Walchand College of Engineering, Sangli

(An Autonomous Institute)

Curriculum (Structures)

for

M.Tech. Programme in

Mechanical (Design Engineering)

With Effect From

Academic Year

2018-2019 (F. Y. M. Tech.)

2019-2020 (S. Y. M. Tech.)

Walchand College of Engineering, Sangli
(An Autonomous Institute)
Teaching and Evaluation Scheme
First Year M.Tech. Program in Mechanical (Design Engineering)
Semester I

Course			Teaching Scheme				Evaluation Scheme		
Category	**Code**	**Name**	**L**	**T**	**P**	**Credits**	**Component**	**Marks**	
								Max	**Min for Passing**
MC	3DE501	Research Methodology for Mechanical Design Engineers	2	-	-	2	ISE 1	10	40
							MSE	30	
							ISE 2	10	
							ESE	50	20
PC	3DE502	Advanced Stress Analysis	3	-	-	3	ISE 1	10	40
							MSE	30	
							ISE 2	10	
							ESE	50	20
PC	3DE503	Advanced Vibrations and Acoustics	3	-	-	3	ISE 1	10	40
							MSE	30	
							ISE 2	10	
							ESE	50	20
PE	3DE5**	Professional elective 1	3	-	-	3	ISE 1	10	40
							MSE	30	
							ISE 2	10	
							ESE	50	20
PE	3DE5**	Professional elective 2	3	-	-	3	ISE 1	10	40
							MSE	30	
							ISE 2	10	
							ESE	50	20
PC	3DE551	Design Engineering Laboratory 1	-	4	-	2	ISE	50	20
							ESE	50	20
PE	3DE552	Design Engineering Laboratory 2 (Professional Elective)	-	4	-	2	ISE	50	20
							ESE	50	20
Total			14	8	0	18	**Total Credits: 18 Total Contact Hrs: 22**		

List of Professional Elective 1		List of Professional Elective 2	
3DE511	Advanced Machine Design	3DE515	Advanced Engineering Materials
3DE512	Design for Manufacturing and Assembly	3DE516	Mechanics of Composite Materials
3DE513	Mathematical Methods in Engineering	3DE517	Analysis and Synthesis of Mechanisms
3DE514	Reliability Engineering	3DE518	Process equipment design

Walchand College of Engineering, Sangli
(An Autonomous Institute)
Teaching and Evaluation Scheme Effective from 2018-19
First Year M.Tech. Program in Mechanical (Design Engineering)
Semester II

Course			Teaching Scheme				Evaluation Scheme		
Category	Code	Name	L	T	P	Credits	Component	Marks	
								Max	Min for Passing
OE	2OE5**	Open Elective	3	-	-	3	ISE 1	10	40
							MSE	30	
							ISE 2	10	
							ESE	50	20
PC	3DE521	Finite Element Method	3	-	-	3	ISE 1	10	40
							MSE	30	
							ISE 2	10	
							ESE	50	20
PC	3DE522	Computer Aided Design	3	-	-	3	ISE 1	10	40
							MSE	30	
							ISE 2	10	
							ESE	50	20
PE	3DE5**	Professional elective 3	3	-	-	3	ISE 1	10	40
							MSE	30	
							ISE 2	10	
							ESE	50	20
PE	3DE5**	Professional elective 4	3	-	-	3	ISE 1	10	40
							MSE	30	
							ISE 2	10	
							ESE	50	20
PC	3DE571	Design Engineering Laboratory 3	-	4	-	2	ISE	50	20
							ESE	50	20
PE	3DE572	Design Engineering Laboratory 4 (Professional Elective)	-	4	-	2	ISE	50	20
							ESE	50	20
PC	3DE541	Pre-dissertation work & seminar	-	4	-	2	ISE	100	40
Total			15	12	0	21	**Total Credits: 21** **Total Contact Hrs: 27**		

List of Professional Elective 3		List of Professional Elective 4	
3DE531	Tribology in Design	3DE535	Advanced Metallurgy
3DE532	Robotics	3DE536	Condition Based Monitoring
3DE533	Fracture Mechanics	3DE537	Optimization Techniques in Design
3DE534	Advanced Machine tool design	3DE538	Vehicle Dynamics

Open Elective		
Course Code	Course Name	Offered by Department
3OE501	Design Optimization	Applied Mechanics
3OE502	Structural Health Monitoring and Smart Materials	
3OE515	Life Cycle Assessment and Ecolabelling	Civil Engineering
3OE516	Construction Equipment	
3OE529	Business Analytics	Mechanical Engineering
3OE530	Industrial Safety	
3OE531	Operations Research	
3OE532	Cost Management of Engineering Projects	
3OE533	Composite Materials	
3OE534	Waste to Energy.	
3OE535	Project Based Learning with Embedded System	
3OE543	Control Techniques for Electrical Drives.	Electrical Engineering
3OE544	Neural Network and Fuzzy Control.	
3OE557	Remote sensing and Image Analysis	Electronics Engineering
3OE558	Automotive Electronics	
3OE559	Mechatronics	
3OE560	Digital Image processing	
3OE561	Nano materials and Nano-technology	
3OE562	Numerical Methods for Engineers	
3OE563	Optimization Techniques	
3OE571	Business Intelligence	Computer Science and Engineering
3OE 572	Cyber Security	
3OE585	Geographic Information Systems	Information Technology
3OE586	Data Visualization & Interpretation	
3OE587	Computational Engineering using Python	
3OE588	3D Modeling, Animation and Computer Simulation	

Walchand College of Engineering, Sangli

(An Autonomous Institute)

Teaching and Evaluation Scheme

Second Year M.Tech. Program in Mechanical (Design Engineering)

Semester III

Course			Teaching Scheme				Evaluation Scheme		
Category	**Code**	**Name**	**L**	**T**	**P**	**Credits**	**Component**	**Marks**	
								Max	**Min for Passing**
PE	3DE6**	Professional elective 5	3	-	-	3	ISE 1	10	40
							MSE	30	
							ISE 2	10	
							ESE	50	20
PC	3DE690	Dissertation phase I	-	-	5	4	ISE	100	40
	3DE691	Dissertation phase II				2	ISE	100	40
						4	ESE	100	40
MC	3IC6**	Mandatory Non Credit Course	2	-	-	-	ISE 1	35	40
							MSE	30	
							ISE 2	35	
Total			5	5	0	13	**Total Credits: 13** **Total Contact Hrs: 10**		

Semester IV

Course			Teaching Scheme				Evaluation Scheme		
Category	**Code**	**Name**	**L**	**T**	**P**	**Credits**	**Component**	**Marks**	
								Max	**Min for Passing**
PC	3DE692	Dissertation phase III	-	-	5	4	ISE	100	40
	3DE693	Dissertation phase IV				4	ISE	100	40
						8	ESE	100	40
MC	3IC6**	Mandatory Non Credit Course	2	-	-	-	ISE 1	35	40
							MSE	30	
							ISE 2	35	
Total			2	5	0	16	**Total Credits: 16** **Total Contact Hrs: 7**		

List of Professional elective 5	
3DE611	Advanced Finite Element Method
3DE612	Multi-body Dynamics
3DE613	Experimental Stress Analysis
3DE614	Product life cycle management (PLM)

List of Mandatory Non Credit Course	
3IC601	Constitution of India
3IC602	Pedagogy of Studies
3IC603	Disaster Management
3IC604	Value Education

Semester	**I**	**II**	**III**	**IV**	**Total**
Credits	18	21	13	16	68

Walchand College of Engineering, Sangli
(An Autonomous Institute)
Curriculum Comparison for WCE and AICTE

M. Tech. Mechanical (Design Engineering)					
Sr. No.	**Category**	**Credits**		**%**	
		AICTE	**Dept**	**AICTE**	**Dept**
1	PC	12	12	17.6	17.6
2	PE	15	15	22.1	22.1
3	PCL	10	8	14.7	11.8
4	OE	3	3	4.4	4.4
5	PC	26	26	38.2	38.2
6	MC	2	2	2.9	2.9
7	PC	0	2	0	2.9
8	PC	0	0	0	0
9	MC	0	0	0	0
Total Credits		**68**	**68**	**100**	**100**

Category

Core theory courses (PC)

Programme Elective courses relevant to chosen specialization/ branch& (PE)

Core/Elective laboratory courses (PCL)

Open subjects – Electives from other technical and /or emerging subjects (OE)

Dissertation (PC)

Mandatory course on Research Methodology (MC)

Pre-dissertation work and seminar (PC)

Summer Internship (PC)

Mandatory Non- credit Courses (MC)

Walchand College of Engineering, Sangli

(An Autonomous Institute)

Curriculum (Structure)

For

M. Tech. Programme in

Mechanical (Heat Power Engineering)

With Effect From

Academic Year

2018-2019 (F. Y. M. Tech.)

2019-2020 (S. Y. M. Tech.)

Walchand College of Engineering, Sangli
(An Autonomous Institute)
Teaching and Evaluation Scheme
First Year M. Tech. Program in Mechanical (Heat Power Engineering)
Semester I

Course			Teaching Scheme				Evaluation Scheme		
Category	**Code**	**Name**	**L**	**T**	**P**	**Credits**	**Component**	**Marks**	
								Max	**Min for Passing**
MC	3HP501	Research methodology for Mechanical Heat Power Engineers	2	-	-	2	ISE 1	10	40
							MSE	30	
							ISE 2	10	
							ESE	50	20
PC	3HP502	Thermodynamics and combustion	3	-	-	3	ISE 1	10	40
							MSE	30	
							ISE 2	10	
							ESE	50	20
PC	3HP503	Advance fluid dynamics	3	-	-	3	ISE 1	10	40
							MSE	30	
							ISE 2	10	
							ESE	50	20
PE	3HP5**	Professional elective 1	3	-	-	3	ISE 1	10	40
							MSE	30	
							ISE 2	10	
							ESE	50	20
PE	3HP5**	Professional elective 2	3	-	-	3	ISE 1	10	40
							MSE	30	
							ISE 2	10	
							ESE	50	20
PC	3HP551	Heat Power Engineering Laboratory 1	-	4	-	2	ISE	50	20
							ESE	50	20
PE	3HP552	Heat Power Engineering Laboratory 2 (Professional Elective)	-	4	-	2	ISE	50	20
							ESE	50	20
Total			14	8	0	18	**Total Credits: 18 Total Contact Hrs: 22**		

List of Professional Elective 1		List of Professional Elective 2	
3HP511	Computational methods in fluid flow and heat transfer	3HP515	Design of hydro turbo machines
3HP512	Nuclear Engineering	3HP516	Air conditioning system design
3HP513	Energy conservation and management	3HP517	Gas turbines
3HP514	Design of thermal turbo systems		

Walchand College of Engineering, Sangli
(An Autonomous Institute)
Teaching and Evaluation Scheme
First Year M. Tech. Program in Mechanical (Heat Power Engineering)
Semester II

Course			Teaching Scheme				Evaluation Scheme			
Category	**Code**	**Name**	**L**	**T**	**P**	**Credits**	**Component**	**Marks**		
								Max	**Min for Passing**	
OE	2OE5**	Open Elective	3	-	-	3	ISE 1	10		
							MSE	30		
							ISE 2	10		
							ESE	50	20	
PC	3HP521	Advance Heat transfer	3	-	-	3	ISE 1	10		40
							MSE	30		
							ISE 2	10		
							ESE	50	20	
PC	3HP522	Steam engineering	3	-	-	3	ISE 1	10		40
							MSE	30		
							ISE 2	10		
							ESE	50	20	
PE	3HP5**	Professional elective 3	3	-	-	3	ISE 1	10		40
							MSE	30		
							ISE 2	10		
							ESE	50	20	
PE	3HP5**	Professional elective 4	3	-	-	3	ISE 1	10		40
							MSE	30		
							ISE 2	10		
							ESE	50	20	
PC	3HP571	Heat Power Engineering Laboratory 3	-	4	-	2	ISE	50	20	
							ESE	50	20	
PE	3HP572	Heat Power Engineering Laboratory 4 (Professional Elective)	-	4	-	2	ISE	50	20	
							ESE	50	20	
PC	3HP541	Pre-dissertation work & seminar	-	4	-	2	ISE	100	40	
Total			16	8	0	21	**Total Credits: 21** **Total Contact Hrs: 24**			

List of Professional Elective 3		**List of Professional Elective 4**	
3HP531	IC engine design	3HP535	Cryogenics
3HP532	Design of heat exchanger	3HP536	Modeling of IC engines
3HP533	Industrial refrigeration	3HP537	Industrial air conditioning
3HP534	Convective and irradiative heat transfer	3HP538	Computational fluid dynamics

Open Elective		
Course Code	Course Name	Offered by Department
3OE501	Design Optimization	Applied Mechanics
3OE502	Structural Health Monitoring and Smart Materials	
3OE515	Life Cycle Assessment and Ecolabelling	Civil Engineering
3OE516	Construction Equipment	
3OE529	Business Analytics	Mechanical Engineering
3OE530	Industrial Safety	
3OE531	Operations Research	
3OE532	Cost Management of Engineering Projects	
3OE533	Composite Materials	
3OE534	Waste to Energy.	
3OE535	Project Based Learning with Embedded System	
3OE543	Control Techniques for Electrical Drives.	Electrical Engineering
3OE544	Neural Network and Fuzzy Control.	
3OE557	Remote sensing and Image Analysis	Electronics Engineering
3OE558	Automotive Electronics	
3OE559	Mechatronics	
3OE560	Digital Image processing	
3OE561	Nano materials and Nano-technology	
3OE562	Numerical Methods for Engineers	
3OE563	Optimization Techniques	
3OE571	Business Intelligence	Computer Science and Engineering
3OE 572	Cyber Security	
3OE585	Geographic Information Systems	Information Technology
3OE586	Data Visualization & Interpretation	
3OE587	Computational Engineering using Python	
3OE588	3D Modeling, Animation and Computer Simulation	

Walchand College of Engineering, Sangli
(An Autonomous Institute)
Teaching and Evaluation Scheme
Second Year M.Tech. Program in Mechanical (Heat Power Engineering)
Semester III

Course			Teaching Scheme				Evaluation Scheme		
Category	Code	Name	L	T	P	Credits	Component	Marks	
								Max	Min for Passing
PE	3HP6**	Professional elective 5	3	-	-	3	ISE 1	10	40
							MSE	30	
							ISE 2	10	
							ESE	50	20
PC	3HP690	Dissertation phase I	-	-	5	4	ISE	100	40
	3HP691	Dissertation phase II				2	ISE	100	40
						4	ESE	100	40
MC	3IC6**	Mandatory Non Credit Course	2	-	-	-	ISE 1	35	40
							MSE	30	
							ISE 2	35	
Total			5	-	5	13	**Total Credits: 13** **Total Contact Hrs: 10**		

Semester IV

Course			Teaching Scheme				Evaluation Scheme		
Category	Code	Name	L	T	P	Credits	Component	Marks	
								Max	Min for Passing
PC	3HP692	Dissertation phase III	-	-	5	4	ISE	100	40
	3HP693	Dissertation phase IV				4	ISE	100	40
						8	ESE	100	40
MC	3IC6**	Mandatory Non Credit Course	2	-	-	-	ISE 1	35	40
							MSE	30	
							ISE 2	35	
Total			2	-	5	16	**Total Credits: 16** **Total Contact Hrs: 7**		

List of Professional Elective 5	
3HP611	Design of solar and wind systems
3HP612	Advance mathematical methods in engineering
3HP613	Food preservation and cold chain management
3HP614	Design of thermal systems

List of Mandatory Non Credit Course	
3IC601	Constitution of India
3IC602	Pedagogy of Studies
3IC603	Disaster Management
3IC604	Value Education

Semester	I	II	III	IV	Total
Credits	18	21	13	16	68

Walchand College of Engineering, Sangli
(An Autonomous Institute)
Curriculum Comparison for WCE and AICTE

M. Tech. Mechanical (Heat Power Engineering)					
Sr. No.	**Category**	**Credits**		**%**	
		AICTE	**Dept**	**AICTE**	**Dept**
1	PC	12	12	17.6	17.6
2	PE	15	15	22.1	22.1
3	PCL	10	8	14.7	11.8
4	OE	3	3	4.4	4.4
5	PC	26	26	38.2	38.2
6	MC	2	2	2.9	2.9
7	PC	0	2	0	2.9
8	PC	0	0	0	0
9	MC	0	0	0	0
Total Credits		**68**	**68**	**100**	**100**

Category

Core theory courses (PC)

Programme Elective courses relevant to chosen specialization/ branch& (PE)

Core/Elective laboratory courses (PCL)

Open subjects – Electives from other technical and /or emerging subjects (OE)

Dissertation (PC)

Mandatory course on Research Methodology (MC)

Pre-dissertation work and seminar (PC)

Summer Internship (PC)

Mandatory Non- credit Courses (MC)

Walchand College of Engineering, Sangli

(An Autonomous Institute)

Curriculum (Structures)

for

M.Tech. Programme in

Mechanical (Production Engineering)

With Effect From

Academic Year

2018-2019 (F. Y. M. Tech.)

2019-2020 (S. Y. M. Tech.)

Walchand College of Engineering, Sangli
(An Autonomous Institute)
Teaching and Evaluation Scheme
First Year M. Tech. Program in Mechanical (Production Engineering)
Semester I

Course			Teaching Scheme				Evaluation Scheme			
Category	**Code**	**Name**	**L**	**T**	**P**	**Credits**	**Component**	**Marks**		
								Max	**Min for Passing**	
MC	3PR501	Research Methodology for Mechanical Production Engineers	2	-	-	2	ISE 1	10		40
							MSE	30		
							ISE 2	10		
							ESE	50	20	
PC	3PR502	Manufacturing processes	3	-	-	3	ISE 1	10		40
							MSE	30		
							ISE 2	10		
							ESE	50	20	
PC	3PR503	Advanced Joining Technology	3	-	-	3	ISE 1	10		40
							MSE	30		
							ISE 2	10		
							ESE	50	20	
PE	3PR5**	Professional elective 1	3	-	-	3	ISE 1	10		40
							MSE	30		
							ISE 2	10		
							ESE	50	20	
PE	3PR5**	Professional elective 2	3	-	-	3	ISE 1	10		40
							MSE	30		
							ISE 2	10		
							ESE	50	20	
PC	3PR551	Production Engineering Laboratory 1	-	4	-	2	ISE	50	20	
							ESE	50	20	
PE	3PR552	Production Engineering Laboratory 2 (Professional Elective)	-	4	-	2	ISE	50	20	
							ESE	50	20	
Total			14	8	0	18	**Total Credits: 18 Total Contact Hrs: 22**			

List of Professional Elective 1		List of Professional Elective 2	
3PR511	Finite Element method in Manufacturing	3PR515	Project Management
3PR512	Industrial Hydraulics and Pneumatics	3PR516	Design for Manufacturing and Assembly
3PR513	Quality Engineering for Manufacturing	3PR517	Precision Engineering
3PR514	Manufacturing of non metallic products	3PR518	Costing and Cost control

Walchand College of Engineering, Sangli
(An Autonomous Institute)
Teaching and Evaluation Scheme
First Year M. Tech. Program in Mechanical (Production Engineering)
Semester II

Course			Teaching Scheme				Evaluation Scheme			
Category	**Code**	**Name**	**L**	**T**	**P**	**Credits**	**Component**	**Marks**		
								Max	**Min for Passing**	
OE	2OE5**	Open Elective	3	-	-	3	ISE 1	10		
							MSE	30		
							ISE 2	10		
							ESE	50	20	
PC	3PR521	Advanced Manufacturing Processes	3	-	-	3	ISE 1	10		40
							MSE	30		
							ISE 2	10		
							ESE	50	20	
PC	3PR522	Industrial Automation and Mechatronics	3	-	-	3	ISE 1	10		40
							MSE	30		
							ISE 2	10		
							ESE	50	20	
PE	3PR5**	Professional elective 3	3	-	-	3	ISE 1	10		40
							MSE	30		
							ISE 2	10		
							ESE	50	20	
PE	3PR5**	Professional elective 4	3	-	-	3	ISE 1	10		40
							MSE	30		
							ISE 2	10		
							ESE	50	20	
PC	3PR571	Production Engineering Laboratory 3	-	4	-	2	ISE	50	20	
							ESE	50	20	
PE	3PR572	Production Engineering Laboratory 4 (Professional Elective)	-	4	-	2	ISE	50	20	
							ESE	50	20	
PC	3PR541	Pre-dissertation work and seminar	-	4	-	2	ISE	100	40	
Total			15	12	0	21	**Total Credits: 21** **Total Hrs: 24**			

List of Professional Elective 3		List of Professional Elective 4	
3PR531	CAD / CAM / CNC	3PR535	PLM – Product Lifecycle Management
3PR532	Additive Manufacturing	3PR536	Processing of Plastics and Composites
3PR533	Micro-Electro-Mechanical Systems	3PR537	Advanced Tool Design
3PR534	Modeling and simulation in manufacturing	3PR538	Sustainable Manufacturing

Open Elective		
Course Code	Course Name	Offered by Department
3OE501	Design Optimization	Applied Mechanics
3OE502	Structural Health Monitoring and Smart Materials	
3OE515	Life Cycle Assessment and Ecolabelling	Civil Engineering
3OE516	Construction Equipment	
3OE529	Business Analytics	Mechanical Engineering
3OE530	Industrial Safety	
3OE531	Operations Research	
3OE532	Cost Management of Engineering Projects	
3OE533	Composite Materials	
3OE534	Waste to Energy.	
3OE535	Project Based Learning with Embedded System	
3OE543	Control Techniques for Electrical Drives.	Electrical Engineering
3OE544	Neural Network and Fuzzy Control.	
3OE557	Remote sensing and Image Analysis	Electronics Engineering
3OE558	Automotive Electronics	
3OE559	Mechatronics	
3OE560	Digital Image processing	
3OE561	Nano materials and Nano-technology	
3OE562	Numerical Methods for Engineers	
3OE563	Optimization Techniques	
3OE571	Business Intelligence	Computer Science and Engineering
3OE 572	Cyber Security	
3OE585	Geographic Information Systems	Information Technology
3OE586	Data Visualization & Interpretation	
3OE587	Computational Engineering using Python	
3OE588	3D Modeling, Animation and Computer Simulation	

Walchand College of Engineering, Sangli

(An Autonomous Institute)

Teaching and Evaluation Scheme

Second Year M.Tech. Program in Mechanical (Production Engineering)

Semester III

Course			Teaching Scheme				Evaluation Scheme		
Category	**Code**	**Name**	**L**	**T**	**P**	**Credits**	**Component**	**Marks**	
								Max	**Min for Passing**
PE	3PR6**	Professional elective 5	3	-	-	3	ISE 1	10	40
							MSE	30	
							ISE 2	10	
							ESE	50	20
PC	3PR690	Dissertation phase I	-	5	-	4	ISE	100	40
	3PR691	Dissertation phase II				2	ISE	100	40
						4	ESE	100	40
MC	3IC6**	Mandatory Non Credit Course	2	-	-	-	ISE 1	35	40
							MSE	30	
							ISE 2	35	
Total			5	5	0	13	**Total Credits: 13** **Total Contact Hrs: 10**		

Semester IV

Course			Teaching Scheme				Evaluation Scheme		
Category	**Code**	**Name**	**L**	**T**	**P**	**Credits**	**Component**	**Marks**	
								Max	**Min for Passing**
PC	3PR692	Dissertation phase III	-	5	-	4	ISE 3	100	40
	3PR693	Dissertation phase IV				4	ISE 4	100	40
						8	ESE 2	100	40
MC	3IC6**	Mandatory Non Credit Course	2	-	-	-	ISE 1	35	40
							MSE	30	
							ISE 2	35	
Total			2	5	0	16	**Total Credits: 16** **Total Contact Hrs: 7**		

List of Professional Elective 5	
3PR611	Material Handling Systems
3PR612	Manufacturing Planning and Control
3PR613	Organizational Behavior
3PR614	Flexible Manufacturing System
3PR615	Digital Manufacturing and Industry 4.0

List of Mandatory Non Credit Course	
3IC601	Constitution of India
3IC602	Pedagogy of Studies
3IC603	Disaster Management
3IC604	Value Education

Semester	**I**	**II**	**III**	**IV**	**Total**
Credits	18	21	13	16	68

Walchand College of Engineering, Sangli
(An Autonomous Institute)
Curriculum Comparison for WCE and AICTE

M. Tech. Mechanical (Production Engineering)					
Sr. No.	**Category**	**Credits**		**%**	
		AICTE	**Dept**	**AICTE**	**Dept**
1	PC	12	12	17.6	17.6
2	PE	15	15	22.1	22.1
3	PCL	10	8	14.7	11.8
4	OE	3	3	4.4	4.4
5	PC	26	26	38.2	38.2
6	MC	2	2	2.9	2.9
7	PC	0	2	0	2.9
8	PC	0	0	0	0
9	MC	0	0	0	0
Total Credits		**68**	**68**	**100**	**100**

Category

Core theory courses (PC)

Programme Elective courses relevant to chosen specialization/ branch& (PE)

Core/Elective laboratory courses (PCL)

Open subjects – Electives from other technical and /or emerging subjects (OE)

Dissertation (PC)

Mandatory course on Research Methodology (MC)

Pre-dissertation work and seminar (PC)

Summer Internship (PC)

Mandatory Non- credit Courses (MC)