VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI.

Scheme of Teaching and Examinations and Syllabus
M.Tech in Thermal Engineering/Thermal Power Engineering (MTP)
(Effective from Academic year 2020 - 21)

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examinations – 2020 - 21
M.Tech in Thermal Engineering/Thermal Power Engineering (MTP)
Choice Based Credit System (CBCS) and Outcome Based Education(OBE)

I SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Hours per Week			Examination				Credits
				Theory	Practical	Skill Development Activities	Duration in hours	CIE Marks	SEE Marks	Total Marks	
				L	P	SDA					
1	PCC	20MTP11	Applied Mathematics	03	--	02	03	40	60	100	4
2	PCC	20MTP12	Finite Element Method in Heat Transfer	03	--	02	03	40	60	100	4
3	PCC	20 MTP13	Advanced Fluid Mechanics	03	--	02	03	40	60	100	4
4	PCC	20MTP14	Combustion Thermodynamics	03	--	02	03	40	60	100	4
5	PCC	20 MTP15	Advanced Power Plant Cycles	03	--	02	03	40	60	100	4
6	PCC	20 MTPL16	Thermal Engineering Measurement Laboratory	--	04	--	03	40	60	100	2
7	PCC	20RMI17	Research Methodology and IPR	01	--	02	03	40	60	100	2
			TOTAL	**17**	**04**	**12**	**21**	**280**	**420**	**700**	**24**

Note: PCC: Professional core.

Skill development activities:
Students and course instructor/s to involve either individually or in groups to interact together to enhance the learning and application skills.
The students should interact with industry (small, medium and large), understand their problems or foresee what can be undertaken for study in the form of research/ testing / projects, and for creative and innovative methods to solve the identified problem.
The students shall
(1) Gain confidence in modelling of systems and algorithms.
(2) Work on different software/s (tools) to Simulate, analyse and authenticate the output to interpret and conclude. Operate the simulated system under changed parameter conditions to study the system with respect to thermal study, transient and steady state operations, etc.
(3) Handle advanced instruments to enhance technical talent.
(4) Involve in case studies and field visits/ field work.
(5) Accustom with the use of standards/codes etc., to narrow the gap between academia and industry.
All activities should enhance student's abilities to employment and/or self-employment opportunities, management skills, Statistical analysis, fiscal expertise, etc.

Internship: All the students have to undergo mandatory internship of 6 weeks during the vacation of I and II semesters and /or II and III semesters. A University examination shall be conducted during III semester and the prescribed internship credit shall be counted for the same semester. Internship shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not take-up/complete the internship shall be declared as fail in internship course and have to complete the same during the subsequent University examination after satisfying the internship requirements.

Note: (i) Four credit courses are designed for 50 hours Teaching – Learning process.
(ii) Three credit courses are designed for 40 hours Teaching – Learning process.
(iii) Two credit courses are designed for 25 hours Teaching – Learning process.

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II SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Hours /Week			Examination				Credits
				Theory	Practical/ Seminar	Skill Development Activities	Duration in hours	CIE Marks	SEE Marks	Total Marks	
				L	P	SDA					
1	PCC	20 MTP21	Advanced Heat Transfer	03	--	02	03	40	60	100	4
2	PCC	20 MTP22	Steam and Gas Turbines	03	--	02	03	40	60	100	4
3	PCC	20MTP23	Refrigeration and Air Conditioning	03	--	02	03	40	60	100	4
4	PEC	20MTP24X	Professional Elective- 1	04	--	--	03	40	60	100	4
5	PEC	20MTP25X	Professional Elective- 2	04	--	--	03	40	60	100	4
6	PCC	20 MTPL26	Simulation Laboratory	--	04	--	03	40	60	100	2
7	PCC	20MTP27	Technical Seminar	--	02	--	--	100	--	100	2
TOTAL				**17**	**06**	**06**	**18**	**340**	**360**	**700**	**24**

Note: PCC: Professional core, PEC: Professional Elective.

Professional Elective 1		**Professional Elective 2**	
Course Code under 20XXX24X	**Course title**	**Course Code under 20XXX25X**	**Course title**
20MTP241	Energy Conservation and Management	20MTP251	Solar Thermal Technologies and applications
20MTP242	Thermal Power Station	20MTP252	Modelling and Simulation of Thermal Systems
20 MTP243	Nuclear Engineering in Power Generation	20MTP253	Computational Methods in Heat Transfer and Fluid Flow
20MTP244	Cryogenics	20MTP254	Jet Propulsion and Rocketry

Note:

1. Technical Seminar: CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide, if any, and a senior faculty of the department. Participation in the seminar by all postgraduate students of the programme shall be mandatory.

The CIE marks awarded for Technical Seminar, shall be based on the evaluation of Seminar Report, Presentation skill and performance in Question and Answer session in the ratio 50:25:25.

2. Internship: All the students shall have to undergo mandatory internship of 6 weeks during the vacation of I and II semesters and /or II and III semesters. A University examination shall be conducted during III semester and the prescribed internship credit shall be counted in the same semester. Internship shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not take-up/complete the internship shall be declared as fail in internship course and have to complete the same during the subsequent University examination after satisfying the internship requirements.

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III SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Hours /Week			Examination				Credits
				Theory	Practical/ Mini–Project/ Internship	Skill Development activities	Duration in hours	CIE Marks	SEE Marks	Total Marks	
				L	P	SDA					
1	PCC	20MTP31	Design of Heat Transfer Equipment for Thermal Power Plant	03	--	02	03	40	60	100	4
2	PEC	20MTP32X	Professional elective -3	03	--	--	03	40	60	100	3
3	PEC	20MTP33X	Professional elective -4	03	--	--	03	40	60	100	3
4	Project	20MTP34	Project Work phase -1	--	02	--	--	100	--	100	2
5	PCC	20MTP35	Mini-Project	--	02	--	--	100	--	100	2
6	Internship	20MTPI36	Internship	(Completed during the intervening vacation of I and II semesters and /or II and III semesters.)			03	40	60	100	6
TOTAL				**09**	**04**	**02**	**12**	**360**	**240**	**600**	**20**

Note: PCC: Professional core, PEC: Professional Elective.

Professional elective 3		**Professional elective 4**	
Course Code under	**Course title**	**Course Code under**	**Course title**
20MTP321	Convective Heat and Mass Transfer	20MTP331	Experimental Methods in Thermal Power Engineering
20MTP322	Theory of IC Engines	20MTP332	Non-conventional Energy Resources
20MTP323	Design and Analysis of Thermal Systems	20MTP333	Gas Dynamics
20MTP324	Phase Change Phenomena in Fluids	20MTP334	Thermal Storage System

Note:

1. Project Work Phase-1: Students in consultation with the guide/co-guide if any, shall pursue literature survey and complete the preliminary requirements of selected Project work. Each student shall prepare relevant introductory project document, and present a seminar.

CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide if any, and a senior faculty of the department. The CIE marks awarded for project work phase -1, shall be based on the evaluation of Project Report, Project Presentation skill and performance in Question and Answer session in the ratio 50:25:25.

SEE (University examination) shall be as per the University norms.

2. Internship: Those, who have not pursued /completed the internship shall be declared as fail in internship course and have to complete the same during subsequent University examinations after satisfying the internship requirements. Internship SEE (University examination) shall be as per the University norms.

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IV SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Field work	Duration in hours	CIE Marks	SEE Marks Viva voce	Total Marks	
				L	P					
1	Project	20MTP41	Project work phase -2	--	04	03	40	60	100	20
			TOTAL	--	**04**	**03**	**40**	**60**	**100**	**20**

Note:

1. Project Work Phase-2:

CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide, if any, and a Senior faculty of the department. The CIE marks awarded for project work phase -2, shall be based on the evaluation of Project Report subjected to plagiarism check, Project Presentation skill and performance in Question and Answer session in the ratio 50:25:25.

SEE shall be at the end of IV semester. Project work evaluation and Viva-Voce examination (SEE), after satisfying the plagiarism check, shall be as per the University norms.