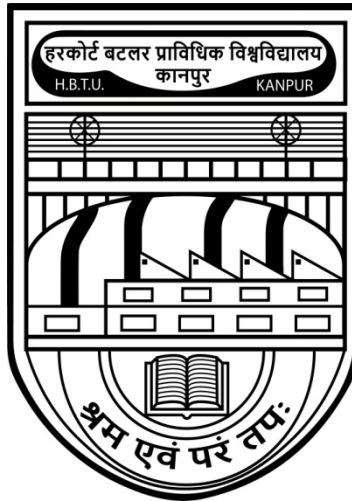


**SEMESTER WISE COURSE STRUCTURE  
&  
EVALUATION SCHEME**

**MASTER OF TECHNOLOGY  
MECHANICAL ENGINEERING**

**(Effective from the session 2017-18 for new entrants)**



**HARCOURT BUTLER TECHNICAL UNIVERSITY  
KANPUR-208002 (UP) – INDIA**

**SEMESTER WISE COURSE STRUCTURE & EVALUATION SCHEME**  
**M.TECH. COMPUTER AIDED DESIGN**  
**(FULL TIME PROGRAMME)**

**SEMESTER I**

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	PCC	EME 501	Numerical Methods & Computer Programming	5 (3-2-0)	30	20	-	50	50	100
2.	PCC	EME 503	Advance Mechanics of Solids Computer Graphics & Geometric Modelling	4 (3-1-0)	30	20	-	50	50	100
3.	PCC	EME 505	Computer Aided Design of Mechanical System	5 (3-2-0)	30	20	-	50	50	100
4.	PCC	EME 507	Numerical Methods & Computer Programming	4 (3-1-0)	30	20	-	50	50	100
<b>Total Credits</b>				<b>18</b>						

**SEMESTER II**

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	PCC	EME 502	Optimization Methods for Engineering Design	4 (3-1-0)	30	20	-	50	50	100
2.	PCC	EME 504	Finite Element Method	4 (3-1-0)	30	20	-	50	50	100
3.	PEC	PEC I	PEC-I	4 (3-1-0)	30	20	-	50	50	100
4.	PEC	PEC II	PEC-II	4 (3-1-0)	30	20	-	50	50	100
<b>Total Credits</b>				<b>16</b>						

**SEMESTER III**

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	PCC	EME 601	Product Design & Development	4 (3-1-0)	30	20	-	50	50	100
2.	PEC	PEC III	PEC-III	4 (3-1-0)	30	20	-	50	50	100
3.	Seminar	EME 671	Seminar	2 (0-0-4)	-	50	-	50	50	100
4.	Dissertation	EME 697	Dissertation	4 (0-0-8)	-	50	-	50	50	100
<b>Total Credits</b>				<b>14</b>						

**SEMESTER IV**

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	Dissertation	EME 698	Dissertation	12 (0-0-24)	-	50	-	50	50	100
<b>Total Credits</b>				<b>12</b>						

**Total Programme Credits : 60**

EME 697 Dissertation will have Internal Evaluation while EME 698 Dissertation will have External Evaluation.

**DEPARTMENT OF MECHANICAL ENGINEERING**  
**LIST OF ELECTIVE COURSES**  
**M.TECH. COMPUTER AIDED DESIGN**  
**(FULL TIME PROGRAMME)**

**Programme Elective-I**

<b>S. No.</b>	<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>
1.	EME 530	Theory of Elasticity & Plasticity	4 (3-1-0)
2.	EME 532	Computational Fluid Dynamics	4 (3-1-0)
3.	EME 534	Smart Materials & Structures	4 (3-1-0)
4.	EME 536	Industrial Design and Ergonomics	4 (3-1-0)
5.	EME 538	Rapid Prototyping & Tooling	4 (3-1-0)
6.	EME 540	Advanced Manufacturing Processes	4 (3-1-0)

**Programme Elective-II**

1.	EME 550	Advanced Mechanical Vibrations	4 (3-1-0)
2.	EME 552	Introduction to Robotics	4 (3-1-0)
3.	EME 554	Flexible Manufacturing System	4 (3-1-0)
4.	EME 556	Reliability & Maintenance	4 (3-1-0)
5.	EME 558	Composite Materials	4 (3-1-0)

**Programme Elective-III**

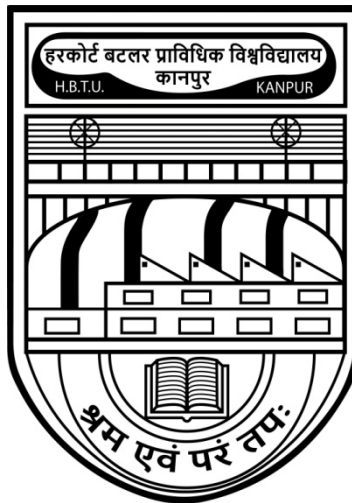
1.	EME 631	Computer Aided Manufacturing	4 (3-1-0)
2.	EME 633	Fracture Mechanics	4 (3-1-0)
3.	EME 635	Neural Network & Fuzzy Systems	4 (3-1-0)
4.	EME 637	Design of Thermal System	4 (3-1-0)
5.	EME 639	Advance Machine Design	4 (3-1-0)
6.	EME 641	Simulation, Modeling & Analysis	4 (3-1-0)

**SEMESTER WISE COURSE STRUCTURE  
&  
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**MASTER OF TECHNOLOGY**

**CIVIL ENGINEERING**

**(Effective from the session 2017-18 for new entrants)**



**HARCOURT BUTLER TECHNICAL UNIVERSITY  
KANPUR-208002 (UP) – INDIA**

**SEMESTER WISE COURSE STRUCTURE & EVALUATION SCHEME  
M.TECH. ENVIRONMENTAL SCIENCE AND ENGINEERING  
(FULL TIME PROGRAMME)**

**SEMESTER I**

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	PCC	ECE 501	Environmental Chemistry and Microbiology	5(3-1-2)	15	20	15	50	50	100
2.	PCC	ECE 503	Environmental Quality and Natural Process	4(3-1-0)	30	20	-	50	50	100
3.	PCC	ECE 505	Air Pollution Control	5(3-1-2)	15	20	15	50	50	100
4.	PEC	PEC I	PEC I	4(3-1-0)	30	20	-	50	50	100
<b>Total Credits</b>				<b>18</b>						

**SEMESTER II**

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	PCC	ECE 502	Design of Wastewater Treatment	4(3-1-0)	30	20	-	50	50	100
2.	PCC	ECE 504	Solid and Hazardous Waste Management	4(3-1-0)	30	20	-	50	50	100
3.	PCC	BMA 514	Probability and Statistics for Engineers	4(3-1-0)	30	20	-	50	50	100
4.	PEC	PEC II	PEC II	4(3-1-0)	30	20	-	50	50	100
<b>Total Credits</b>				<b>16</b>						

**SEMESTER III**

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	PCC	ECE 601	Environmental System Analysis	4(3-1-0)	30	20	-	50	50	100
2.	PEC	PEC III	PEC III	4(3-1-0)	30	20	-	50	50	100
3.	Seminar	ECE 671	Seminar	2(0-0-2)	-	50	-	50	50	100
4.	Dissertation	ECE 697	Dissertation	4(0-0-8)	-	50	-	50	50	100
<b>Total Credits</b>				<b>14</b>						

**SEMESTER IV**

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	Dissertation	ECE 698	Dissertation	12(0-0-24)	-	50	-	50	50	100
<b>Total Credits</b>				<b>12</b>						

**Total Programme Credits : 60**

ECE 697 Dissertation will have Internal Evaluation while ECE 698 Dissertation will have External Evaluation.

**DEPARTMENT OF CIVIL ENGINEERING**  
**LIST OF ELECTIVE COURSES**  
**M.TECH. ENVIRONMENTAL SCIENCE AND ENGINEERING**  
**(FULL TIME PROGRAMME)**

**Programme Elective-I**

<b>S. No.</b>	<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>
1.	ECE 509	Environmental Impact Assessment	4(3-1-0)
2.	ECE 511	Surface Water Quality Modeling and Control	4(3-1-0)
3.	ECE 513	Toxicology and Environmental Risk Assessment	4(3-1-0)
4.	ECE 515	Environmental Economics, Legislation and Social Impact	4(3-1-0)
5.	ECE 517	Physico-Chemical Processes in Water and Wastewater	4(3-1-0)

**Programme Elective-II**

1.	ECE 510	Ground Water Flow and Pollution Modeling	4(3-1-0)
2.	ECE 512	Advanced Water and Wastewater Technologies	4(3-1-0)
3.	ECE 514	Principles of Cleaner Production	4(3-1-0)
4.	ECE 516	Industrial Waste Management and Environmental Audit	4(3-1-0)
5.	ECE 518	Occupational Health and Safety	4(3-1-0)

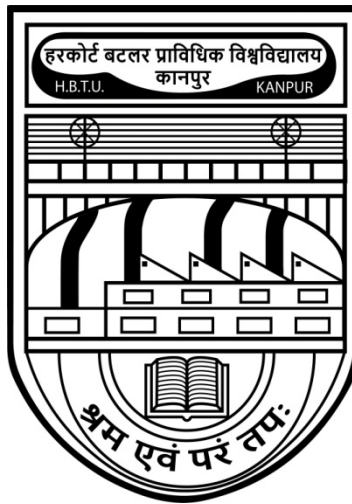
**Programme Elective-III**

1.	ECE 603	Remote Sensing and GIS for Environmental Applications	4(3-1-0)
2.	ECE 605	Environmental Hydraulics	4(3-1-0)
3.	ECE 607	Application of Soft Computing Techniques	4(3-1-0)
4.	ECE 609	Transport of Water and Wastewater	4(3-1-0)
5.	ECE 611	Water Resources Management	4(3-1-0)

**SEMESTER WISE COURSE STRUCTURE  
&  
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**MASTER OF TECHNOLOGY  
ELECTRONICS ENGINEERING**

**(Effective from the session 2017-18 for new entrants)**



**HARCOURT BUTLER TECHNICAL UNIVERSITY  
KANPUR-208002 (UP) – INDIA**

**SEMESTER WISE COURSE STRUCTURE & EVALUATION SCHEME  
M.TECH. ELECTRONICS & COMMUNICATION ENGINEERING  
(FULL TIME PROGRAMME)**

**SEMESTER I**

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	PCC	EET 501	Introduction to Signal Analysis	4 (3-1-0)	30	20	-	50	50	100
2.	PCC	EET 503	Advanced Semiconductor Devices	4 (3-1-0)	30	20	-	50	50	100
3.	PCC	BMA 507	Probability, Statistics and Queuing Model	4 (3-1-0)	30	20	-	50	50	100
4.	PEC	PEC I	PEC-I	4 (3-1-0)	30	20	-	50	50	100
<b>Total Credits</b>				<b>16</b>						

**SEMESTER II**

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	PCC	EET 502	Digital Communication	5 (3-2-0)	15	20	15	50	50	100
2.	PCC	EET 504	Optical Communication	5 (3-2-0)	15	20	15	50	50	100
3.	PCC	BMA 512	Discrete Mathematics	4 (3-1-0)	30	20	-	50	50	100
4.	PEC	PEC II	PEC-II	4 (3-1-0)	30	20	-	50	50	100
<b>Total Credits</b>				<b>18</b>						

**SEMESTER III**

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	PCC	EET 601	Advanced Digital Signal Processing	4 (3-1-0)	30	20	-	50	50	100
2.	PEC	PEC III	PEC-III	4 (3-1-0)	30	20	-	50	50	100
3.	Seminar	EET 695	Seminar	2 (0-0-4)	-	50	-	50	50	100
4.	Dissertation	EET 697	Dissertation	4 (0-0-8)	-	50	-	50	50	100
<b>Total Credits</b>				<b>14</b>						

**SEMESTER IV**

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	Dissertation	EET 698	Dissertation	12 (0-0-24)	-	50	-	50	50	100
<b>Total Credits</b>				<b>12</b>						

**Total Programme Credits : 60**

EET 697 Dissertation will have Internal Evaluation while EET 698 Dissertation will have External Evaluation.



**DEPARTMENT OF ELECTRONICS ENGINEERING**  
**LIST OF ELECTIVE COURSES**  
**M.TECH. ELECTRONICS & COMMUNICATION ENGINEERING**  
**(FULL TIME PROGRAMME)**

**Programme Elective-I**

<b>S. No.</b>	<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>
1.	EET 531	Space Communication	4 (3-1-0)
2.	EET 533	Organic Electronics	4 (3-1-0)
3.	EET 535	RF Systems	4 (3-1-0)
4.	EET 537	Digital System Design	4 (3-1-0)
5.	EET 539	Advanced Microprocessor	4 (3-1-0)
6.	EET 541	Communication Theory	4 (3-1-0)

**Programme Elective-II**

1.	EET 550	Embedded Systems	4 (3-1-0)
2.	EET 552	Antenna Analysis & Synthesis	4 (3-1-0)
3.	EET 554	VLSI System Design	4 (3-1-0)
4.	EET 556	Wireless Communication	4 (3-1-0)
5.	EET 558	Information Theory & Coding	4 (3-1-0)
6.	EET 560	Architecture & Application of Digital Signal Processors	4 (3-1-0)

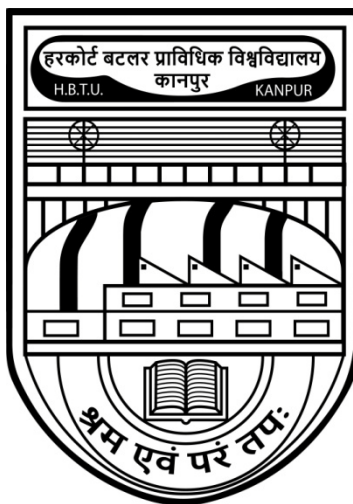
**Programme Elective-III**

1.	EET 631	Telecommunication & Switching	4 (3-1-0)
2.	EET 633	Image Processing	4 (3-1-0)
3.	EET 635	Data Communication Networks	4 (3-1-0)
4.	EET 637	Fuzzy Electronics	4 (3-1-0)
5.	EET 639	Photonic Networks	4 (3-1-0)
6.	EET 641	VLSI Implementation of Digital Processors	4 (3-1-0)
7.	EET 643	Mobile Communication	4 (3-1-0)

**SEMESTER WISE COURSE STRUCTURE  
&  
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**MASTER OF TECHNOLOGY  
CHEMICAL ENGINEERING**

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KANPUR-208002 (UP) – INDIA**

**SEMESTER WISE COURSE STRUCTURE & EVALUATION SCHEME**  
**M.TECH. CHEMICAL ENGINEERING**  
**(FULL TIME PROGRAMME)**

**SEMESTER I**

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	PCC	TCH 501	Advanced Mathematical Methods in Chemical Engg.	4 (3-1-0)	30	20	-	50	50	100
2.	PCC	TCH 503	Advanced Chemical Engineering Thermodynamics	4 (3-1-0)	30	20	-	50	50	100
3.	PCC	TCH 505	Advanced Chemical Reaction Engineering	4 (3-1-0)	30	20	-	50	50	100
4.	PEC	PEC I	PEC-I	4 (3-1-0)	30	20	-	50	50	100
<b>Total Credits</b>				<b>16</b>						

**SEMESTER II**

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	PCC	TCH 502	Advanced Transport Phenomena	4 (3-1-0)	30	20	-	50	50	100
2.	PCC	TCH 504	Advanced Separation Processes	4 (3-1-0)	30	20	-	50	50	100
3.	PCC	TCH 506	Optimization of Chemical Processes	4 (3-1-0)	30	20	-	50	50	100
4.	PEC	PEC II	PEC-II	4 (3-1-0)	30	20	-	50	50	100
<b>Total Credits</b>				<b>16</b>						

**SEMESTER III**

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	PCC	TCH 601	Modeling and Simulation of Chemical Processes	4 (3-1-0)	30	20	-	50	50	100
2.	PCC	TCH 603	Design & Simulation Lab	2 (0-0-6)	-	20	30	50	50	100
3.	PEC	PEC III	PEC-III	4 (3-1-0)	30	20	-	50	50	100
4.	Seminar	TCH 671	Seminar	2 (0-0-4)	-	50	-	50	50	100
5.	Dissertation	TCH 697	Dissertation	4 (0-0-8)	-	50	-	50	50	100
<b>Total Credits</b>				<b>16</b>						

**SEMESTER IV**

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	Dissertation	TCH 698	Dissertation	12 (0-0-24)	-	50	-	50	50	100
<b>Total Credits</b>				<b>12</b>						

**Total Programme Credits : 60**

TCH 697 Dissertation will have Internal Evaluation while TCH 698 Dissertation will have External Evaluation.

**DEPARTMENT OF CHEMICAL ENGINEERING**  
**LIST OF ELECTIVE COURSES**  
**M.TECH. CHEMICAL ENGINEERING**  
**(FULL TIME PROGRAMME)**

**Programme Elective-I**

<b>S. No.</b>	<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>
1.	TCH 531	Air Pollution Monitoring and Control	4 (3-1-0)
2.	TCH 533	Safety Hazard and Risk Analysis	4 (3-1-0)
3.	TCH 535	Instrumental Methods of Analysis	4 (3-1-0)
4.	TCH 537	Advanced Petroleum Refining	4 (3-1-0)

**Programme Elective-II**

1.	TCH 550	Advanced Process Control	4 (3-1-0)
2.	TCH 552	Statistical Design of Experiments	4 (3-1-0)
3.	TCH 554	Design of Piping System for Chemical Plants	4 (3-1-0)
4.	TCH 556	Water Pollution Monitoring and Control	4 (3-1-0)

**Programme Elective-III**

1.	TCH 631	Principles of Polymer Engineering	4 (3-1-0)
2.	TCH 633	Solar Thermal Energy Storage	4 (3-1-0)
3.	TCH 635	Nano Technology	4 (3-1-0)
4.	TCH 637	Natural Gas Engineering	4 (3-1-0)