

B Tech Engineering Education at OPJU

The cornerstone of the OP Jindal University is pursuit of knowledge through experience, where students learn by doing and real world challenges find practical solutions and innovation happens not by chance but by design. The University strives to meet the undergraduate education portion of its mission by offering degree programs in fields of engineering whose curriculum and teaching methodologies will inculcate the relevant skills to tackle real world challenges.

An objective of these programs is to provide a technical education integrated with humanities, fine arts, and management subject matter to provide the requisite foundation for life-long learning. The availability of minors in subject areas in other fields increases opportunities for engineering students to enhance their education by pursuing studies in the other disciplines.

1.1 Academic Framework

The educational programmes of OP Jindal University are conducted in the campus at Punjipatra, near Raigarh in Chhattisgarh. The academic year is divided into two sessions, two regular **semesters** known as the first semester and the second semester. The B Tech programme of engineering studies consists of prescribed courses sequentially distributed in eight semesters. Five engineering disciplines are offered as the major field of B Tech studies: Civil Engineering (CIE), Electrical and Electronics (EEE), Metallurgical Engineering & Material Science (MME) Mechanical Engineering (MEE), and Computer Science & Engineering (CSE).

1.2 Credits

1 Credit typically refers to one instruction hour in the classroom. Most of the core and elective courses are 3 credits while the engineering labs are worth 2 credits. Humanities courses are typically of 1 credit and the Professional Development courses are of 2 credits. Number of credit units per semester is typically between 25-30 credits hours.

1.3 Graduation Requirements

Each of the five engineering majors requires 185 credits for graduation. These include between 180-200 hours of core and elective courses in science and engineering. In addition, each semester a student has about 1 to 3 credits worth of Humanities/Management and Professional Development courses.

1.4 Grading System

Letter grades A-D & F will be used to report student achievements. These letter grades have points associated with them in a quantified hierarchy. In addition, Grade I would be used to report incomplete Grades. S for Satisfactory & U for Unsatisfactory will also be used to report the achievements for certain courses. These describe qualitative accomplishments and will not have any points associate with them. The grades for a semester are given in a **grade sheet**.

Chronologically organized information from the grade sheets of a student with the necessary explanation constitutes his/her **transcript** which is issued at the time he/she leaves the OP Jindal University.

1.5 B Tech Curriculum Structure and Semester-wise Courses

The course requirement for the engineering B Tech degree has been designed to address the diversity of specializations and the globally competitive landscape of education.

1. Courses in Physics, Chemistry, Engineering Drawing and Computer Science are required of all students in the first year to address the interdisciplinary nature of the engineering degree
2. In addition, courses in Professional Development (PD), Humanities and Management subjects are intended to provide a wider exposure to different areas of knowledge, broaden horizons and nurture them to be confident global citizens
3. Core and elective engineering courses in the relevant area of specialization as well as the option to pursue open electives courses form another engineering discipline
4. Provision of university-industry linkages in curricular structure in the form of Industrial Training Seminar courses in the later semesters

Table 1: Semester-wise Pattern of Course

Course Category/Department	CIE	CSE	MME	MEE	EEE
Total Number of Core Engineering Theory Courses	20	20	19	20	19
Total Number of Core Engineering Lab Courses	16	15	16	16	16
Total Number of Interdisciplinary Engineering Theory Courses	05	04	05	04	05
Total Number of Interdisciplinary Engineering Lab Courses	00	01	00	00	00
Science & Math Core Theory Courses	07	08	08	07	08
Science & Math Core Lab Courses	03	03	03	04	03
PD/Humanities/Management Courses	12	12	12	12	12
Total Theory Courses	44	44	44	43	44
Total Lab Courses	19	19	19	20	19
Total Courses (Theory +Lab)	63	63	63	63	63
Total Credits	189	189	189	189	189

Civil Engineering

L: Lecture, T: Tutorial, P: Practical, C: Credit

SEMESTER I

Courses	Name of the Courses	Credit Structure			
		L	T	P	C
MAT1101	Mathematics-I	5	2	0	5
PHY1101	Physics-I	4	2	0	4
PHY1102	Physics-I Lab	0	0	2	1
CHM1101	Chemistry	4	2	0	4
CHM1102	Chemistry Lab	0	0	2	1
CSE1101	Basic Computing*	4	0	2	4
CSE1102	C Programming*	4	0	2	4
MME1101	Engineering Drawing	4	0	2	4
PFD1101	Professional Development	3	0	2	3
TOTAL		24	6	10	26

SEMESTER II

Courses	Name of the Courses	Credit Structure			
		L	T	P	C
MAT1202	Mathematics-II	5	2	0	5
PHY1203	Physics-II	4	2	0	4
PHY1204	Physics-II Lab	0	0	2	1
CHM1203	Environmental Studies	4	0	0	4
CSE1203	C++ Programming*	4	0	2	4
CSE1202	C Programming*	4	0	2	4
WSP1201	Workshop Practice	0	0	3	2
PFD1202	Professional Development	3	0	2	3
HSS1201	Humanities & Social Sciences	1	0	0	1
TOTAL		21	4	09	24

NOTE - * indicates either one of the two subjects is to be chosen in each semester.

Civil Engineering

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SEMESTER III

CODE	SUBJECT	L	T	P	C
CIE2101	Surveying	3	1	0	4
CIE2102	Strength of Materials	3	1	0	4
CIE2103	Building Materials & Construction	3	1	0	4
MAT2103	Engineering Mathematics-III	3	1	0	4
CIE2104	Surveying Lab	0	0	3	2
CIE2105	Material Testing Lab	0	0	3	2
CIE2106	Civil Engineering Drawing Lab	0	0	3	2
HSS2102	Humanities & Social Sciences	1	0	0	1
PFD2103	Professional Development	2	0	0	2
TOTAL		15	4	9	25

SEMESTER IV

CODE	SUBJECT	L	T	P	C
CIE2207	Theory of Structures- I	3	1	0	4
CIE2208	Fluid Mechanics	4	1	0	5
CIE2209	Transportation Engineering-I	3	1	0	4
MAT2208	Numerical Methods and Computing	3	1	0	4
CIE2210	Theory of Structures Lab	0	0	3	2
CIE2211	Fluid Mechanics Lab	0	0	3	2
CIE2212	Transportation Engineering Lab	0	0	3	2
PFD2204	Professional Development	2	0	0	2
TOTAL		15	4	9	25

Civil Engineering

L: Lecture, T: Tutorial, P: Practical, C: Credit

SEMESTER V

CODE	SUBJECT	L	T	P	C
CIE3113	Theory of Structures -II	3	0	0	3
CIE3114	Structural Engineering Design-I	3	1	0	4
CIE3115	Geotechnical Engineering-I	3	1	0	4
CIE3116	Transportation Engineering-II	3	0	0	3
CIE3117	Concrete Technology Lab	0	0	3	2
CIE3118	Structural Engineering Design-I Lab	0	0	3	2
CIE3119	Geotechnical Engineering-I Lab	0	0	3	2
CIE3120	Industrial Training & Seminar	0	0	2	1
HSS3103	Humanities & Social Sciences	1	0	0	1
PFD3105	Professional Development	0	0	1	1
TOTAL		13	2	12	23

SEMESTER VI

CODE	SUBJECT	L	T	P	C
CIE3221	Structural Engineering Design-II	3	1	0	4
CIE3222	Geotechnical Engineering-II	3	1	0	4
CIE3223	Environmental Engineering	3	1	0	4
CIE3224(1-9)	Professional Elective -I (CIE Annexure - I)	3	1	0	4
CIE3225	Structural Engineering Design-II Lab	0	0	3	2
CIE3226	Geotechnical Engineering-II Lab	0	0	3	2
CIE3227	Environmental Engineering Lab	0	0	3	2
PFD3206	Professional Development	0	0	1	1
TOTAL		12	4	10	23

Civil Engineering

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SEMESTER VII

CODE	SUBJECT	L	T	P	C
CIE4128	Water Resources Engineering-I	3	1	0	4
CIE4129	Professional Practice	3	1	0	4
CIE4130(1-9)	Professional Elective -II (CIE Annexure - II)	3	0	0	3
CIE4131	Professional Practice Lab	0	0	3	2
CIE4132	Minor Project	0	0	8	6
CIE4133	Industrial Training & Seminar	0	0	2	1
HSS4104	Humanities & Social Sciences	1	0	0	1
PFD4107	Professional Development	0	0	1	1
TOTAL		10	2	14	22

SEMESTER VIII

CODE	SUBJECT	L	T	P	C
CIE4234	Structural Engineering Design-IV	3	1	0	4
CIE4235	Software Applications in Civil Engineering	3	1	0	4
OPE42(01-38)	Open Elective – I (OE Annexure – I)	3	0	0	3
CIE4236	Structural Engineering Design Lab-IV	0	0	3	2
CIE4237	Major Project	0	0	10	7
PFD4208	Professional Development	0	0	1	1
TOTAL		9	2	14	21

Civil Engineering

Professional Elective-I (CIE Annexure - I)

Sr. No	Courses	Name of the Courses
1	CIE3224(1)	Design of Bridge Structures
2	CIE3224(2)	Traffic Engineering
3	CIE3224(3)	Solid Waste Management
4	CIE3224(4)	Computer Methods in Structural Analysis
5	CIE3224(5)	Maintenance, Repair and Rehabilitation of Civil Engineering Structures (MRCS)
6	CIE3224(6)	Remote Sensing and GIS in Civil Engineering
7	CIE3224(7)	Urban Infrastructure
8	CIE3224(8)	Town Planning
9	CIE3224(9)	Systems Approach in Civil Engineering

Professional Elective -II (CIE Annexure - II)

Sr. No	Courses	Name of the Courses
1	CIE4130(1)	Design of Earthquake Resistant Buildings
2	CIE4130(2)	Transportation Planning and Management
3	CIE4130(3)	Quality Control and Assurance in Construction
4	CIE4130(4)	Modern Construction Materials & Methods
5	CIE4130(5)	Advanced Concrete Technology
6	CIE4130(6)	Industrial Waste Management
7	CIE4130(7)	Foundation Engineering
8	CIE4130(8)	Air Pollution & Control
9	CIE4130(9)	Disaster Management

Civil Engineering

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Additional Courses for Minor Degree in Civil Engineering					
Courses	Name of the Courses	Credit Structure			
		L	T	P	C
3rd Semester					
CIE2101	Surveying	3	1	0	4
CIE2104	Surveying Lab	0	0	3	2
4th Semester					
CIE2207	Theory of Structures- I	3	1	0	4
CIE2210	Theory of Structures Lab	0	0	3	2
5th Semester					
CIE3115	Geotechnical Engineering-I	3	0	0	3
CIE3119	Geotechnical Engineering-I Lab	0	0	3	2
6th Semester					
CIE3221	Structural Engineering Design-II	3	1	0	4
CIE3225	Structural Engineering Design-II Lab	0	0	3	2
7th Semester					
CIE4129	Professional Practice	3	1	0	4
CIE4131	Professional Practice Lab	0	0	3	2
TOTAL		15	04	14	30

Computer Science and Engineering

L: Lecture, T: Tutorial, P: Practical, C: Credit

SEMESTER I

Courses	Name of the Courses	Credit Structure			
		L	T	P	C
MAT1101	Mathematics-I	5	2	0	5
PHY1101	Physics-I	4	2	0	4
PHY1102	Physics-I Lab	0	0	2	1
CHM1101	Chemistry	4	2	0	4
CHM1102	Chemistry Lab	0	0	2	1
CSE1101	Basic Computing*	4	0	2	4
CSE1102	C Programming*	4	0	2	4
MME1101	Engineering Drawing	4	0	2	4
PFD1101	Professional Development	3	0	2	3
TOTAL		24	6	10	26

SEMESTER II

Courses	Name of the Courses	Credit Structure			
		L	T	P	C
MAT1202	Mathematics-II	5	2	0	5
PHY1203	Physics-II	4	2	0	4
PHY1204	Physics-II Lab	0	0	2	1
CHM1203	Environmental Studies	4	0	0	4
CSE1203	C++ Programming*	4	0	2	4
CSE1202	C Programming*	4	0	2	4
WSP1201	Workshop Practice	0	0	3	2
PFD1202	Professional Development	3	0	2	3
HSS1201	Humanities & Social Sciences	1	0	0	1
TOTAL		21	4	09	24

NOTE - * indicates either one of the two subjects is to be chosen in each semester.

Computer Science and Engineering

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SEMESTER III

CODE	SUBJECT	L	T	P	C
MAT2104	Mathematical Foundation of Computer science	3	1	0	4
CSE2104	Electronics and Digital Systems	3	1	0	4
CSE2105	Internet Technologies	3	1	0	4
CSE2106	Object Oriented Concepts & Programming using Java	3	1	0	4
CSE2107	Electronics and Digital Systems Lab	0	0	3	2
CSE2108	Internet Technology Lab	0	0	3	2
CSE2109	OOPs Lab	0	0	3	2
HSS2102	Humanities & Social Sciences	1	0	0	1
PFD2103	Professional Development	2	0	0	2
TOTAL		15	4	9	25

SEMESTER IV

CODE	SUBJECT	L	T	P	C
MAT2209	Probability Statistics and Numerical Analysis	4	1	0	5
CSE2210	Computer Organization and architecture	3	1	0	4
CSE2211	Data Base and Information System	3	1	0	4
CSE2212	Data Structures and Algorithms	3	1	0	4
CSE2213	Software Technology-I Lab	0	0	3	2
CSE2214	DBMS Lab	0	0	3	2
CSE2215	Data Structure and Algorithms Lab	0	0	3	2
PFD2204	Professional Development	2	0	0	2
TOTAL		15	4	9	25



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SEMESTER V

CODE	SUBJECT	L	T	P	C
CSE3116	Theory of Computation	3	1	0	4
CSE3117	Microprocessors & Interfacing	3	1	0	4
CSE3118	Operating System	3	0	0	3
CSE3119(1-4)	Professional Elective-I(CSE Annexure - I)	3	0	0	3
CSE3120	Microprocessors & Interfacing Lab	0	0	3	2
CSE3121	APP development Lab	0	0	3	2
CSE3122(1-3)	Elective Lab – I (CSE Annexure - II)	0	0	3	2
CSE3123	Industrial Training and Seminar	0	0	2	1
HSS3103	Humanities & Social Sciences	1	0	0	1
PFD3105	Professional Development	0	0	1	1
TOTAL		13	2	12	23

SEMESTER VI

CODE	SUBJECT	L	T	P	C
CSE3224	Computer Network	3	1	0	4
CSE3225	Software Engineering & Project Management	3	1	0	4
CSE3226(1-4)	Professional Elective -II(CSE Annexure - III)	3	1	0	4
CSE3227(1-4)	Professional Elective -III(CSE Annexure - IV)	3	1	0	4
CSE3228	Software Technology-II Lab	0	0	3	2
CSE3229	Computer Network Lab	0	0	3	2
CSE3230(1-3)	Elective Lab – II(CSE Annexure - V)	0	0	3	2
PFD3206	Professional Development	0	0	1	1
TOTAL		12	4	10	23



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SEMESTER VII

CODE	SUBJECT	L	T	P	C
CSE4131	Artificial Intelligence and Soft Computing	3	1	0	4
CSE4132(1-4)	Professional Elective-IV(CSE Annexure - VI)	3	0	0	3
CSE4133(1-4)	Professional Elective-V(CSE Annexure - VII)	3	1	0	4
CSE4134(1-3)	Elective Lab -III(CSE Annexure - VIII)	0	0	3	2
CSE4135	Minor Project	0	0	8	6
CSE4136	Industrial Training and Seminar	0	0	2	1
HSS4104	Humanities & Social Sciences	1	0	0	1
PFD4107	Professional Development	0	0	1	1
TOTAL		10	2	14	22

SEMESTER VIII

CODE	SUBJECT	L	T	P	C
CSE4237(1-4)	Professional Elective-VI(CSE Annexure - IX)	3	1	0	4
CSE4238(1-4)	Professional Elective-VII(CSE Annexure - X)	3	1	0	4
OPE42(01-38)	Open Elective(OE Annexure - I)	3	0	0	3
CSE4239(1-3)	Elective Lab-IV(CSE Annexure - XI)	0	0	3	2
CSE4240	Major Project	0	0	10	7
PFD4208	Professional Development	0	0	1	1
TOTAL		9	2	14	21

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Professional Elective-1 (CSE Annexure - I)

Sr. No	Courses	Name of the Courses
1	CSE3119(1)	Cloud Computing
2	CSE3119(2)	Internet Architecture and Communication protocol
3	CSE3119(3)	Natural Language processing
4	CSE3119(4)	Computer Graphics

Elective Lab -I (CSE Annexure - II)

Sr. No	Courses	Name of the Courses
1	CSE3122(1)	Cloud Computing Lab
2	CSE3122(2)	Dot NET Lab
3	CSE3122(3)	Computer Graphics lab

Professional Elective-II (CSE Annexure - III)

Sr. No	Courses	Name of the Courses
1	CSE3226(1)	LAMP Technology
2	CSE3226(2)	User Interface Development
3	CSE3226(3)	Compiler Design
4	CSE3226(4)	Wireless Network

Professional Elective-III (CSE Annexure - IV)

Sr. No	Courses	Name of the Courses
1	CSE3227(1)	Embedded Systems
2	CSE3227(2)	Wireless Adhoc Network
3	CSE3227(3)	Animation and Game Theory
4	CSE3227(4)	Introduction to Multimedia Systems

Elective Lab-II (CSE Annexure - V)

Sr. No	Courses	Name of the Courses
1	CSE3230(1)	LAMP Technology lab
2	CSE3230(2)	Compiler Lab
3	CSE3230(3)	Perl and Shell Scripting Lab

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Professional Elective-IV (CSE Annexure - VI)

Sr. No	Courses	Name of the Courses
1	CSE4132(1)	Big Data Analytics
2	CSE4132(2)	Introduction to Robotics
3	CSE4132(3)	Artificial Neural Network
4	CSE4132(4)	Advance Web Technology

Professional Elective-V (CSE Annexure - VII)

Sr. No	Courses	Name of the Courses
1	CSE4133(1)	Machine Learning
2	CSE4133(2)	Advanced Computing Paradigm
3	CSE4133(3)	Software Testing
4	CSE4133(4)	Data Mining

Elective Lab-III (CSE Annexure - VIII)

Sr. No	Courses	Name of the Courses
1	CSE4134(1)	Big Data Analysis Lab
2	CSE4134(2)	ANN Lab
3	CSE4134(3)	Advance Web Technology Lab

Professional Elective-VI (CSE Annexure - IX)

Sr. No	Courses	Name of the Courses
1	CSE4237(1)	Information Retrieval
2	CSE4237(2)	Human Computer Interaction
3	CSE4237(3)	Software Interface and Design
4	CSE4237(4)	Distributed Computing

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Professional Elective-VII (CSE Annexure - X)

Sr. No	Courses	Name of the Courses
1	CSE4238(1)	Image Processing
2	CSE4238(2)	Embedded C Programming
3	CSE4238(3)	Applied Cryptography
4	CSE4238(4)	Operational Research

Elective Lab-IV (CSE Annexure - XI)

Sr. No	Courses	Name of the Courses
1	CSE4239(1)	Embedded C Lab
2	CSE4239(2)	Image Processing Lab
3	CSE4239(3)	Software Testing Lab

Computer Science and Engineering

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Additional Courses for Minor Degree in Computer Science and Engineering					
Courses	Name of the Courses	Credit Structure			
		L	T	P	C
3rd Semester					
CSE2106	Object Oriented Concepts & Programming using Java	3	1	0	4
CSE2109	OOPs Lab	0	0	3	2
4th Semester					
CSE2211	Data Base and Information System	3	1	0	4
CSE2214	DBMS Lab	0	0	3	2
5th Semester					
CSE3117	Microprocessors & Interfacing	3	1	0	4
CSE3120	Microprocessors & Interfacing Lab	0	0	3	2
6th Semester					
CSE3225	Software Engineering & Project Management	3	1	0	4
CSE3228	Software Technology-II Lab	0	0	3	2
7th Semester					
CSE4133(1-4)	Professional Elective-V(Annexure -VII)	3	1	0	4
CSE4134(1-3)	Elective Lab -III Lab(Annexure - VIII)	0	0	3	2
TOTAL		15	05	15	30

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Electrical & Electronics Engineering

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SEMESTER I

Courses	Name of the Courses	Credit Structure			
		L	T	P	C
MAT1101	Mathematics-I	5	2	0	5
PHY1101	Physics-I	4	2	0	4
PHY1102	Physics-I Lab	0	0	2	1
CHM1101	Chemistry	4	2	0	4
CHM1102	Chemistry Lab	0	0	2	1
CSE1101	Basic Computing*	4	0	2	4
CSE1102	C Programming*	4	0	2	4
MME1101	Engineering Drawing	4	0	2	4
PFD1101	Professional Development	3	0	2	3
TOTAL		24	6	10	26

SEMESTER II

Courses	Name of the Courses	Credit Structure			
		L	T	P	C
MAT1202	Mathematics-II	5	2	0	5
PHY1203	Physics-II	4	2	0	4
PHY1204	Physics-II Lab	0	0	2	1
CHM1203	Environmental Studies	4	0	0	4
CSE1203	C++ Programming*	4	0	2	4
CSE1202	C Programming*	4	0	2	4
WSP1201	Workshop Practice	0	0	3	2
PFD1202	Professional Development	3	0	2	3
HSS1201	Humanities & Social Sciences	1	0	0	1
TOTAL		21	4	09	24

NOTE - * indicates either one of the two subjects is to be chosen in each semester.

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Electrical & Electronics Engineering

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SEMESTER III

CODE	SUBJECT	L	T	P	C
EEE2101	Basic Electrical & Instrumentation Engineering	3	1	0	4
EEE2102	Electronic Devices and Circuits	3	1	0	4
EEE2103	Electrical Machines – I	3	1	0	4
MAT2105	Advanced Engineering Mathematics	3	1	0	4
EEE2104	Basic Electrical & Instrumentation Engineering Lab	0	0	3	2
EEE2105	Electronic Devices and Circuits Lab	0	0	3	2
EEE2106	Electrical Machines - I Lab	0	0	3	2
HSS2102	Humanities & Social Sciences	1	0	0	1
PFD2102	Professional Development	2	0	0	2
TOTAL		15	4	9	25

SEMESTER IV

CODE	SUBJECT	L	T	P	C
EEE2207	Electric Circuits and Network Analysis	4	1	0	5
EEE2208	Power Systems-I	3	1	0	4
EEE2209	Digital Fundamentals & Microprocessors	3	1	0	4
MAT2210	Mathematics of Signal Processing	3	1	0	4
EEE2210	Electric Circuits and Network Analysis Lab	0	0	3	2
EEE2211	Power Systems Simulation Lab	0	0	3	2
EEE2212	Digital Fundamentals & Microprocessors Lab	0	0	3	2
PFD2203	Professional Development	2	0	0	2
TOTAL		15	4	9	25



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Electrical & Electronics Engineering

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SEMESTER V

CODE	SUBJECT	L	T	P	C
EEE3113	Control Systems	3	1	0	4
EEE3114	Electrical Machines- II	3	1	0	4
EEE3115	Linear Integrated Circuits	3	0	0	3
EEE3116	Power Systems-II	3	0	0	3
EEE3117	Control System Lab	0	0	3	2
EEE3118	Electrical Machines- II Lab	0	0	3	2
EEE3119	Linear Integrated Circuits Lab	0	0	3	2
EEE3120	Industrial Training & Seminar	0	0	2	1
HSS3103	Humanities & Social Sciences	1	0	0	1
PFD3104	Professional Development	0	0	1	1
TOTAL		13	2	12	23

SEMESTER VI

CODE	SUBJECT	L	T	P	C
EEE3221	Power Systems Protection and Switchgear	3	1	0	4
EEE3222	Power Electronics	3	1	0	4
EEE3223	Digital Signal Processing	3	1	0	4
EEE3224(1-5)	Professional Elective -I (EEE Annexure - I)	3	1	0	4
EEE3225	Power Systems Protection and Switchgear Lab	0	0	3	2
EEE3226	Power Electronics Lab	0	0	3	2
EEE3227	Digital Signal Processing Lab	0	0	3	2
PFD3205	Professional Development	0	0	1	1
TOTAL		12	4	10	23



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Electrical & Electronics Engineering

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SEMESTER VII

CODE	SUBJECT	L	T	P	C
EEE4128	Microcontrollers & Embedded System	3	1	0	4
EEE4129 (1-5)	Professional Elective-II (EEE Annexure - II)	3	1	0	4
EEE4130(1-5)	Professional Elective -III (EEE Annexure - III)	3	0	0	3
EEE4131	Microcontrollers & Embedded Lab	0	0	3	2
EEE4132	Minor Project	0	0	8	6
EEE4133	Industrial Training & Seminar	0	0	2	1
HSS4104	Humanities & Social Sciences	1	0	0	1
PFD4106	Professional Development	0	0	1	1
TOTAL		10	2	14	22

SEMESTER VIII

CODE	SUBJECT	L	T	P	C
EEE4234	Electrical Drives	3	1	0	4
EEE4235(1-5)	Professional Elective -IV (EEE Annexure - IV)	3	1	0	4
OPE42(01-38)	Open Elective (OE Annexure - I)	3	0	0	3
EEE4236	Electrical Drives Lab	0	0	3	2
EEE4237	Major Project	0	0	10	7
PFD4207	Professional Development	0	0	1	1
TOTAL		9	2	14	21

Electrical & Electronics Engineering

Professional Elective-I (EEE Annexure - I)

Sr. No	Courses	Name of the Courses
1	EEE3224 (1)	Electromagnetic Field Theory
2	EEE3224 (2)	Wind And Solar Electrical Systems
3	EEE3224 (3)	Electrical Machine Design
4	EEE3224 (4)	Signal processing & communication Engineering
5	EEE3224 (5)	Computer Organization and Architecture

Professional Elective -II (EEE Annexure - II)

Sr. No	Courses	Name of the Courses
1	EEE4129 (1)	High Voltage Engineering
2	EEE4129 (2)	FACTS
3	EEE4129 (3)	Industrial Automation
4	EEE4129 (4)	Power System Analysis
5	EEE4129 (5)	Control And Renewable Energy Systems Laboratory

Professional Elective -III (EEE Annexure - III)

Sr. No	Courses	Name of the Courses
1	EEE4130 (1)	Soft Computing
2	EEE4130 (2)	Image Processing
3	EEE4130 (3)	Analog Filter Design
4	EEE4130 (4)	Speech Processing Techniques
5	EEE4130 (5)	VLSI design

Professional Elective -IV (EEE Annexure - IV)

Sr. No	Courses	Name of the Courses
1	EEE4235 (1)	Extra High Voltage AC & DC Transmission System
2	EEE4235 (2)	Sensors & Transducers
3	EEE4235 (3)	Advance Electrical & Electronics Measurement
4	EEE4235 (4)	Power System Economics And Control Techniques
5	EEE4235 (5)	Installation Maintenance & Testing of Electrical Equipment

Electrical & Electronics Engineering

L: Lecture, T: Tutorial, P: Practical, C: Credit

Additional Courses for Minor Degree in Electrical & Electronics Engineering					
Courses	Name of the Courses	Credit Structure			
		L	T	P	C
3rd Semester					
EEE2103	Electrical Machines - I	3	1	0	4
EEE2106	Electrical Machines - I Lab	0	0	3	2
4th Semester					
EEE2208	Power Systems-I	3	1	0	4
EEE2211	Power Systems Simulation Lab	0	0	3	2
5th Semester					
EEE3113	Control Systems	3	1	0	4
EEE3117	Control Systems Lab	0	0	3	2
6th Semester					
EEE3222	Power Electronics	3	1	0	4
EEE3226	Power Electronics Lab	0	0	3	2
7th Semester					
EEE4128	Microcontrollers & Embedded Systems	3	1	0	4
EEE4131	Microcontrollers & Embedded Lab	0	0	3	2
TOTAL		15	05	15	30

Mechanical Engineering

L: Lecture, T: Tutorial, P: Practical, C: Credit

SEMESTER I

Courses	Name of the Courses	Credit Structure			
		L	T	P	C
MAT1101	Mathematics-I	5	2	0	5
PHY1101	Physics-I	4	2	0	4
PHY1102	Physics-I Lab	0	0	2	1
CHM1101	Chemistry	4	2	0	4
CHM1102	Chemistry Lab	0	0	2	1
CSE1101	Basic Computing*	4	0	2	4
CSE1102	C Programming*	4	0	2	4
MME1101	Engineering Drawing	4	0	2	4
PFD1101	Professional Development	3	0	2	3
TOTAL		24	6	10	26

SEMESTER II

Courses	Name of the Courses	Credit Structure			
		L	T	P	C
MAT1202	Mathematics-II	5	2	0	5
PHY1203	Physics-II	4	2	0	4
PHY1204	Physics-II Lab	0	0	2	1
CHM1203	Environmental Studies	4	0	0	4
CSE1203	C++ Programming*	4	0	2	4
CSE1202	C Programming*	4	0	2	4
WSP1201	Workshop Practice	0	0	3	2
PFD1202	Professional Development	3	0	2	3
HSS1201	Humanities & Social Sciences	1	0	0	1
TOTAL		21	4	09	24

NOTE - * indicates either one of the two subjects is to be chosen in each semester.

Mechanical Engineering

L: Lecture, T: Tutorial, P: Practical, C: Credit

SEMESTER III

CODE	SUBJECT	L	T	P	C
MEE2102	Engineering Thermodynamics	3	1	0	4
MEE2103	Machine Drawing	3	1	0	4
MAT2106	Advanced Engineering Mathematics-I	3	1	0	4
MEE2104	Metallurgical & Materials Science	3	1	0	4
MEE2105	Engineering Thermodynamics Lab	0	0	3	2
MEE2106	Machine Drawing & Computer Aided Design Lab	0	0	3	2
MEE2107	MAT LAB Programming Lab	0	0	3	2
HSS2102	Humanities & Social Sciences	1	0	0	1
PFD2103	Professional Development	2	0	0	2
TOTAL		15	4	9	25

SEMESTER IV

CODE	SUBJECT	L	T	P	C
MEE2208	Thermal Engineering	4	1	0	5
MEE2209	Engineering Mechanics & Strength of Materials	3	1	0	4
MEE2210	Manufacturing Processes	3	1	0	4
MAT2211	Advanced Engineering Mathematics-II	3	1	0	4
MEE2211	Thermal Engineering Lab	0	0	3	2
MEE2212	Engineering Mechanics & Strength of Materials Lab	0	0	3	2
MEE2213	Manufacturing Processes Lab	0	0	3	2
PFD2204	Professional Development	2	0	0	2
TOTAL		15	4	9	25

Mechanical Engineering

L: Lecture, T: Tutorial, P: Practical, C: Credit

SEMESTER V

CODE	SUBJECT	L	T	P	C
MEE3114	Fluid Mechanics & Hydraulic Machinery	3	1	0	4
MEE3115	Internal Combustion Engines	3	1	0	4
MEE3116	Machine Tools & Machining	3	0	0	3
MEE3117	Energy Conversion Systems	3	0	0	3
MEE3118	Machine Tools & Machining Lab	0	0	3	2
MEE3119	Fluid Mechanics & Hydraulic Machines Lab	0	0	3	2
MEE3120	Internal Combustion Engines Lab	0	0	3	2
MEE3121	Industrial Training & Seminar	0	0	2	1
HSS3103	Humanities & Social Sciences	1	0	0	1
PFD3105	Professional Development	0	0	1	1
TOTAL		13	2	12	23

SEMESTER VI

CODE	SUBJECT	L	T	P	C
MEE3222	Heat & Mass Transfer	3	1	0	4
MEE3223	Analysis and Synthesis of Machines	3	1	0	4
MEE3224	Design of Machine Elements	3	1	0	4
MEE3225 (1-09)	Professional Elective -I (MEE Annexure - I)	3	1	0	4
MEE3226	Heat and Mass Transfer Lab	0	0	3	2
MEE3227	Analysis and Synthesis of Machines Lab	0	0	3	2
MEE3228	Advanced CAD & CAM Lab	0	0	3	2
PFD3206	Professional Development	0	0	1	1
TOTAL		12	4	10	23

Mechanical Engineering

L: Lecture, T: Tutorial, P: Practical, C: Credit

SEMESTER VII

CODE	SUBJECT	L	T	P	C
MEE4129	Refrigeration and Air Conditioning	3	1	0	4
MEE4130(1-09)	Professional Elective – II (MEE Annexure – II)	3	1	0	4
MEE4131(1-09)	Professional Elective –III (MEE Annexure – III)	3	0	0	3
MEE4132	Refrigeration and Air conditioning Lab	0	0	3	2
MEE4133	Minor Project	0	0	8	6
MEE4134	Industrial Training & Seminar	0	0	2	1
HSS4104	Humanities & Social Sciences	1	0	0	1
PFD4107	Professional Development	0	0	1	1
TOTAL		10	2	14	22

SEMESTER VIII

CODE	SUBJECT	L	T	P	C
MEE4235	Robotics & Automation	3	1	0	4
MEE4236 (01-09)	Professional Elective –IV (MEE Annexure – IV)	3	1	0	4
OPE37(01-38)	Open Elective (OE Annexure – I)	3	0	0	3
MEE4238	Robotics & Automation Lab	0	0	3	2
MEE4239	Major Project	0	0	10	7
PFD4208	Professional Development	0	0	1	1
TOTAL		9	2	14	21

Mechanical Engineering

Professional Elective-I (MEE Annexure - I)

Sr. No	Courses	Name of the Courses
1	MEE3225(1)	Introduction to Micro & Nano Fluidics
2	MEE3225(2)	Dynamic Programming & Stochastic Control
3	MEE3225(3)	Power Plant Engineering
4	MEE3225(4)	Nonlinear Systems and Control
5	MEE3225(5)	Unsteady Flow in Fluid Systems
6	MEE3225(6)	Photovoltaic Devices & Systems
7	MEE3225(7)	Automobile Design and Engineering
8	MEE3225(8)	Computer Aided Design/Computer Aided Manufacturing
9	MEE3225(9)	Management of Inventory Systems

Professional Elective -II (MEE Annexure - II)

Sr. No	Courses	Name of the Courses
1	MEE4130(1)	Automation in Manufacturing
2	MEE4130(2)	Optimization Techniques
3	MEE4130(3)	Vibration Theory and Application
4	MEE4130(4)	Emerging Energy Conversion and Storage Technologies
5	MEE4130(5)	Transport Phenomena in Energy Systems
6	MEE4130(6)	Optimization of Energy Systems
7	MEE4130(7)	Production Planning and Control
8	MEE4130(8)	Computational Fluid Dynamics
9	MEE4130(9)	Compressible Flow

Mechanical Engineering

Professional Elective -III (MEE Annexure - III)

Sr. No	Courses	Name of the Courses
1	MEE4131(1)	Finite Element Method
2	MEE4131(2)	Robot Mechanics and Control
3	MEE4131(3)	Solar Energy Technology
4	MEE4131(4)	Mechatronics
5	MEE4131(5)	Material Handling Systems and equipments
6	MEE4131(6)	Welding Technology
7	MEE4131(7)	Advanced Engineering Thermodynamics
8	MEE4131(8)	Energy Conservation and Waste Heat Recovery
9	MEE4131(9)	Production Design and Process Planning

Professional Elective -IV (MEE Annexure - IV)

Sr. No	Courses	Name of the Courses
1	MEE4236(1)	Industrial Engineering and Production Management
2	MEE4236(2)	Classical & Non-Equilibrium Thermodynamics
3	MEE4236(3)	Corrosion of Materials
4	MEE4236(4)	No Traditional Manufacturing Processes
5	MEE4236(5)	Engineering Economy, Costing and Accounting
6	MEE4236(6)	Quality Control, Assurance and Reliability
7	MEE4236(7)	Advanced Fluid Mechanics
8	MEE4236(8)	Fatigue, Creep and Fracture
9	MEE4236(9)	Thermal System Design

Mechanical Engineering

L: Lecture, T: Tutorial, P: Practical, C: Credit

Additional Courses for Minor Degree in Mechanical Engineering					
Courses	Name of the Courses	Credit Structure			
		L	T	P	C
3rd Semester					
MEE2102	Engineering Thermodynamics	3	1	0	4
MEE2105	Engineering Thermodynamics Lab	0	0	3	2
4th Semester					
MEE2210	Manufacturing Processes	3	1	0	4
MEE2213	Manufacturing Processes Lab	0	0	3	2
5th Semester					
MEE3114	Fluid Mechanics & Hydraulic Machinery	3	1	0	4
MEE3119	Fluid Mechanics & Hydraulic Machinery Lab	0	0	3	2
6th Semester					
MEE3223	Analysis and Synthesis of Machines	3	1	0	4
MEE3228	Analysis and Synthesis of Machines Lab	0	0	3	2
7th Semester					
MEE4129	Refrigeration and Air Conditioning	3	1	0	4
MEE4132	Refrigeration and Air Conditioning Lab	0	0	3	2
TOTAL		15	05	15	30

Metallurgical & Materials Engineering

L: Lecture, T: Tutorial, P: Practical, C: Credit

SEMESTER I

Courses	Name of the Courses	Credit Structure			
		L	T	P	C
MAT1101	Mathematics-I	5	2	0	5
PHY1101	Physics-I	4	2	0	4
PHY1102	Physics-I Lab	0	0	2	1
CHM1101	Chemistry	4	2	0	4
CHM1102	Chemistry Lab	0	0	2	1
CSE1101	Basic Computing*	4	0	2	4
CSE1102	C Programming*	4	0	2	4
MME1101	Engineering Drawing	4	0	2	4
PFD1101	Professional Development	3	0	2	3
TOTAL		24	6	10	26

SEMESTER II

Courses	Name of the Courses	Credit Structure			
		L	T	P	C
MAT1202	Mathematics-II	5	2	0	5
PHY1203	Physics-II	4	2	0	4
PHY1204	Physics-II Lab	0	0	2	1
CHM1203	Environmental Studies	4	0	0	4
CSE1203	C++ Programming*	4	0	2	4
CSE1202	C Programming*	4	0	2	4
WSP1201	Workshop Practice	0	0	3	2
PFD1202	Professional Development	3	0	2	3
HSS1201	Humanities & Social Sciences	1	0	0	1
TOTAL		21	4	09	24

NOTE - * indicates either one of the two subjects is to be chosen in each semester.

Metallurgical & Materials Engineering

L: Lecture, T: Tutorial, P: Practical, C: Credit

SEMESTER III

CODE	SUBJECT	L	T	P	C
MME2101	Introduction to Physical Metallurgy	3	1	-	4
MME2102	Mineral Dressing	3	1	-	4
MME2103	Metallurgical Thermodynamics and Kinetics	3	1	-	4
MAT2107	Advances Engineering Mathematics	3	1	-	4
MME2104	Introduction to Physical Metallurgy Lab	-	-	3	2
MME2105	Mineral Dressing Lab	-	-	3	2
MME2106	Introduction to Material Science Lab	-	-	3	2
HSS2102	Humanities & Social Sciences	1	-	-	1
PFD2103	Professional Development	2	-	-	2
TOTAL		15	4	9	25

SEMESTER IV

CODE	SUBJECT	L	T	P	C
MAT2212	Numerical Methods & Computing	4	1	-	5
MME2207	Fuels, Furnaces and Refractories	3	1	-	4
MME2208	Deformation Behavior & Testing of Materials	3	1	-	4
MME2209	Principle of Extractive Metallurgy	3	1	-	4
MME2210	Fuels, Furnaces & Refractory Lab	-	-	3	2
MME2211	Deformation Behavior & Testing of Materials Lab	-	-	3	2
MME2212	Non Destructive Testing Lab	-	-	3	2
PFD2204	Professional Development	2	-	-	2
TOTAL		15	4	9	25

Metallurgical & Materials Engineering

L: Lecture, T: Tutorial, P: Practical, C: Credit

SEMESTER V

CODE	SUBJECT	L	T	P	C
MME3113	Transport Phenomena in Metallurgical Processes	3	1	-	4
MME3114	Phase Transformations and Heat Treatment of Materials	3	1	-	4
MME3115	Mechanical Working Processes	3	-	-	3
MME3116	Engineering Economics	3	-	-	3
MME3117	Heat Treatment of Materials Lab	-	-	3	2
MME3118	Transport Phenomena in Metallurgical Processes Lab	-	-	3	2
MME3119	Mechanical Working Processes Lab			3	2
MME3120	Industrial Training & Seminar –I	-	-	2	1
HSS3103	Humanities & Social Sciences	1	-	-	1
PFD3105	Professional Development	-	-	1	1
TOTAL		13	2	12	23

SEMESTER VI

CODE	SUBJECT	L	T	P	C
MME3221	Non Ferrous Extractive Metallurgy	3	1	-	4
MME3222	Material Characterization	3	1	-	4
MME3223	Iron Making & Steel Making	3	1	-	4
MME3224(1-4)	Professional Elective -I (MME Annexure - I)	3	1	-	4
MME3225	Material Characterization Lab	-	-	3	2
MME3226	Steel Making Lab	-	-	3	2
MME3227	Computer Applications in Metallurgical Processes Lab	-	-	3	2
PFD3206	Professional Development	-	-	1	1
TOTAL		12	4	10	23

Metallurgical & Materials Engineering

L: Lecture, T: Tutorial, P: Practical, C: Credit

SEMESTER VII

CODE	SUBJECT	L	T	P	C
MME4128	Alloys their Properties and Selection	3	1	-	4
MME4129(1-4)	Professional Elective -II (MME Annexure - II)	3	1	-	4
MME4130(1-4)	Professional Elective -III (MME Annexure - III)	3	-	-	3
MME4131	Corrosion and Protection of Materials Lab	-	-	3	2
MME4132	Minor Project	-	-	8	6
MME4133	Industrial Training and Seminar -II	-	-	2	1
HSS4104	Humanities & Social Sciences	1	-	-	1
PFD4107	Professional Development	-	-	1	1
TOTAL		10	2	14	22

SEMESTER VIII

CODE	SUBJECT	L	T	P	C
MME4234	Foundry Technology	3	1	-	4
MME4235(1-4)	Professional Elective - IV (MME Annexure - IV)	3	1	-	4
OPE42(01-38)	Open Elective – I (OE Annexure – I)	3	-	-	3
MME4236	Foundry Metallurgy Lab	-	-	3	2
MME4237	Major Project	-	-	10	7
PFD4208	Professional Development	-	-	1	1
TOTAL		9	2	14	21

Metallurgical & Materials Engineering

Professional Elective-I (MME Annexure - I)

Sr. No	CODE	Name of the Courses
1	MME3224(1)	Engineering Polymers & Composite Materials
2	MME3224(2)	Advances in Materials and Processes
3	MME3224(3)	Surface Engineering
4	MME3224(4)	Solar Energy Materials

Professional Elective -II (MME Annexure - II)

Sr. No	CODE	Name of the Courses
1	MME4129(1)	Corrosion and Protection of Materials
2	MME4129(2)	Environmental Sustainability and Materials
3	MME4129(3)	Fracture Mechanics and Failure Analysis
4	MME4129(4)	Light Metals

Professional Elective -III (MME Annexure - III)

Sr. No	CODE	Name of the Courses
1	MME4130(1)	Metal Joining Processes
	MME4130(2)	Design and Selection of Materials
2	MME4130(3)	Industrial Pollution and Control
3	MME4130(4)	Industrial Tribology

Professional Elective -IV (MME Annexure - IV)

Sr. No	CODE	Name of the Courses
1	MME3235(1)	Ceramics and Powder Metallurgy
2	MME3235(2)	Design of Metallurgical Processes
3	MME3235(3)	Introduction to Nano-Science & Technology
4	MME3235(4)	Nuclear Metallurgy



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Metallurgical & Materials Engineering

L: Lecture, T: Tutorial, P: Practical, C: Credit

Additional Courses for Minor Degree in Metallurgical & Materials Engineering					
Courses	Name of the Courses	Credit Structure			
		L	T	P	C
3rd Semester					
MME2101	Introduction to Physical Metallurgy	3	1	-	4
MME2104	Introduction to Physical Metallurgy Lab	-	-	3	2
4th Semester					
MME2207	Fuels, Furnaces and Refractories	3	1	-	4
MME2210	Fuels, Furnaces and Refractory Lab	-	-	3	2
5th Semester					
MME3114	Phase Transformations and Heat Treatment of Materials	3	1	-	4
MME3117	Heat Treatment Lab	-	-	3	2
6th Semester					
MME3223	Iron Making & Steel Making	3	1	-	4
MME3226	Steel Making Lab	-	-	3	2
7th Semester					
MME4128	Alloys their Properties and Selection	3	1	-	4
MME4131	Corrosion and Protection of Materials Lab	-	-	3	2
TOTAL		15	05	15	30

Open Elective (OE Annexure – I)

Sr. No	Subject code	Board of Studies	Name of the Courses
1	OPE4201	CIE	Disaster Management
2	OPE4202	CIE	Construction Management
3	OPE4203	CIE	Ecology and Sustainable Development
4	OPE4204	CSE	Bio Informatics
5	OPE4205	CSE	Software Technology
6	OPE4206	CSE	Internet & Web Technology
7	OPE4207	CSE	Business Analysis and Optimization
8	OPE4208	CSE	IT Industry Management
9	OPE4209	CSE	IT Industry Entrepreneurship
10	OPE4210	CSE	Evolutionary Computations
11	OPE4211	CSE	E-Commerce & Strategic IT
12	OPE4212	CSE	Decision Support & Executive Information
13	OPE4213	CSE	Information Theory & Control
14	OPE4214	EEE	Distributed Generation
15	OPE4215	EEE	Non-Conventional Energy Sources
16	OPE4216	EEE	Energy Auditing and Management
17	OPE4217	HSS	Innovation, Entrepreneurship and Leadership
18	OPE4218	HSS	Technology Management
19	OPE4219	HSS	Knowledge Entrepreneurship
20	OPE4220	HSS	Finance Management
21	OPE4221	HSS	Project Planning, Management & Evaluation
22	OPE4222	HSS	Intellectual Property Rights
23	OPE4223	HSS	Engineering Economics
24	OPE4224	HSS	Human Relations Management
25	OPE4225	HSS	Entrepreneurship Development
26	OPE4226	HSS	Personnel Management and Industrial Engineering
27	OPE4227	MEE	Safety Engineering
28	OPE4228	MEE	Value Engineering
29	OPE4229	MEE	Energy Conservation & Management
30	OPE4230	MEE	Thermal Treatment of Metal and alloys
31	OPE4231	MEE	Simulation of Physical Processes
32	OPE4232	MEE	TQM and Reliability Engineering
33	OPE4233	MEE	Non Traditional Machining Techniques
34	OPE4234	MME	Nanotechnology
35	OPE4235	MME	Introduction to Nano-Technology applications
36	OPE4236	MME	Material Characterization
37	OPE4237	MME	Materials Management
38	OPE4238	MME	Manufacturing Strategies