31057	Linux Programming Lab	0
43	VI	RT31016	IPR and Patents- 1	0
44	VI	RT31059	Seminar	0
45	VI	1RT32053	Computer Networks	0
46	VI	1RT32052	Data Ware housing and Mining	0
47	VI	1RT32054	Design and Analysis of Algorithms	0
48	VI	1RT32121	Software Testing	0
49	VI	1RT32055	Web Technologies	0
50	VI	RT32127	Computer Networks Lab	0
51	VI	RT32128	Software Testing Lab	0
52	VI	RT32129	Web Technologies Lab	0
53	VII	1RT32056	IPR and Patents-II	0
54	VII	RT41051	Cryptography and Network Security	0
55	VII	RT41052	UML & Design Patterns	0
56	VII	RT41053	Mobile Computing	0
57	VII	RT41121	Embedded and Real Time Systems	0
58	VII	RT41056	Information Retreival Systems	0
59	VII	RT41058	Multimedia Computing	0
60	VII	RT4105B	Haddop and Big Data	0
61	VII	RT4105C	Software Project Management	0
62	VII	RT41122	Computer Vision	0
63	VII	RT4105E	Advanced Databases	0
64	VII	RT4112L	UML & Design Patterns Lab	0
65	VII	RT4112M	Mobile Application Development Lab	0
66	VII	RT4112O	Software Engineering Lab	0
67	VII	RT4112N	Hadoop & BigData Lab	0
68	VII	RT42121	MATHEMATICAL OPIMIZATION	0
69	VII	RT42051	DISTRIBUTED SYSTEMS	0
70	VII	RT42052	MANAGEMENT SCIENCE	0
71	VIII	RT42053A	HUMAN COMPUTER INTERACTION	0
72	VIII	RT42053B	ADVANCED OPERATING SYSTEMS	0
73	VIII	RT42053C	MOBILE ADHOC & SENSOR NETWORKS	0
74	VIII	RT42053D	pattern Recognisation	0
75	VIII	RT42122	Project	0
Total number of courses in the academic year 2017-2018				**= 75**
Number of courses having revision in syllabus content >/= 20% in the academic year 2017-2018				**12**
Percentage of syllabus revision carried out in the academic year 2017-2018 = (49/135)*100				**= 16%**

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STRUCTURE OF THE CURRICULUM

I SEMESTER

Course Code	Course Title	Course Component	Total Number of contact hours				Credits (C)
			Lecture (L)	Tutorial (T)	Practical (P)	Total Hours	
171HS1T01	English – I	HSS	3	1	---	4	3
171BS1T01	Mathematics – I	BS	3	1	2	6	3
171BS1T02	Mathematics – II	BS	3	1	---	4	3
171BS1T04	Applied Physics	BS	3	1	---	4	3
171ES1T03	Engineering Drawing	ES	3	1	---	4	3
171ES1T01	Computer Programming	ES	3	1	---	4	3
171HS1L01	English Communication Skills Lab – I	HSS	---	---	3	3	2
171BS1L04	Applied Physics Lab	BS	---	---	3	3	2
171ES1L01	Computer Programming Lab	ES	---	---	3	3	2
		Total	**18**	**6**	**11**	**35**	24

II SEMESTER

Course Code	Course Title	Course Component	Total Number of contact hours				Credits (C)
			Lecture (L)	Tutorial (T)	Practical (P)	Total Hours	
171HS2T03	English – II	HSS	3	1	---	4	3
171BS2T06	Mathematics – III	BS	3	1	2	6	3
171HS2T02	Environmental Studies	HSS	2	1	---	3	2
171BS2T05	Applied Chemistry	BS	3	1	---	4	3
171ES2T02	Engineering Mechanics	ES	3	1	---	4	3
171CS2T01	Data Structures through C	PC	3	1	2	6	3
171HS2L02	English Communication Skills Lab – II	HSS	---	---	3	3	2
171BS2L03	Applied Chemistry Lab	BS	---	---	3	3	2
171ES2L02	Engineering Workshop & IT Workshop	ES	---	---	3	3	2
		Total	**17**	**6**	**13**	**36**	**23**

BS: Basic Sciences; HSS: Humanities and Social Sciences; ES: Engineering Sciences; PC: Professional Core; PE: Professional Elective; OE: Open Elective; SS: Self Study Course; PR: Project.

III SEMESTER

Course Code	Course Title	Course Component	Total Number of contact hours				Credits (C)
			Lecture (L)	Tutorial (T)	Practical (P)	Total Hours	
171BS3T08	Mathematical Foundations of Computer Science	BS	3	1	---	4	3
171ES3T23	Digital Logic Design	ES	3	1	---	4	3
171CS3T02	Statistics with R Programming	PC	3	---	2	5	3
171CS3T03	Object Oriented Programming through C++	PC	3	1	---	4	3
171HS3T04	Managerial Economics & Financial Analysis	HSS	3	1	---	4	3
171CS3T04	Advanced Data Structures	PC	3	1	---	4	3
171CS3L01	Object Oriented Programming Lab	PC	---	---	3	3	2
171CS3L02	Advanced Data Structures Lab	PC	---	---	3	3	2
171HS3A10	Employability Skills – I	HSS	---	---	2	2	0
171HS3A09	Professional Ethics & Human Values	HSS	2	---	---	2	0
		Total	**20**	**5**	**10**	**35**	**22**

IV SEMESTER

Course Code	Course Title	Course Component	Total Number of contact hours				Credits (C)
			Lecture (L)	Tutorial (T)	Practical (P)	Total Hours	
171CS4T05	Software Engineering	PC	3	1	---	4	3
171IT4T01	Language Processors	PC	3	1	---	4	3
171CS4T07	Java Programming	PC	3	1	---	4	3
171CS4T08	Database Management Systems	PC	3	1	---	4	3
171HS4T05	Management Science	HSS	3	1	---	4	3
171CS4T10	Computer Organization	PC	3	1	---	4	3
171CS4L03	Java Programming Lab	PC	---	---	3	3	2
171CS4L04	Database Management Systems Lab	PC	---	---	3	3	2
171HS4A11	Employability Skills – II	HSS	---	---	2	2	0
171HS4A08	IPR & Patents	HSS	2	---	---	2	0
		Total	**20**	**6**	**8**	**34**	**22**

III Year - I Semester

S. No.	Subjects	L	T	P	Credits
1	Human Computer Interaction	4	--	--	3
2	Unix and Shell Programming	4	--	--	3
3	Advanced Java Programming	4	--	--	3
4	Database Management Systems	4	--	--	3
5	Operating Systems	4	--	--	3
6	Advanced Java Programming Lab	--	--	--	2
7	Unix and Operating Systems Lab	--	--	3	2
8	Database Management System Lab	--	--	3	2
MC	Professional Ethics & Human Values	--	3	--	--
	Total Credits				**21**

III Year - II Semester

S. No.	Subjects	L	T	P	Credits
1	Computer Networks	4	--	--	3
2	Data Mining	4	--	--	3
3	Web Technologies	4	--	--	3
4	Software Testing Methodologies	4	--	--	3
5	**Open Elective:** i. Artificial Intelligence ii. Social Networks and Semantic Web iii.Digital Signal Processing iv.Embbeded Systems v. Robotics vi.Operations Research	4	--	--	3
6	Web Technologies Lab	--	--	3	2
7	Software Testing Lab	--	--	3	2
8	Data Mining Lab	--	--	3	2
9	IPR & Patents	--	2	--	--
	Total Credits				**21**

IV Year – I SEMESTER

S. No.	Subject	T	P	Credits
1	Cryptography and Network Security	4	-	3
2	UML & Design Patterns	4	-	3
3	Mobile Computing	4	-	3
4	**Elective –I**	4	-	3
5	**Elective – II**	4	-	3
6	UML & Design Patterns Lab	-	3	2
7	Mobile Application Development Lab	-	3	2
8	Software Testing Lab	-	3	2
9	Hadoop & BigData Lab	-	3	2
Total Credits				**23**

IV Year – II SEMESTER

S. No.	Subject	T	P	Credits
1	**Elective – III**	4	-	3
2	Distributed Systems	4	-	3
3	Mathematical Opimization (LP, Scheduling, Simulation, QT, Markov analysis, NLP, PERT CPM Network related problems etc)	4	-	3
4	Management Science	4	-	3
5	Project	-	-	9
Total Credits				**21**

Elective – I:
i) Embedded and Real Time Systems
ii) Information Retrieval Systems
iii) Multimedia Computing

Elective – II:
i. Hadoop and Big Data
ii. Software Project Management
iii. Computer Vision
iv. Advanced Databases

Elective – III:
i) Human Computer Interaction
ii) Advanced Operating Systems
iii)Mobile Adhoc & Sensor Networks
iv)Pattern Recognition

MATHEMATICS-I
(Common to all branches)

I Semester	**L**	**T**	**P**	**C**
Course Code: 171BS1T01	**3**	**1**	**2**	**3**

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Associate linear differential equations of first order to solve various physical problems involving differential equations of first order
CO 2: Solve linear differential equations of higher order.
CO 3: Solve linear systems of equations using the concept of rank, Gauss elimination, Gauss Seidal method.
CO 4: Find the eigen values and eigen vectors of matrices.
CO 5: Associate the concepts of Partial Differentiation to maxima and minima of functions of several variables and to solve Partial differential equations.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	-
CO5	3	2	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT I:

Differential equations of first order and first degree:

Linear differential equations - Bernoulli differential equation - Exact differential equations-Equations reducible to exact (Type-1, Type-2, Type-3, Type-4)

Applications:

Newton's Law of cooling-Law of natural growth and decay-Orthogonal trajectories.

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UNIT II:

Linear differential equations of higher order:

Linear differential equations of higher order with constant coefficients with RHS term of the type e^{ax}, sin ax, cos ax, polynomials in x, e^{ax} V(x), xV(x)- Method of Variation of parameters, Method of undetermined coefficients.

*(MATLAB Exercise: Introduction to MAT LAB commands and Solution of Initial Value Problems using the command 'dsolve')

Applications:

Electric circuits, simple harmonic motion.

UNIT III:

Linear systems of equations:

Rank of a matrix - Echelon form-Normal form – Solution of linear systems – Gauss elimination method - Gauss Seidal method.

Applications:

Finding the current in electrical circuits.

UNIT IV:

Eigen values - Eigen vectors and Quadratic forms:

Eigen values - Eigen vectors– Properties of eigen values (without proof) – Cayley - Hamilton theorem (without proof) - Inverse and powers of a matrix by using Cayley - Hamilton theorem- Diagonalization- Quadratic forms- Reduction of quadratic form to canonical form using orthogonal transformation– Nature of the quadratic form.

*(MATLAB Exercise: All Basic Operations on matrices are to be implemented using MATLAB including computation of rank, computation of eigen values and eigen vectors)

UNIT V:

Partial differentiation and Partial differential equations

Homogeneous function-Euler's theorem-Total derivative-Chain rule-Taylor's and Maclaurin's series expansion of functions of two variables– Functional dependence-Jacobian.

Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions –solutions of first order linear (Lagrange) equation, nonlinear (standard types) equations.

Applications: Maxima and Minima of functions of two variables without constraints and Lagrange's method (with constraints).

*(MATLAB Exercise: To Plot graphs of various single and multivariable functions using MATLAB and analyze their maxima and minima graphically).

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MATHEMATICS - II
(Common to ECE, CSE & IT)

I Semester	L	T	P	C
Course Code: 171BS1T02	3	1	0	3

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Apply various numerical methods to find roots of equations and interpolating polynomials.
CO 2: Apply numerical methods to initial value problems and problems involving integration.
CO 3: Find the Fourier series of a given function and study the convergence of the series.
CO 4: Find the Fourier transforms for given functions.
CO 5: Apply method of separation of variables to solve one dimensional heat equation and wave equation and two dimensional laplace equations.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	-
CO5	3	2	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT I:

Solution of Algebraic and Transcendental Equations and Interpolation:

Introduction- Bisection method – Method of false position – Iteration method – Newton - Raphson method.

Errors in polynomial interpolation – Finite differences- Forward differences-Backward differences –Central differences – Relation between operators - Differences of a polynomial-Newton's formulae for interpolation – Interpolation with unequal intervals - Lagrange's interpolation formula.

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UNIT II:

Numerical Integration and solution of Ordinary Differential equations:

Trapezoidal rule- Simpson's $1/3^{rd}$ and $3/8^{th}$ rule-Solution of ordinary differential equations by Taylor's series-Picard's method of successive approximations-Euler's method, Modified Euler's method – Runge - Kutta method (fourth order).

UNIT III:

Fourier Series:

Fourier series of periodic function - Dirichlet's conditions for Fourier expansion - Functions having points of discontinuities–Change of interval – Even and odd functions – Half-range series.

UNIT IV:

Fourier Transforms:

Fourier integral theorem (without proof) – Fourier sine and cosine integrals - sine and cosine transforms – properties – inverse transforms – Finite Fourier transforms.

UNIT V:

Applications of Partial Differential Equations:

Classification of Higher order P.D.E - Method of separation of Variables- Solution of One dimensional Wave equation, Heat equation and two-dimensional Laplace equation.

Text Books:

1. B.S.Grewal, Higher Engineering Mathematics, 43rdEdition, Khanna Publishers.
2. V. Ravindranath and P. Vijayalakshmi, Mathematical Methods, Himalaya PublishingHouse.

Reference Books:

1. Dean G. Duffy, Advanced engineering mathematics with MATLAB, CRC Press.
2. Erwin Kreyszig, Advanced Engineering Mathematics, 10thEdition, Wiley-India.
3. Dass H.K., Rajnish Verma. Er., Higher Engineering Mathematics, S. Chand Co. Pvt. Ltd,Delhi.
4. Higher engineering mathematics by John Bird, 5th edition Elsevier Limited, 2006.
5. Advance engineering mathematics by SRK Iyengar, Alpha Sciences International Publication.

Web Links:

1. https://en.wikipedia.org/wiki/Portal:Mathematics
2. http://mathworld.wolfram.com
3. https://www.khanacademy.org
4. http://nptel.ac.in/courses/122104017

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APPLIED PHYSICS
(Common to ECE, CSE & IT)

I Semester	L	T	P	C
Course Code: 171BS1T04	3	1	0	3

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Make use of the basic concepts of interference and relate to the principle of interferometer.

CO 2: Relate the basic concepts of diffraction to illustrate the principle of optical instruments like Telescope & microscope.

CO 3: Explain the basic concepts of polarization, principle of polarimeter and the method of producing high intensity light beams.

CO 4: Interpret the wave nature of microscopic particles by using quantum mechanics and explain the electrical conductivity of materials.

CO 5: Explain the behaviour of materials to classify using the band theory of solids and the basic concepts of semiconductors.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	2	1	-	-	-	-	-	-	-	-	-	-
CO3	2	1	-	-	-	-	-	-	-	-	-	-
CO4	2	1	-	-	-	-	-	-	-	-	-	-
CO5	2	2	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT-I:

Interference:

Principle of Superposition – Coherence– Interference in thin films (reflection geometry) – Newton's rings – construction and working principle of Interferometer.

UNIT-II:

Diffraction:

Fraunhofer diffraction at single slit – Cases of double slit, N-slits, & circular aperture, Grating equation – Rayleigh criterion of resolving power-Resolving power of a grating, Telescope and Microscopes

UNIT-III:

Polarization:

Types of Polarization – Methods of production – Nicol Prism –Quarter wave plate and Half Wave plate- working principle of polarimeter (Sacharimeter).

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LASERS: Characteristics– Stimulated emission – Einstein's Transition Probabilities- Pumping schemes- Ruby laser – Helium Neon laser-CO_2 Laser-Applications

UNIT-IV:

Quantum Mechanics:

Introduction –Matter waves – Schrödinger Time Independent and Time Dependent wave equations – Particle in a box.

FREE ELECTRON THEORY: Defects of classical free electron theory –Quantum Free electron theory – concept of Fermi Energy.

UNIT-V:

Band Theory of Solids:

Bloch's theorem (qualitative) – Kronig – Penney model (Qualitative) – energy bandsin crystalline solids – classification of crystalline solids– effective mass of electron & concept of hole.

Semiconductor Physics:

Conduction – Density of carriers in Intrinsic and Extrinsic semiconductors – Drift & Diffusion – relevance of Einstein's equation- Hall effect in semiconductors.

Text Books:

1. Applied Physics – by M.N.Avadhanulu and T.V.S. Arun Murthy, S. Chand & Company Ltd.,
2. Engineering Physics by D. K. Bhattacharya and Poonam Tandon, Oxford press (2015).

Reference Books:

1. Applied Physics by P. K. Palanisamy, Scitech publications (2014)
2. Concepts of Modern Physics, Arthur Beiser, Tata McGraw-Hill Education, (2003) Engineering Physics by M. Arumugam, Anuradha Publication (2014).

Web Links:

1. http://nptel.ac.in/courses/122107035/11
2. http://nptel.ac.in/courses/115102023/
3. https://phet.colorado.edu/en/simulations/category/physics
4. http://physicsgecg.blogspot.in/p/reading-materials.html
5. https://sites.google.com/site/physicsbysureshsaganti/home

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MATHEMATICS-III
(Common to all branches)

II Semester	**L**	**T**	**P**	**C**
Course Code: 171BS2T06	**3**	**1**	**2**	**3**

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Compute Laplace transform of various functions.
CO 2: Apply Laplace transform to solve initial value problems.
CO 3: Discuss about beta and gamma function, double integral over a region and triple integral over a volume.
CO 4: Find the gradient of a scalar function, divergence and curl of a vector function.
CO 5: Apply line, surface and volume integrals to find work done by a force, flux.

Mapping of Course Outcomes with Program Outcomes

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	-
CO5	3	2	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT - I:

Laplace transforms:

Laplace transforms of standard functions-First Shifting theorem, Change of scale, Multiplication with t, Division by t - Transforms of derivatives and integrals – Unit step function –Dirac's delta function, Periodic functions.

UNIT- II:

Inverse Laplace transforms:

Inverse Laplace transforms – Convolution theorem (without proof), Second shifting theorem.

*(MATLAB Exercise: Computing Laplace transform off(t) using symbolic toolbox, Solving initial value problems using 'dsolve')

Applications:

Evaluating improper integrals, solving initial value problems using Laplace transforms.

UNIT - III:

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Multiple integrals and Beta, Gamma functions:
Multiple integrals: Double and triple integrals – Change of variables – Change of order of integration, Beta and Gamma functions- Properties - Relation between Beta and Gamma functions-
Applications:
Finding Areas and Volumes.

UNIT - IV:
Vector Differentiation:
Gradient - Directional Derivatives - Divergence- Curl - Laplacian operator - Vector identities.
Applications:
Equation of continuity, potential surfaces

UNIT - V:
Vector Integration:
Line integral – Work done - Surface and volume integrals, Green's Theorem, Stokes Theorem and Gauss Divergence theorem (without proof) and related problems.

Text Books:

1. B.S.Grewal, Higher Engineering Mathematics, 43rdEdition, Khanna Publishers.
2. Dr. T K V Iyengar, Engineering Mathematics, S. Chand Publications.

Reference Books:

1. George B. Thomas, D, Weir and J. Hass. Thomas Calculus, 12th edition, 2010 Pearson Education
2. Greenberg, Advanced Engineering Mathematics, 2nd edition, Pearson Education.
3. Erwin Kreyszig, Advanced Engineering Mathematics, 10thEdition, Wiley-India.
4. W. Jordan and T. Smith, Mathematical Techniques, Oxford University Press.

Web Links:

1. https://en.wikipedia.org/wiki/Portal:Mathematics
2. http://mathworld.wolfram.com
3. https://www.khanacademy.org
4. http://nptel.ac.in/courses/122104017

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ENVIRONMENTAL STUDIES
(Common to ECE, CSE &IT)

II Semester	**L**	**T**	**P**	**C**
Course Code: 171HS2T02	**2**	**1**	**0**	**2**

Course Outcomes:
At the end of the Course, Student will be able to:

CO 1: Identify the need for protecting the producers and consumers in various ecosystems and their role in the food web.

CO 2: Outline the natural resources and their importance for the sustenance of the life.

CO 3: List out the biodiversity of India, threats and its conservation methods.

CO 4: Explain the different types of pollutions and their control technologies, Waste water treatment, Bio medical waste management etc.

CO 5: Explain EIA- Environmental Impact Assessment, Sustainable developmental activities, environmental policies and regulations.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	-	-	-	-	-	1	3	-	-	-	-	-
CO2	-	-	-	-	-	2	3	-	-	-	-	-
CO3	-	-	-	-	-	1	3	-	-	-	-	-
CO4	-	-	2	-	-	2	3	-	-	-	-	-
CO5	-	-	2	-	-	2	3	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT –I:
Ecosystems:
Scope of environmental studies, Structure- Producers, consumers and decomposers.
Function – Food chain, Food web, Tropic structure and Energy flow in the ecosystem.
Ecological pyramids, nutrient recycling, primary and secondary production, ecosystem regulation. Ecological succession Terrestrial ecosystem and aquatic ecosystem - Introduction, types, characteristic features.

UNIT – II:
Natural Resources:
Natural resources and associated problems Forest resources – Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people.
Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems.
Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources.
Food resources: World food problems, changes caused by non-agriculture activities-effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity

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Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources vs oil and natural gas extraction.
Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

UNIT – III:
Biodiversity and its conservation:
Definition: genetic, species and ecosystem diversity classification Value of biodiversity: consumptive use, productive use, social-Biodiversity at national and local levels. India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts - Endangered and endemic species of India – Conservation of biodiversity.

UNIT – IV:
Environmental Pollution:
Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies, Sustainable Life Style.
Solid Waste Management: Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.

UNIT – V:
Social Issues and the Environment
Urban problems related to energy -Water conservation, rain water harvesting-Resettlement and rehabilitation of people; its problems and concerns. Global challenges
Environmental ethics: Issues and possible solutions. Environmental Protection Act -Air (Prevention and Control of Pollution) Act. –Water (Prevention and control of Pollution) Act -Wildlife Protection Act - Forest Conservation Act-Issues involved in enforcement of environmental legislation. - Public awareness and Environmental management.

Text Books:

1. Environmental Studies, K.V. S. G. Murali Krishna, VGS Publishers, Vijayawada
2. Environmental Studies, R. Rajagopalan, 2nd Edition, 2011, Oxford University Press.
3. Environmental Studies, P.N. Palanisamy, P. Manikandan, A. Geetha, and K. Manjula Rani; Pearson Education, Chennai

Reference Books:

1. Text Book of Environmental Studies, Deeshita Dave & P. Udaya Bhaskar, Cengage Learning.
2. A Textbook of Environmental Studies, Shaashi Chawla, TMH, New Delhi.
3. Environmental Studies, Benny Joseph, Tata McGraw Hill Co, New Delhi.
4. "Perspectives in Environment Studies" Anubha Kaushik, C P Kaushik, New Age International Publishers, 2014.

Web Links:

1. https://www.youtube.com/watch?v=7G3eXI_DPn8
2. www.nptel.ac.in/courses/122102006/
3. www.nptel.ac.in/courses/120108002/
4. https://www.youtube.com/watch?v=4AuwG2G_ERU
5. www.nptelvideos.in/2012/12/fundamentals-of-environmental-pollution.html
6. www.nptel.ac.in/courses/120108004/

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APPLIED CHEMISTRY
(Common to ECE, CSE & IT)

II Semester	**L**	**T**	**P**	**C**
Course Code: 171BS2T05	**3**	**1**	**0**	**3**

Course Outcomes

At the end of the Course, Student will be able to:

CO 1: Explain polymeric materials their uses and moulding techniques of plastics.

CO 2: Analyse fuel characteristics using Calorific value, knocking characteristics and flue gas analysis.

CO 3: Explain the working principle of Electro chemical cells and corrosion characteristics.

CO 4: Explain the properties and applications of Nano, Superconductors, Semiconductors, Liquid crystals and fuel cells.

CO 5: Summarize non-conventional energy sources and their applications.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	2	-	-	-	-	-	-	-	-	-	-	-
CO2	2	-	-	-	-	-	-	-	-	-	-	-
CO3	3	-	-	-	-	-	-	-	-	-	-	-
CO4	3	-	-	-	-	-	-	-	-	-	-	-
CO5	2	-	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes:

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

UNIT - I:

High Polymers and Plastics:

Polymerisation: Introduction- Mechanism of polymerization - Stereo regular polymers - Physical and mechanical properties – Plastics as engineering materials: advantages and limitations – Thermoplastics and Thermosetting plastics – Compounding and fabrication (compression moulding, injection moulding, extrusion moulding and transfer moulding techniques)- Preparation, properties and applications of polyethene, PVC, Bakelite and polycarbonates. Elastomers – Natural rubber- compounding and vulcanization – Synthetic rubbers: Buna S, Buna N, Thiokol – Applications of elastomers. Biodegradable polymers.

UNIT - II:

Fuel Technology:

Fuels:- Introduction – Classification – Calorific value - HCV and LCV – Dulong's formula – Coal — Proximate and ultimate analysis – Significance of the analyses – Liquid fuels – Petroleum- Refining – Cracking – Synthetic petrol –Petrol knocking – Diesel knocking - Octane and Cetane ratings – Anti-knock agents – Power alcohol – Bio-diesel – Gaseous

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fuels – Natural gas. LPG and CNG – Combustion – Calculation of air for the combustion of a fuel – Flue gas analysis – Orsat apparatus.

UNIT - III:

Electrochemical Cells And Corrosion:

Galvanic cells - Reversible and irreversible cells – Single electrode potential- Electro chemical series and uses of this series- Standard electrodes (Hydrogen and Calomel electrodes) - Concentration Cells – Batteries: Dry Cell - Li cells - Zinc – air cells.

Corrosion:- Definition – Theories of Corrosion (electrochemical) – Formation of galvanic cells by different metals, by concentration cells, by differential aeration and waterline corrosion – Passivity of metals – Pitting corrosion - Galvanic series – Factors which influence the rate of corrosion - Protection from corrosion – Cathodic protection - Protective coatings: – Metallic (cathodic and anodic) coatings - Methods of application on metals (Galvanizing, Tinning, Electroplating, Electroless plating).

UNIT - IV:

Chemistry of Advanced Materials:

Nano materials:-Introduction – Sol-gel method - Carbon nano tubes and fullerenes: Types, preparation, properties and applications.

Super conductors:-Type –I, Type II – Characteristics and applications

Semiconductors:- Preparation of semiconductors, working of diods and transistors.

Green synthesis:-Principles

Liquid crystals:-Introduction – Types – Applications

Fuel cells:- Introduction - cell representation, H_2-O_2fuel cell: Design and working, advantages and Limitations. Types of fuel cells: methanol-oxygen fuel cells.

UNIT - V:

Non Conventional Energy Sources:

Solar Energy: - Introduction, application of solar energy, conversion of solar energy (Thermal conversion & photo conversion) – photovoltaic cell: design, working and its importance Non-conventional energy sources:

(i) Hydropower include setup a hydropower plant (schematic diagram).
(ii) Geothermal energy: Introduction-schematic diagram of a geothermal power plant.
(iii) Tidal and wave power: Introduction- Design and working-movement of tides and their effect on sea level.

(iv) Ocean thermal energy: Introduction, closed-cycle, ocean thermal energy conversion (OTEC), open cycle OTEC, hybrid OTEC, schematic diagram and explanation.
(v) Biomass and biofuels.

Text Books:

1. Engineering Chemistry by Jain and Jain; Dhanpat Rai Publicating Co.
2. A Text books of Applied Chemistry by Dr. Bharathi kumariYalamananchili, VGS publications.
3. Engineering Chemistry by Shikha Agarwal; Cambridge University Press, 2015 edition.

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ENGLISH COMMUNICATION SKILLS LAB- I

(Common to all branches)

I Semester	**L**	**T**	**P**	**C**
Course Code: 171HS1L01	**0**	**0**	**3**	**2**

Course Outcomes:

At the end of the Course, Student will be able to:

CO 1: Make use of the concepts to communicate confidently and competently in English Language in all spheres.

CO 2: Express Creative skills to construct Dialogues / Conversations in Spoken and Written forms.

CO 3: Identify Accent for intelligibility.

CO 4: Demonstrate communicative ability in everyday Conversation, JAM Sessions and Public Speaking.

CO 5: Demonstrate nuances of Language through Audio – Visual Experience and group activities.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO1	-	-	-	-	1	-	-	-	-	3	-	1
CO2	-	-	-	-	1	-	-	-	-	3	-	2
CO3	-	-	-	-	1	-	-	-	-	3	-	2
CO4	-	-	-	-	1	-	-	-	-	3	-	1
CO5	-	-	-	-	1	-	-	-	-	3	-	1

Mapping of Course Outcomes with Program Specific Outcomes:

CO / PSO	PSO 1	PSO 2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-

PRACTICE 1:

A. Greeting, Introducing and taking leave

B. Pure Vowels

PRACTICE 2:

A. Giving Information and Asking for Information

B. Diphthongs

PRACTICE 3:

A. Inviting, Accepting and Declining Invitations

B. Consonants

PRACTICE 4:

A. Commands, Instructions and Requests

B. Accent and Rhythm

PRACTICE 5:

A. Suggestions and Opinions

B. Intonation

Reference Books:

1. Strengthen your Communication Skills by Dr.M.Hari Prasad, Dr.SalivendraJ.Raju and Dr.G.Suvarna Lakshmi, Maruthi Publications.
2. English for Professionals by Prof Eliah, B.S Publications, Hyderabad.
3. A Handbook of English for Professionals by Prof Eliah, B.S Publications.
4. Effective Technical Communication by M. Ashraf Rizvi, Tata Mcraw – Hill Publishing Company.
5. Word power made handy, Dr. Shalini verma, S. Chand Company.
6. Let us hear them speak, Jayashree Mohanraj, Sage texts.

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II Year - II Semester

L	T	P	C
4	0	0	3

COMPUTER ORGANIZATION

OBJECTIVES:

- Understand the architecture of a modern computer with its various processing units. Also the Performance measurement of the computer system.
- In addition to this the memory management system of computer.

UNIT -I:

Basic Structure Of Computers: Functional unit, Basic Operational concepts, Bus structures, System Software, Performance, The history of computer development.

UNIT -II:

Machine Instruction and Programs:

Instruction and Instruction Sequencing: Register Transfer Notation, Assembly Language Notation, Basic Instruction Types,

Addressing Modes, Basic Input/output Operations, The role of Stacks and Queues in computer programming equation. Component of Instructions: Logic Instructions, shift and Rotate Instructions

UNIT -III:

Type of Instructions: Arithmetic and Logic Instructions, Branch Instructions, Addressing Modes, Input/output Operations

UNIT -IV:

INPUT/OUTPUT ORGANIZATION: Accessing I/O Devices, Interrupts: Interrupt Hardware, Enabling and Disabling Interrupts, Handling Multiple Devices, Direct Memory Access,

Buses: Synchronous Bus, Asynchronous Bus, Interface Circuits, Standard I/O Interface: Peripheral Component Interconnect (PCI) Bus, Universal Serial Bus (USB)

UNIT -V:

The MEMORY SYSTEMS: Basic memory circuits, Memory System Consideration, Read-Only Memory: ROM, PROM, EPROM, EEPROM, Flash Memory,

Cache Memories: Mapping Functions, INTERLEAVING

Secondary Storage: Magnetic Hard Disks, Optical Disks,

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UNIT -VI:

Processing Unit: Fundamental Concepts: Register Transfers, Performing An Arithmetic Or Logic Operation, Fetching A Word From Memory,
Execution of Complete Instruction, Hardwired Control,
Micro programmed Control: Microinstructions, Micro program Sequencing, Wide Branch Addressing Microinstructions with next –Address Field

OUTCOMES:

- Students can understand the architecture of modern computer.
- They can analyze the Performance of a computer using performance equation
- Understanding of different instruction types.
- Students can calculate the effective address of an operand by addressing modes
- They can understand how computer stores positive and negative numbers.
- Understanding of how a computer performs arithmetic operation of positive and negative numbers.

TEXT BOOKS:

1. Computer Organization, Carl Hamacher, Zvonks Vranesic, Safea Zaky, 5th Edition, McGraw Hill.
2. Computer Architecture and Organization, John P. Hayes, 3rd Edition, McGraw Hill.

REFERENCE BOOKS:

1. Computer Organization and Architecture – William Stallings Sixth Edition, Pearson/PHI
2. Structured Computer Organization – Andrew S. Tanenbaum, 4th Edition PHI/Pearson
3. Fundamentals or Computer Organization and Design, - Sivaraama Dandamudi Springer Int. Edition.
4. "Computer Organization and Design: The Hardware/Software Interface" by David A. Patterson and John L. Hennessy.
5. J .P. Hayes, "Computer Architecture and Organization", McGraw-Hill, 1998.

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Mathematics – II	Mathematics – II
Course Code	R161110	171BS1T02
Syllabus	**UNIT-I:** Solution of Algebraic and Transcendental Equations: Introduction- Bisection method – Method of false position – Iteration method – Newton-Raphson method (One variable and simultaneous Equations).	**UNIT-I:** Solution of Algebraic and Transcendental Equations and Interpolation: Introduction- Bisection method – Method of false position – Iteration method – Newton - Raphson method. Errors in polynomial interpolation – Finite differences-Forward differences-Backward differences –Central differences – Relation between operators - Differences of a polynomial-Newton's formulae for interpolation – Interpolation with unequal intervals - Lagrange's interpolation formula.
	UNIT-II: **Interpolation:** Introduction- Errors in polynomial interpolation – Finite differences-Forward differences- Backward differences –Central differences – Symbolic relations and separation of symbols - Differences of a polynomial-Newton's formulae for interpolation – Interpolation with unequal intervals - Lagrange's interpolation formula.	**UNIT-II:** Numerical Integration and solution of Ordinary Differential equations: Trapezoidal rule- Simpson's 1/3rd and 3/8th rule-Solution of ordinary differential equations by Taylor's series-Picard's method of successive approximations-Euler's method, Modified Euler's method – Runge - Kutta method (fourth order).

	UNIT-III Numerical Integration and solution of Ordinary Differential equations: Trapezoidal rule- Simpson's 1/3rd and 3/8th rule-Solution of ordinary differential equations by Taylor's series-Picard's method of successive approximations-Euler's method - Runge-Kutta method (second and fourth order).	**UNIT-III:** **Fourier Series:** Fourier series of periodic function - Dirichlet's conditions for Fourier expansion - Functions having points of discontinuities–Change of interval – Even and odd functions – Half-range series.
	UNIT-IV: **Fourier Series:** Introduction- Periodic functions – Fourier series of -periodic function - Dirichlet's conditions –Even and odd functions –Change of interval– Half-range sine and cosine series.	**UNIT-IV:** **Fourier Transforms**: Fourier integral theorem (without proof) – Fourier sine and cosine integrals - sine and cosine transforms – properties – inverse transforms – Finite Fourier transforms.
	UNIT-V: Applications of PDE: Method of separation of Variables-Solution of One-dimensional Wave, Heat and two-dimensional Laplace equation.	**UNIT-V Applications of Partial Differential Equations:** Classification of Higher order P.D.E - Method of separation of Variables- Solution of One-dimensional Wave equation, Heat equation and two-dimensional Laplace equation

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Applied Physics	Applied Physics
Course Code	R161104	171BS1T04
Syllabus	**UNIT-I:** **INTERFERENCE:** Principle of Superposition–Coherent Sources – Interference in thin films (reflection geometry) – Newton's rings – construction and basic principle of Interferometers.	**UNIT-I:** Interference: Principle of Superposition – Coherence– Interference in thin films (reflection geometry) – Newton's rings – construction and working principle of Interferometer.
	UNIT-II: **DIFFRACTION:** Fraunhofer diffraction at single slit - Cases of double slit, N-slits & Circular Aperture (Qualitative treatment only)-Grating equation - Resolving power of a grating, Telescope and Microscopes	**UNIT-II:** Diffraction: Fraunhofer diffraction at single slit – Cases of double slit, N-slits, & circular aperture, Grating equation – Rayleigh criterion of resolving power-Resolving power of a grating, Telescope and Microscopes
	UNIT-III POLARIZATION: Types of Polarization – Methods of production - Nicol Prism -Quarter wave plate and Half Wave plate – Working principle of Polarimeter (Sacharimeter). LASERS: Characteristics– Stimulated emission – Einstein's Transition Probabilities- Pumping schemes - Ruby laser – Helium Neon laser.	**UNIT-III** **Polarization:** Types of Polarization – Methods of production – Nicol Prism – Quarter wave plate and Half Wave plate-working principle of polarimeter (Sacharimeter). LASERS: Characteristics– Stimulated emission – Einstein's Transition Probabilities-Pumping schemes- Ruby laser – Helium Neon laser-CO2 Laser-Applications
	UNIT-IV: ELECTROMAGNETIC FIELDS: Scalar and Vector Fields – Electric Potential-Gradient, Divergence of	**UNIT-IV:** **Quantum Mechanics**: Introduction – Matter waves – Schrödinger Time Independent and Time Dependent wave equations – Particle in a box. FREE

	fields – Gauss and Stokes theorems-Propagation of EM waves through dielectric medium.	ELECTRON THEORY: Defects of classical free electron theory –Quantum Free electron theory – concept of Fermi Energy.
	UNIT-V: **Quantum Mechanics:** Introduction - Matter waves – Schröedinger Time Independent and Time Dependent wave equations – Particle in a box. FREE ELECTRON THEORY: Defects of Classical free electron theory –Quantum Free electron theory - concept of Fermi Energy.	**UNIT-V:** **Band Theory of Solids:** Bloch's theorem (qualitative) – Kronig – Penney model (Qualitative) – energy bandsin crystalline solids – classification of crystalline solids– effective mass of electron & concept of hole. **Semiconductor Physics**: Conduction – Density of carriers in Intrinsic and Extrinsic semiconductors – Drift & Diffusion – relevance of Einstein's equation- Hall effect in semiconductors.

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	English Communication Skills Lab – I	English Communication Skills Lab – I
Course Code	R161114	171HS1L01
Syllabus	**UNIT-I:** 1. WHY study Spoken English? 2. Making Inqueries on the phone, thanking and responding to Thanks Practice work.	**UNIT-I:** A. Greeting, Introducing and taking leave B. Pure Vowels
	UNIT-II: 1. Responding to Requests and asking for Directions Practice work.	**UNIT-II:** A. Giving Information and Asking for Information B. Diphthongs
	UNIT-III 1. Asking for Clarifications, Inviting, Expressing Sympathy, Congratulating 2. Apologising, Advising, Suggesting, Agreeing and Disagreeing Practice work.	**UNIT-III:** A. Inviting, Accepting and Declining Invitations B. Consonants
	UNIT-IV: 1. Letters and Sounds Practice work.	**UNIT-IV:** A. Commands, Instructions and Requests B. Accent and Rhythm
	UNIT-V: 1. The Sounds of English Practice work.	**UNIT-V:** A. Suggestions and Opinions B. Intonation

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Computer Programming Lab	Computer Programming Lab
Course Code	R161119	171ES1L01
Syllabus	**Exercise - 1** Basics a) What is an OS Command, Familiarization of Editors - vi, Emacs b) Using commands like mkdir, ls, cp, mv, cat, pwd, and man c) C Program to Perform Adding, Subtraction, Multiplication and Division of two numbers From Command line	**Exercise - 1** Introduction to C Programming 1.1) Introduction about Editors –Turbo, vi, Emacs 1.2) C Program to Perform Addition, Subtraction, Multiplication and Division of two numbers from Command line 1.3) Write a C Program to Calculate area of a Triangle using Heron's formula.
	Exercise - 2 Basic Math a) Write a C Program to Simulate 3 Laws at Motion b) Write a C Program to convert Celsius to Fahrenheit and vice versa	**Exercise – 2:** Basic Math 2.1) Write a C Program to Find Whether the Given Year is a Leap Year or not. 2.2) Write a C Program to convert Celsius to Fahrenheit and vice versa. 2.3) Write a C Program to find largest of three numbers using ternary operator.
	Exercise - 3 Control Flow - I a) Write a C Program to Find Whether the Given Year is a Leap Year or not. b) Write a C Program to Add Digits & Multiplication of a number	**Exercise – 3:** Control Flow - I 3.1) Write a C program to find the roots of a Quadratic Equation. 3.2) Write a C Program to make a simple Calculator to Add, Subtract, Multiply or Divide Using switch…case. 3.3) Scenario - 1 ATM PIN GENERATION: Aditya purchased a credit card. He has to generate a PIN number to access the ATM and Net banking for which OTP was sent to his registered mobile number. Using this OTP number he has to generate ATM PIN number. After

		generating PIN number, he can use it for further transactions. Maximum login he can make is 3 times. Sample Input: OTP: 6732 If valid Enter PIN: 8858 Confirm your PIN: 8858 Sample output: valid/Invalid PIN generated successfully. Note: OTP is hard coded. 3.4) Scenario - 2 RESET PASSWORD: Sindhuja was using Syndicate Bank's Online Account. She wanted to pay her bills through Online. But she forget her password. Now she has to reset the password. For resetting the password, she has to select reset option from the Menu. NOTE: using switch case. Sample input: 1. Fast withdrawal 2. Mini Statement. 3. Balance Enquiry 4. Reset Password Enter your choice: 4 Sample Output: Reset password: New password: ***** Confirm password: *****
	Exercise – 4 Control Flow - II a) Write a C Program to Find Whether the Given Number is i) Prime Number ii) Armstrong Number b) Write a C program to print Floyd Triangle c) Write a C Program to print Pascal Triangle	**Exercise –4:** Control Flow - II 4.1) Write a C Program to Find Whether the Given Number is i) Prime Number ii) Armstrong Number 4.2) Write a C program to print Floyd Triangle 4.3) Write a C Program to print Pascal Triangle
	Exercise – 5 Functions a) Write a C Program demonstrating of parameter passing in Functions and returning values.	**Exercise – 5:** Control Flow – III 5.1) Write a C program to find the sum of individual digits of a positive integer.

	b) Write a C Program illustrating Fibonacci, Factorial with Recursion without Recursion.	5.2) Write a C program to check whether given number is palindrome or not. 5.3) Write a C program to read two numbers, x and n, and then compute the sum of the geometric progression 1+x+x2 +x3 +.....+xn. 5.4) Scenario - 3 Student Attendance report Generation: Some of the school staff had failed to maintain the attendance of the students, causing lack of essential records related to students attendance that should be submitted in a parents meet. The school management has decided to automate the process in order to maintain the attendance of every student effectively. You are asked to write a program to the above scenario and display whether the student is allowed to write the Exam or not.
	Exercise – 6 Control Flow - III a) Write a C Program to make a simple Calculator to Add, Subtract, Multiply or Divide Using switch…case b) Write a C Program to convert decimal to binary and hex (using switch call function the function)	**Exercise 6:** Arrays Demonstration of arrays 6.1) Linear Search. 6.2) Bubble Sort. 6.3) Operations on Matrix. 6.4) Scenario – 4 Celebrity of the Week: Red FM has launched a program called Celebrity of the week in their channel. Listeners are given a toll free number where they can listen to list of celebrities. Listeners can choose their favourite celebrity from the list and vote for him/her. The votes are validated from Monday to Saturday. The one with highest votes is called as "Celebrity of the Week" and his/her songs are played in the program, which is aired on Sundays. Now write a program to find the celebrity of the week.
	Exercise – 7 Functions - Continued Write a C Program to compute the values ofsin x and cos x and e^x values using Series expansion. (use factorial function)	**Exercise – 7:** Functions 7.1) Write a C Program to demonstrate parameter passing in Functions and returning values.

		7.2) Write a C Program to find Fibonacci, Factorial of a number with Recursion and without Recursion. 7.3) Scenario – 5 SELF DRIVE RENTAL Sadiq and his friends are going to Banglore. But they don't have a vehicle in Banglore. For that they go to rental cars to take car for rent. You have find out what is total amount of car's rent. The car's rentals and rules are as follows. i) Minimum booking is 4. ii) There are 3 types of cars iii) There are 3 categories in cars rental FOR SWIFT, • • In LTTE 5 kms are free for one hour and Rs.70 per one hour, if they exceed 5kmph, then Rs.12 per km. • • In CLASS, 10 kms are free for one hour and Rs.90 per one hour, if they exceed 10kmph, then Rs.12 per km. • • In XL, 15 kms are free for one hour and Rs.110 per one hour, if they exceed 15kmph, then Rs.12 per km.
	Exercise – 8 Arrays Demonstration of arrays a) Search-Linear. b) Sorting-Bubble, Selection. c) Operations on Matrix.	**Exercise – 8:** Strings 8.1) Implementation of string manipulation operations with library function. 8.2) Implementation of string manipulation operations without library function. i. copy ii. concatenate iii. length iv. compare i. copy ii. concatenate iii. length iv. compare 8.3) Verify whether the given string is a palindrome or not 8.4) Scenario – 6 Word with Obesity:

		Jeeth is a fun loving and active boy. He likes to play with words and numbers. One day Jeeth and his friends attended a seminar, which was conducted in his school. The Seminar was about "Causes of obesity in children and its effects". Jeeth and his friend Ram are not interested in listening to the seminar, so he thought of giving a puzzle to Ram. Jeeth gave some words to Ram and wanted him to find the word with Obesity. Ram was confused and asking your help. Write a program to find the weights of the words and display the word with highest weight (word with obesity).
	Exercises - 9 Structures a)Write a C Program to Store Information of a Movie Using Structure b)Write a C Program to Store Information Using Structures with Dynamically Memory Allocation c) Write a C Program to Add Two Complex Numbers by Passing Structure to a Function	**Exercise – 9:** Arrays and Pointers 9.1) Write a C Program to Access Elements of an Array Using Pointer 9.2) Write a C Program to find the sum of numbers with arrays and pointers.
	Exercise - 10 Arrays and Pointers a)Write a C Program to Access Elements of an Array Using Pointer b) Write a C Program to find the sum of numbers with arrays and pointers.	**Exercise – 10:** Dynamic Memory Allocations 10.1) Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using malloc () function. 10.2)Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using calloc () function. Understand the difference between the above two programs
	Exercise – 11 Dynamic Memory Allocations a) Write a C program to find sum of n elements entered by user. To perform this program,	**Exercises – 11:** **Structures:** 11.1) Write a C Program to Store Information of a book Using Structure

	allocate memory dynamically using malloc () function. b) Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using calloc () function. Understand the difference between the above two programs	11.2) Write a C Program to Store Information Using Structures with Dynamically Memory Allocation 11.3) Write a C Program to Add Two Complex Numbers by Passing Structure to a Function 11.4) Scenario – 7 Library Management Shilpa student of PGEC got the Library Card. She wants to lend the books from the Library. The college gave two cards to each and every student. The students can lend only two books at a time and it has to be returned back after 15 days. If the books are not returned late fee will be collected for no. of days the books were returned after the due date. Late fee per day is Rs.50/- Sample Input. Enter the name of student, Roll No. Branch, Section, Year, DOL, DOR, Sample output No. of days returned after the due date = 5 Late fee per day = Rs. 50 Fine paid by the student is 5 * 50 =250.
	Exercise – 12 Strings a) Implementation of string manipulation operations with library function. i) copy ii) concatenate iii) length iv) compare b) Implementation of string manipulation operations without library function. i) copy ii) concatenate iii) length iv) compare	**Exercise -12:** Files 12.1) Write a C program to open a file and to print the contents of the file on screen. 12.2) Write a C program to copy content of one file to another file. 12.3) Write a C program to merge two files and store content in another file. 12.4) Scenario – 8 Student Information System Using Files: Lakshya International school was recently established and having large no of admissions. The school management wanted the Student information to be computerized and wanted to maintain in a simple and in effective manner. You are asked to develop Student Information System using Files to perform the following tasks 1. Add New Student

		2. Update Existing Student 3. Delete Existing Student 4. Retrieve A Particular/All Students Sample Input: Choose the task you want to perform: 1. Add 2. Update 3. Delete 4. Retrieve Your choice: 1 Enter student details: Name: Akhil Age: 5 Class: 1 Sample Output: Student details added
	Exercise -13 Files a)Write a C programming code to open a file and to print it contents on screen. b)Write a C program to copy files	
	Exercise - 14 Files Continued a) Write a C program merges two files and stores their contents in another file. b) Write a C program to delete a file.	
	Exercise – 15 a) System Assembling, Disassembling and identification of Parts / Peripherals. b) Operating System Installation-Install Operating Systems like Windows, Linux along with necessaryDevice Drivers.	
	Exercise – 16 a) MS-Office / Open Office i) Word - Formatting, Page Borders, Reviewing, Equations, symbols. ii) SpreadSheet - organize data, usage of formula, graphs, charts. iii) Powerpoint - features of power point, guidelines for preparing an effectivepresentation. b) Network Configuration & Software Installation-Configuring TCP/IP, Proxy, and firewallsettings. Installing application software, system software & tools.	

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Mathematics – III	Mathematics – III
Course Code	R161201	171BS2T06
Syllabus	**UNIT-I:** **Linear systems of equations:** Rank-Echelon form-Normal form – Solution of linear systems – Gauss elimination - Gauss Jordon- Gauss Jacobi and Gauss Seidal methods.Applications: Finding the current in electrical circuits.	**UNIT-I:** Laplace transforms: Laplace transforms of standard functions-First Shifting theorem, Change of scale, Multiplication with t, Division by t - Transforms of derivatives and integrals – Unit step function –Dirac's delta function, Periodic functions.
	UNIT-II: Eigen values - Eigen vectors– Properties – Cayley-Hamilton theorem - Inverse and powers of a matrix by using Cayley-Hamilton theorem- Diagonalization- Quadratic forms- Reduction of quadratic form to canonical form – Rank - Positive, negative and semi definite - Index – Signature. Applications: Free vibration of a two-mass system.	**UNIT-II:** **Inverse Laplace Transforms :** Inverse Laplace transforms – Convolution theorem (with out proof), Second shifting theorem. *(MATLAB Exercise: Computing Laplace transform of f(t) using symbolic toolbox, Solving initial value problems using 'dsolve') **Applications:** Evaluating improper integrals, solving initial value problems using Laplace transforms.
	UNIT-III: Curve tracing: Cartesian, Polar and Parametric forms. Multiple integrals: Double and triple integrals – Change of variables – Change of order of integration. Applications: Finding Areas and Volumes.	**UNIT-III:** Multiple integrals and Beta, Gamma functions: Multiple integrals: Double and triple integrals – Change of variables – Change of order of integration, Beta and Gamma functions- Properties - Relation between Beta and Gamma functions- Applications: Finding Areas and Volumes.

	UNIT-IV: Beta and Gamma functions- Properties - Relation between Beta and Gamma functions- Evaluation of improper integrals. Applications: Evaluation of integrals.	**UNIT-IV:** **Vector Differentiation:** Gradient - Directional Derivatives - Divergence- Curl - Laplacian operator -Vector identities. **Applications:** Equation of continuity, potential surfaces
	UNIT-V: . Gradient- Divergence- Curl - Laplacian and second order operators - Vector identities. Applications: Equation of continuity, potential surfaces	**UNIT-V:** **Vector Integration:** Line integral – Work done - Surface and volume integrals, Green's Theorem, Stokes Theorem and Gauss Divergence theorem (without proof) and related problems. .
	UNIT VI: Vector Integration: Line integral – Work done – Potential function – Area- Surface and volume integrals Vector integral theorems: Greens, Stokes and Gauss Divergence theorems (without proof) and related problems. Applications: Work done, Force.	

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Environmental Studies	Environmental Studies
Course Code	R161203	171HS2T02
Syllabus	**UNIT-I:** Multidisciplinary nature of Environmental Studies: Definition, Scope and Importance –Sustainability: Stockholm and Rio Summit–Global Environmental Challenges: Global warming and climate change, Carbon Credits, acid rains, ozone layer depletion, population growth and explosion, effects. Role of information Technology in Environment and human health. Ecosystems: Concept of an ecosystem. - Structure and function of an ecosystem. - Producers, consumers and decomposers. - Energy flow in the ecosystem - Ecological succession. – Food chains, food webs and ecological pyramids. - Introduction, types, characteristic features, structure and function of Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems.	**UNIT-I:** **Ecosystems:** Scope of environmental studies, Structure- Producers, consumers and decomposers Function – Food chain, Food web, Tropic structure and Energy flow in the ecosystem Ecological pyramids, nutrient recycling, primary and secondary production, ecosystem regulation. Ecological succession Terrestrial ecosystem and aquatic ecosystem - Introduction, types, characteristic features.
	UNIT-II: Forest resources – Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people Water resources – Use and over utilization of surface and ground water	**UNIT-II:** **Natural Resources:** Natural resources and associated problems Forest resources – Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people Water

	– Floods, drought, conflicts over water, dams – benefits and problems Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, Sustainable mining of Granite, Literate, Coal, Sea and River sands. Food resources: World food problems, changes caused by non-agriculture activities-effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources Vs Oil and Natural Gas Extraction. Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.	resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources Food resources: World food problems, changes caused by non-agriculture activities-effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources vs oil and natural gas extraction. Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.
	UNIT-III: Definition: genetic, species and ecosystem diversity- classification - Value of biodiversity: consumptive use, productive use, social- Biodiversity at national and local levels. India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts - Endangered and endemic species of India – Conservation of biodiversity: conservation of biodiversity.	**UNIT-III:** Biodiversity and its conservation: Definition: genetic, species and ecosystem diversity classification Value of biodiversity: consumptive use, productive use, social-Biodiversity at national and local levels. India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts - Endangered and endemic species of India – Conservation of biodiversity.
	UNIT-IV: **Environmental Pollution:** Definition, Cause, effects and control measures of Airpollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies, Sustainable Life Studies.	**UNIT-IV:** **Environmental Pollution:** Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies, Sustainable Life Style.

	Impact of Fire Crackers on Men and his well being. **Solid Waste Management:** Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.	**Solid Waste Management:** Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.
	UNIT-V: . **Social Issues and the Environment:** Urban problems related to energy - Water conservation, rain water harvesting-Resettlement and rehabilitation of people; its problems and concerns. Environmental ethics: Issues and possible solutions. Environmental Protection Act - Air (Prevention and Control of Pollution) Act. –Water (Prevention and control of Pollution) Act -Wildlife Protection Act -Forest Conservation Act-Issues involved in enforcement of environmental legislation. -Public awareness.	**UNIT**-V: **Social Issues and the Environment:** Urban problems related to energy - Water conservation, rain water harvesting-Resettlement and rehabilitation of people; its problems and concerns. Global challenges Environmental ethics: Issues and possible solutions. Environmental Protection Act -Air (Prevention and Control of Pollution) Act. –Water (Prevention and control of Pollution) Act -Wildlife Protection Act - Forest Conservation Act-Issues involved in enforcement of environmental legislation. - Public awareness and Environmental management
	UNIT-VI Environmental Management: Impact Assessment and its significance various stages of EIA, preparation of EMP and EIS, Environmental audit. Ecotourism, Green Campus – Green business and Green politics. The student should Visit an Industry / Ecosystem and submit a report individually on any issues related to Environmental Studies course and make a power point presentation.	

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Applied Chemistry	Applied Chemistry
Course Code	R161211	171BS2T05
Syllabus	**UNIT-I:** HIGH POLYMERS AND PLASTICS Polymerisation : Introduction- Mechanism of polymerization - Stereo regular polymers – methods of polymerization (emulsion and suspension) -Physical and mechanical properties – Plastics as engineering materials : advantages and limitations – Thermoplastics and Thermosetting plastics – Compounding and fabrication (4/5 techniques)- Preparation, properties and applications of polyethene, PVC, Bakelite Teflon and polycarbonates Elastomers – Natural rubber- compounding and vulcanization – Synthetic rubbers : Buna S, Buna N, Thiokol and polyurethanes – Applications of elastomers. Composite materials & Fiber reinforced plastics – Biodegradable polymers – Conducting polymers.	**UNIT-I:** **High Polymers and Plastics:** Polymerisation: Introduction- Mechanism of polymerization - Stereo regular polymers -Physical and mechanical properties – Plastics as engineering materials: advantages and limitations – Thermoplastics and Thermosetting plastics – Compounding and fabrication (compression moulding, injection moulding, extrusion moulding and transfer moulding techniques)- Preparation, properties and applications of polyethene, PVC, Bakelite and polycarbonates. Elastomers – Natural rubber- compounding and vulcanization – Synthetic rubbers: Buna S, Buna N, Thiokol – Applications of elastomers. Biodegradable polymers
	UNIT-II: ***Fuels***:- Introduction – Classification – Calorific value - HCV and LCV – Dulong's formula – Bomb calorimeter – Numerical problems – Coal — Proximate and ultimate analysis – Significance of the analyses – Liquid fuels – Petroleum- Refining –	**UNIT-II:** **Fuel Technology:** Fuels:- Introduction – Classification – Calorific value - HCV and LCV – Dulong's formula – Coal — Proximate and ultimate analysis – Significance of the analyses – Liquid fuels –

	Cracking – Synthetic petrol –Petrol knocking – Diesel knocking - Octane and Cetane ratings – Anti-knock agents – Power alcohol – Bio-diesel – Gaseous fuels – Natural gas. LPG and CNG – Combustion – Calculation of air for the combustion of a fuel – Flue gas analysis – Orsat apparatus – Numerical problems on combustion. ***Explosives:-*** Introduction, classification, examples: RDX, TNT and ammonium nitrite – rocket fuels.	Petroleum- Refining – Cracking – Synthetic petrol –Petrol knocking – Diesel knocking - Octane and Cetane ratings – Anti-knock agents – Power alcohol – Bio-diesel – Gaseous fuels – Natural gas. LPG and CNG – Combustion – Calculation of air for the combustion of a fuel – Flue gas analysis – Orsat apparatus.
	UNIT-III: Galvanic cells - Reversible and irreversible cells – Single electrode potential – Electro chemical series and uses of this series- Standard electrodes (Hydrogen and Calomel electrodes) - Concentration Cells – Batteries: Dry Cell - Ni-Cd cells - Ni-Metal hydride cells - Li cells – Zinc – air cells. *Corrosion:-* Definition – Theories of Corrosion (electrochemical) – Formation of galvanic cells by different metals, by concentration cells, by differential aeration and waterline corrosion – Passivity of metals – Pitting corrosion - Galvanic series – Factors which influence the rate of corrosion - Protection from corrosion – Design and material selection – Cathodic protection - Protective coatings: – Surface preparation – Metallic (cathodic and anodic) coatings – Methods of application on metals (Galvanizing, Tinning, Electroplating, Electroless plating)	**UNIT-III:** Electrochemical Cells And Corrosion: Galvanic cells - Reversible and irreversible cells – Single electrode potential- Electro chemical series and uses of this series- Standard electrodes (Hydrogen and Calomel electrodes) - Concentration Cells – Batteries: Dry Cell - Li cells - Zinc – air cells. Corrosion:- Definition – Theories of Corrosion (electrochemical) – Formation of galvanic cells by different metals, by concentration cells, by differential aeration and waterline corrosion – Passivity of metals – Pitting corrosion - Galvanic series – Factors which influence the rate of corrosion - Protection from corrosion – Cathodic protection - Protective coatings: – Metallic (cathodic and anodic) coatings - Methods of application on metals (Galvanizing, Tinning, Electroplating, Electroless plating).
	UNIT-IV: ***Nano materials:-*** Introduction – Sol-gel method & chemical reduction	**UNIT-IV:** **Chemistry of Advanced Materials:**

	method of preparation – Characterization by BET method and TEM methods - Carbon nano tubes and fullerenes: Types, preparation, properties and applications ***Liquid crystals:-*** Introduction – Types – Applications ***Superconductors*** :- Type-I & Type-2, properties &applications ***Green synthesis:-*** Principles - 3or 4 methods of synthesis with examples – R4M4 principles	Nano materials:-Introduction – Sol-gel method - Carbon nano tubes and fullerenes: Types, preparation, properties and applications. Super conductors:-Type –I, Type II – Characteristics and applications Semi conductors:- Preparation of semiconductors, working of diods and transistors. Green synthesis:-Principles Liquid crystals:-Introduction – Types – Applications Fuel cells:- Introduction - cell representation, H2-O2fuel cell: Design and working, advantages and Limitations. Types of fuel cells: methanol-oxygen fuel cells.
	UNIT-V: Types of solids - close packing of atoms and ions - BCC , FCC, structures of rock salt – cesium chloride- spinel - normal and inverse spinels, Non-elemental ***semiconducting Materials***:- Stoichiometric, controlled valency & Chalcogen photo/semiconductors, Preparation of Semiconductors - Semiconductor Devices:- p-n junction diode as rectifier – junction transistor. ***Insulators*** (electrical and electronic applications) ***Magnetic materials:-*** Ferro and ferri magnetism. Hall effect and its applications. .	**UNIT**-V: . **Non Conventional Energy Sources :** Solar Energy: - Introduction, application of solar energy, conversion of solar energy (Thermal conversion & photo conversion) – photovoltaic cell: design, working and its importance Non-conventional energy sources:
	UNIT VI: Non Conventional Energy Sources And Storage Devices *Solar Energy:* - Introduction, application of solar energy, conversion of solar energy (Thermal conversion & photo conversion) – photovoltaic cell: design, working and its importance *Non-conventional energy sources:* (i) Hydropower include setup a hydropower plant (schematic diagram)	

	(ii) Geothermal energy: Introduction-schematic diagram of a geothermal power plant (iii) Tidal and wave power: Introduction- Design and working-movement of tides and their effect on sea level. (iv) Ocean thermal energy: Introduction, closed-cycle, ocean thermal energy conversion (OTEC), open cycle OTEC, hybrid OTEC, schematic diagram and explanation. (v) Biomass and biofuels *Fuel cells:-* Introduction - cell representation, H2-O2 fuel cell: Design and working, advantages and limitations. Types of fuel cells: Alkaline fuel cell - methanol-oxygen - phosphoric acid fuel cells - molten carbonate fuel cells.	

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1.1.2. Table-Prior/Post revision of syllabus

Regulation	Pre-Revision	Post-Revision
Course Title	Software Engineering	Software Engineering
Course Code	RT32051	R1622051
Syllabus	**UNIT-I:** Introduction to Software Engineering: Software, Software Crisis, Software Engineering definition, Evolution of Software Engineering Methodologies, Software Engineering Challenges. Software Processes: Software Process, Process Classification, Phased development life cycle, Software Development Process Models-Process, use, applicability and Advantages/limitations	**UNIT-I:** Software and Software Engineering: The Nature of Software, The Unique Nature of WebApps, Software Engineering, Software Process, Software Engineering Practice, Software Myths. Process Models: A Generic Process Model, Process Assessment and Improvement, Prescriptive Process Models, Specialized Process Models, The Unified Process, Personal and Team Process Models, Process Terminology, Product and Process.
	UNIT-II: **Requirements Engineering:** Software Requirements, Requirements engineering Process, Requirements elicitation, Requirements Analysis, Structured Analysis, Data Oriented Analysis, Object oriented Analysis, Prototyping Analysis, Requirements Specification, Requirements Validation, requirement Management.	**UNIT-II:** Requirements Analysis And Specification: Requirements Gathering and Analysis, Software Requirement Specification (SRS), Formal System Specification. Software Design: Overview of the Design Process, How to Characterise of a Design?, Cohesion and Coupling, Layered Arrangement of Modules, Approaches to Software Design
	UNIT-III: Software Design: Software Design Process, Characteristics of Good Software Design, Design Principles, Modular Design, Design Methodologies, Structured Design, Structured Design Methodology, Transform Vs Transaction Analysis.	**UNIT-III:** **Function-Oriented Software Design:** Overview of SA/SD Methodology, Structured Analysis, Developing the DFD Model of a System, Structured Design, Detailed Design, Design Review, over view of Object Oriented design.

	Object-Oriented Design: Object oriented Analysis and Design Principles	**User Interface Design**: Characteristics of Good User Interface, Basic Concepts, Types of User Interfaces, Fundamentals of Component-based GUI Development, A User Interface Design Methodology.
	UNIT-IV: **Implementation:** Coding Principles, Coding Process, Code verification, Code documentation **Software Testing:** Testing Fundamentals, Test Planning, Black Box Testing, White Box Testing, Levels of Testing, Usability Testing, Regression testing, Debugging approaches	**UNIT-IV:** Coding And Testing: Coding, Code Review, Software Documentation, Testing, Unit Testing, Black-Box Testing, White-Box Testing, Debugging, Program Analysis Tool, Integration Testing, Testing Object-Oriented Programs, System Testing, Some General Issues Associated with Testing
	UNIT-V: **Software Project Management**: Project Management Essentials, What is Project management, Software Configuration Management. **Project Planning and Estimation**: Project Planning activities, Software Metrics and measurements, Project Size Estimation, Effort Estimation Techniques. .	**UNIT-V:** Software Reliability And Quality Management: Software Reliability, Statistical Testing, Software Quality, Software Quality Management System, ISO 9000, SEI Capability Maturity Model. Computer Aided Software Engineering: Case and its Scope, Case Environment, Case Support in Software Life Cycle, Other Characteristics of Case Tools, Towards Second Generation CASE Tool, Architecture of a Case Environment
	UNIT-VI Software Quality: Software Quality Factors, Verification & Validation, Software Quality Assurance, The Capability Maturity Model Software Maintenance: Software maintenance, Maintenance Process Models, Maintenance Cost, Reengineering, Reengineering activities, Software Reuse.	**UNIT-VI** Software Maintenance: Software maintenance, Maintenance Process Models, Maintenance Cost, Software Configuration Management. Software Reuse: what can be reused? Why almost No Reuse So Far? Basic Issues in Reuse Approach, Reuse at Organization Level.

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