ADITYA ENGINEERING COLLEGE

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

Program Name : M.Tech. in Thermal Engineering

Syllabus Revision for the Academic Year 2020-2021

S.No	Semester	Course Code	Course Name	% of content revised for the existing year
1	I	192TE1T01	Advanced Fluid Mechanics	0
2	I	192TE1T02	Computational Fluid Dynamics	0
3	I	192TE1E01	Advanced IC Engines, Electric and Hybrid Vehicles	0
4	I	192TE1E02	Gas Dynamics	0
5	I	192TE1E03	Cryogenic Engineering	0
6	I	192TE1E04	Advanced Thermodynamics	0
7	I	192TE1E05	Gas Turbines	0
8	I	192TE1E06	Alternative Fuel Technologies	0
9	I	192TE1E07	Energy Conservation and Management	0
10	I	192TE1E08	Theory And Technology of Fuel Cells	0
11	I	192HS1T01	Research Methodology And IPR	0
12	I	192TE1L01	Computational Fluid Dynamics Lab-I	0
13	I	19TE1L02	Thermal Engineering Lab -1	0
14	I	192MC1A01/192MC2A01	English for Research Paper Writing	0
15	I	192MC1A02/192MC2A02	Disaster Management	0
16	I	192MC1A03/192MC2A03	Sanskrit for Technical Knowledge	0
17	I	192MC1A04/192MC2A04	Value Education	0
18	I	192MC1A05/192MC2A05	Constitution of India	0
19	I	192MC1A06/192MC2A06	Pedagogy Studies	0
20	I	192MC1A07/192MC2A07	Stress Management By YOGA	0
21	I	192MC1A08/192MC2A08	Personality Development Through Life Enlightment Skills	0
22	I	192MC1A09/192MC2A09	Soft Skills	0
23	II	192TE2T03	Advanced Heat Transfer	0
24	II	192TE2T04	Thermal Measurements and Process Controls	0
25	II	192TE2E09	Equipment Design for Thermal Systems	0
26	II	192TE2E10	Solar Energy Technologies	0
27	II	192TE2E11	Advanced Power Plant Engineering	0
28	II	192TE2E12	Combustion, Emissions and Environment	0
29	II	192TE2E13	Jet Propulsion and Rocket Engineering	0
30	II	192TE2E14	Automotive Engineering	0
31	II	192TE2E15	Modeling and I.C. Engines	0

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S.No	Semester	Course Code	Course Name	% of content revised for the existing year
32	II	192TE2E16	Renewable Energy Technologies	0
33	II	192TE2L03	Computational Fluid Dynamics Lab-II	0
34	II	192TE2L04	Thermal Engineering Lab -II	0
35	II	192TE2P01	Mini Project with Seminar	0
36	III	192TE3E17	Optimization Techniques and Applications	0
37	III	192TE3E18	Design and Analysis of Experiments	100
38	III	192TE3E19	Convective Heat Transfer	0
39	III	192TE3E20	Waste to Energy	100
40	III	192ST3O01	Repair & Rehabilitation of Structures	100
41	III	192ST3O02	Green Building Systems	100
42	III	192ST3O03	Basic Concrete Technology	100
43	III	192ST3O04	Basic Foundation Engineering	100
44	III	192PD3O01	Renewable Energy Technologies	100
45	III	192PD3O02	Hybrid Electric Vehicles	100
46	III	192PD3O03	Energy Audit and Conservation Management	100
47	III	192PD3O04	Neural Networks and Fuzzy Logic	100
48	III	192PD3O05	Industrial Safety	100
49	III	192PD3O06	Composite Materials	100
50	III	192ES3O01	Embedded System Design	100
51	III	192ES3O02	Digital System Design	100
52	III	192ES3O03	Programming Languages for Embedded Systems	100
53	III	192ES3O04	Sensors & Actuators	100
54	III	192VD3O01	Physical Design Automation	100
55	III	192VD3O02	VLSI Technology	100
56	III	192VD3O03	Nano-Electronics	100
57	III	192CS3O01	Python Programming	100
58	III	192CS3O02	Principles of Cyber Security	100
59	III	192CS3O03	Internet of Things	100
60	III	192CS3O04	Machine Learning	100
61	III	192CS3O05	Artificial Intelligence	100
62	III	192CS3O06	Deep Learning	100
63	III	192PE3O01	Introduction to Petroleum Engineering	100
64	III	192PE3O02	Process Intensification	100
65	III	192PE3O03	Fundamentals of Liquefied Natural Gas	100
66	III	192PE3O04	Subsea Engineering	100
67	III	192PE3O05	Geology	100
68	III	192PE3O06	HSE In Petroleum Industry	100
69	III	192TE3P02	Dissertation I/Industrial Project	0
70	IV	192TE4P03	Dissertation II	0

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S.No	Semester	Course Code	Course Name	% of content revised for the existing year
Total number of courses in the academic year 2020-2021				70
Number of courses having revision in syllabus content >/= 20% in the academic year 2020-2021				31
Percentage of syllabus revision carried out in the academic year 2020-2021 = (31/70)*100				= 44.28

Program Coordinator

Head of the Department

Head of the Department
Department of Mechanical Engineering
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Department of Mechanical Engineering

Date: 12-10-2020

Minutes of the VI meeting of BOS Scheduled on 10-10-2020

The VI meeting of the BOS (Board of Studies) of ME was held virtually on 10-10-2020 at 9.30 AM through Microsoft Teams. Prof Bh. Vara Prasad, Chairperson presided over the meeting.

Agenda 6.1: Welcome address by Chairperson-BOS

Prof Bh. Vara Prasad, BOS chairperson invited the distinguished members of BOS to the VI BOS Meeting.

Agenda 6.2: Ratification of minutes of the previous Board of Studies meeting

The BOS members have ratified the points discussed in the previous Board of Studies meeting held on 23/11/2019.

Agenda 6.3: Discussion and ratification of the vision and mission of the department and Program Educational Objectives (PEOs), Program Out Comes (POs) and Program Specific Outcomes (PSOs) of the programs under the department.

The members of BOS ratified the Vision and Mission of the department, PEOs, POs and PSOs of the Programs under the Department.

Agenda 6.4: Discussion on proposed AR19 B.Tech (ME) Program – IV & V semesters syllabus and ratification of the same.

The members of BOS ratified the AR19 B.Tech (ME) IV & V Semesters Syllabus after making the following changes:

- Suggested to add topics - "Lubrication & Cooling systems", "Introduction to Supercharging" and "Turbocharging" in the course "Thermal Engineering -1".

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- Suggested to introduce "Internet based virtual labs" and "Simulation Experiments" in augmented experiments in the course "Production Technology laboratory".
- Suggested to add topic "Limits and Tolerances" for both practice and examinations by providing data book. Also suggested to include "Machine Drawing by N.D.Bhatt, Charotar Publishing House" as a text book in the course Machine Drawing.
- Suggested to add the following books as text books and reference books in the course "Dynamics of Machinery".

  Text Books:

  i. "Theory of machines by Thomas Bevan, Pearson Education India,3rd Edition".
  ii. "Theory of Machines and Mechanisms by P.L.Ballaney, Khanna Publications".

  Reference books:

  i. "Theory of Mechanisms and Machines by Amitab Ghosh and A. K. Mallik, East West Press".
- Suggested to add the following books as text books and reference books in the course "Thermal Engineering-II".

  Text Books:

  i. "Thermodynamics and Heat Engines, Volume- II, R.Yadav, Central publishing house, 6th Edition"
  ii. "Heat Engineering by V.P Vasandani and D.S Kumar, Metropolitan Book Company 6th Edition"

  Reference books:

  i. "Thermal Engineering, P.L.Ballaney, Khanna publishers, 25th Edition"
  ii. "Thermal Engineering, M.L.Mathur & Mehta, Jain bros, 6th Edition"
- Suggested to add "Introduction to Automotive Electric Vehicles" in the course "Automobile Engineering".
- Suggested to add "Fabrication Methods of Composites" as unit-III and "Introduction to Manufacturing Techniques" in unit-IV & unit -V. Also advised to add "Mechanics of Composite Materials by Robert M. Jones. CRC Press. 2nd Edition" as text book in the course "Composite Materials".

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- Suggested to change the name of course "Fluid Engineering" as "Fluid Machinery". Also advised to include "Mechanics of fluids by Bernard Massey" as reference book in the course "Fluid Engineering".
- Suggested to include "Metrology and Instrumentation" as core subject if possible.
- Suggested to add latest technologies such as "VAT-Photo polymerization process", "Material Jetting Binder Jetting", "Extrusion based system", "Sheet lamination process", "Powder bed system", "Directed energy deposition" in the course "3D- Printing".
- Suggested to add "Power Transmission Devices" as unit–IV in the course "Fundamentals of Mechanical Engineering".
- Suggested to add "Economical Speed Test on IC Engines" as augmented experiment in the course "Thermal Engineering Laboratory".

Agenda 6.5: Discussion on proposed AR20 B.Tech (ME) First Year Program structure and ratification of the same.

The members of BOS ratified the AR20 B.Tech (ME) First Year Program structure.

Agenda 6.6: Discussion on proposed AR20 B.Tech (ME) Program – I & II semesters syllabus and ratification of the same.

The members of BOS ratified the AR20 B.Tech (ME) I & II semesters syllabus.

Agenda 6.7: Discussion on proposed AR19 M.Tech (TE) Program – III & IV semesters syllabus and ratification of the same.

The members of BOS ratified the AR19 M.Tech (TE) program- III & IV semesters syllabus.

Agenda 6.8: Discussion on the courses having focus on employability/entrepreneurship/skill development in the programs of B.Tech (ME) and M.Tech (TE) and ratification of the same.

The members of BOS ratified the courses having focus on employability/entrepreneurship/skill development in the B.Tech (ME) and M.Tech (TE) programs.

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Agenda 6.9: Discussion on the new courses offered in the B.Tech (ME) and M.Tech (TE) programs and ratification of the same

The Members of BOS noted the new courses offered in the B.Tech (ME) and M.Tech (TE) programs and ratified the same. The percentage of courses introduced in the academic year 2020-2021 for B.Tech (ME) Program is 10.7% and M.Tech (TE) Program is 10 %. The list of courses introduced is enclosed as Annexure-I.

Agenda 6.10: Discussion on the B.Tech (ME) and M.Tech (TE) programs in which Choice Based Credit System(CBCS)/elective course system is being implemented and ratification of the same.

The Members of BOS ratified the Choice Based Credit System (CBCS)/elective course system that is being implemented in B.Tech (ME) and M.Tech (TE) programs.

Agenda 6.11: Discussion on the value-added courses offered for students and ratification of the same.

The BOS members ratified the value-added courses identified for the students to be offered and suggested to include topics related to thrust areas.

Agenda 6.12: Discussion on the percentage of syllabus revision done in the B.Tech (ME) and M.Tech (TE) programs and ratification of the same.

The syllabus revisions were done in B.Tech (ME) and M.Tech (TE) based on the stake holders feedback on curriculum. The BOS members have approved all the syllabus revisions in B.Tech (ME) and M.Tech (TE). The percentage of courses revised in the academic year 2020-2021 for B.Tech (ME) Program is 22.61% and M.Tech (TE) Program is 44.28%. The list of courses revised is enclosed as Annexure-II.

Agenda 6.13: Analysis of Results

The BOS chairperson presented the odd and even semesters pass percentage for the A.Y. 2019 - 2020. The BOS members noted the same.

Agenda 6.14: Analysis of Students Feedback & Action Taken Report

BOS Chairperson expressed that the student feedback & action taken report process initiated at end of each semester. The BOS members noted the same.

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Agenda 6.15: Analysis of Stake holder's feedback on Curriculum

The BOS chairperson presented the analysis report of Stakeholder's feedback on curriculum. The BOS members noted the same and the action taken report is enclosed in Annexure III.

Agenda 6.16: Any other item with the approval of Chairman.

NIL

Agenda 6.17: Scheduling of next Board of Studies meeting.

The next BOS meeting is tentatively scheduled in the month of April 2021.

Agenda 6.18: Vote of Thanks

The chairperson presented the Vote of Thanks.

BOS Chairperson

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Annexure-I

List of New Courses in the Academic Year 2020-21

S. No	Program	Semester	Course Code	Course Name
1	B. Tech (ME)	II	201ES2L12	Computer Aided Drafting Lab
2	B. Tech (ME)	III	191MC3A04	Essence of Indian Traditional Knowledge
3	B. Tech (ME)	IV	191BS4T16	Numerical Methods & Statistical Techniques
4	B. Tech (ME)	IV	191MC4A06	Biology for Engineers
5	B. Tech (ME)	IV	191ES4T15	Internet of Things
6	B. Tech (ME)	VII	171ME7E15	Flexible Manufacturing Systems
7	B. Tech (ME)	VIII	171ME8O01	Java Programming
8	B. Tech (ME)	VIII	171ME8O02	Electrical Safety &Management
9	B. Tech (ME)	VIII	171ME8O03	Entrepreneur Resource Planning
10	M. Tech (TE)	III	192TE3E18	Design and Analysis of Experiments
11	M. Tech (TE)	III	192TE3E20	Waste to Energy
12	M. Tech (TE)	III	192TE3O01	Energy Systems
13	M. Tech (TE)	III	192TE3O02	Fuels and Combustion
14	M. Tech (TE)	III	192TE3O03	Green Engineering Technology
15	M. Tech (TE)	III	192TE3O04	IC Engines
16	M. Tech (TE)	III	192TE3O05	Automotive Technology

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BOS Chairperson

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Annexure-II

List of Courses Revised in the Academic Year 2020-21

S. No	Program	Semester	Course Code	Course Name
1	B. Tech (ME)	I	201ES1T05	Engineering Graphics
2	B. Tech (ME)	III	191BS3T11	Integral Transforms &Applications of Partial Differential Equations
3	B. Tech (ME)	III	191ME3T02	Computer Aided Engineering Drawing Practice
4	B. Tech (ME)	IV	191ME4T07	Kinematics of machinery
5	B. Tech (ME)	IV	191ME4T08	Thermal Engineering – I
6	B. Tech (ME)	IV	191ME4L04	Computer aided machine drawing
7	B. Tech (ME)	VII	171ME7T17	Mechatronics
8	B. Tech (ME)	VII	171ME7T18	Finite Element Methods
9	B. Tech (ME)	VII	171ME7E13	Gas dynamics
10	B. Tech (ME)	VIII	171ME7L07	CAD/CFD Lab
11	B. Tech (ME)	VIII	171ME7L08	CAM/Mechatronics Lab
.12	B. Tech (ME)	VIII	171ME8E18	Thermal Equipment Design
13	B. Tech (ME)	VIII	171ME8O06	Computer Graphics

BOS Chairperson

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Annexure III

Action Taken Report on Stakeholders Feedback in the Academic Year 2020-21

S. No	Agenda Item No.	Stakeholders Recommended	Action Taken
1	6.15	Suggested that students need to have an insight in solving real world problems.	Environmental science and Biology for engineers is included in the I, III semesters which gives an introduction and insight to real world problems related to biomedical engineering, environmental sustainability.
2		Suggested that students are strongenough in employability skills	Employability skills-I, II, III, IV courses were restructured in the AR 20 Curriculum and simultaneouslypracticing.
3		Suggested strong industry exposureto the students.	AEC has signed MoU's with renowned industries to cater the students to aware of real time applications and recent trends in Industries. Internship is made mandatory. Regular Visit to Industry.
4	6.15	Programming for problem solving using C and Programming for problem solving using C lab courses are included in I semester. It will be a difficult task for fresh mechanical engineering graduate to handle software background courses in the very first semester.	Programming for problem solving using C and Programming for problem solving using C lab courses included in the second semester of AR 20 syllabus.
5	6.15	Engineering Graphics and design are included as a single subject in the I semester.	Engineering Graphics and Computer Aided Drafting lab are divided into subject and lab course and are included in I and IIsemesters of AR 20 syllabus.

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6	6.15	Essential Electrical and Electronics Engineering, Essential Electrical and Electronics Engineering lab, Mechanical Engineering work shop lab are included in same semester	Essential Electrical and Electronics Engineering, Essential Electrical and Electronics Engineering lab are included in I semester and Engineering work shop lab is included in II semester.
7	6.15	Suggested to involve advanced courses based on specialization.	Existing AR20 curriculum was modified and developed for B. Tech Honours and B.Tech Minor degree programs and as well as different advanced courses were also added as a part of respective curriculum.
8	6.4	Inputs from subject experts to improve the curriculum	Various curriculum developments committees are formed based on different specializations like Thermal, Design, Manufacturing, CAD/CAM etc., and their suggestions were incorporated after consent from Board of studies and Academic Council.
9	6.15	Suggested free access to onlinejournals.	Free access facility was provided to faculty and research scholars and students.Recently college has introduced mLibrary for off-campus access to cater its resources and services to the user community effectively even in situations like Covid- 19.
10	6.14	Please design the curriculum in such a way that the students come across department related courses in the earlysemester itself.	Computer Aided Machine Drawing Practice course is included in the curriculum in the III semester which is one of the core subjects of Mechanical Engineering course.
11	6.14	Students get benefitted if coding or programming related course is introduced in the early semesters so that by the end of the graduation the student will be industry ready.	Skill oriented courses like JAVA programming and PYTHON Programming are introduced in the III and IV semesters to have an exposure on cutting edge technologies.

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12	6.14	Thermal Engineering is an important course for Mechanical Engineering branch. Please provide much insight tothe course	Thermal Engineering-I, Thermal Engineering Lab is introduced in IV semester to provide hands-on and practical experience on the course and it ismade sure that the theory and lab courses are included in the same semester.
13	6.15	It is better if PG students are provided an in – depth understanding of numerical and experimental techniques in heat and fluid flow.	According to the suggestions, optimization techniques with real time applications using CFD will be introduced.
14	6.15	Due to the tremendous growth in IT industry, it is better to get known to programming related courses.	As per suggestions, IT related courses will be implemented as OE such as Machine Learning and IOT etc.
15	6.15	Inputs from subject experts to improve the curriculum.	Various curriculum developments committees are formed based on specialization like thermal and their suggestions will be incorporated after consent from board of studies and academic council.
16	6.14	It is better to give access to online journals and books.	Free access facility was provided to faculty and research scholars and students. Recently college has introduced mLibrary for off – campus access to cater its resources and services to the user community effectively even in situations like COVID – 19.

BOS Chairperson

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