

R - 20 COURSE STRUCTURE

SEMESTER-WISE STRUCTURE OF CURRICULUM

Course structure for eight semesters during four years of study is as follows

I Year I Semester (Semester-1)						
S. No.	Code	Course Name	L	T	P	C
1	HS1101	Communicative English	3	0	0	3
2	BS1101	Engineering Mathematics-I	3	0	0	3
3	BS1102	Engineering Physics	3	0	0	3
4	ES1101	Problem Solving using C	3	0	0	3
5	ES1102	Engineering Graphics	1	0	4	3
6	HS1101L	Communicative English Lab	0	0	3	1.5
7	BS1102L	Engineering Physics and Virtual Lab	0	0	3	1.5
8	ES1101L	Problem Solving using C Lab	0	0	3	1.5
Total Credits			19.5			

Category	CREDITS
Basic Science Course	7.5
Engineering Science Course	7.5
Humanities and Social Science	4.5
TOTAL CREDITS	19.5

I Year II Semester (Semester-2)						
S. No.	Code	Course Name	L	T	P	C
1	BS1201	Engineering Mathematics-II	3	0	0	3
2	BS1202	Engineering Chemistry	3	0	0	3
3	ES1201	Basic Electricals and Electronics Engineering	3	0	0	3
4	ES1202	Materials Science	3	0	0	3
5	ES1203	Engineering Mechanics	3	0	0	3
6	BS1202L	Engineering Chemistry Lab	0	0	3	1.5

7	ES1201L	Basic Electricals and Electronics Engineering Lab	0	0	3	1.5
8	ES1204L	Workshop Practice Lab	0	0	3	1.5
9	MC1201	Indian Constitution	2	0	0	0
Total Credits			19.5			

Category	CREDITS
Basic Science Course	7.5
Engineering Science Course	12
TOTAL CREDITS	19.5

II Year I Semester (Semester-3)						
S.No.	Course Code	Course Title	L	T	P	C
1	BS2101	Engineering Mathematics – III	3	0	0	3
2	PC2101	Mechanics of Solids	3	0	0	3
3	PC2102	Kinematics of Machinery	3	0	0	3
4	PC2103	Production Technology	3	0	0	3
5	PC2104	Machine Drawing	1	0	2	1.5
6	ES2101	Thermodynamics	3	0	0	3
7	PC2103L	Production Technology Lab	0	0	3	1.5
8	PC2101L	Materials and Mechanics of Solids Lab	0	0	3	1.5
9	SOC2101	Skill Oriented Course1: CAAED with NX	1	0	2	2
10	MC2101	Essence of Indian Traditional Knowledge	2	0	0	0
Total Credits						21.5
Minor degree/Honours			3	0	2	4

Category	CREDITS
Basic Science Course	3
Professional Core courses	13.5
Engineering Science Course	3
Skill Oriented Course*	2
TOTAL CREDITS	21.5

II Year II Semester (Semester-4)						
S.No.	Course Code	Course Title	L	T	P	C
1	BS2201	Complex Variables and Statistical Methods	3	0	0	3
2	PC2201	Applied Thermodynamics-I	3	0	0	3
3	PC2202	Fluid Mechanics and Hydraulic Machines	3	0	0	3
4	PC2203	Dynamics of Machinery	3	0	0	3
5	PC2204	Design of Machine Members-I	3	0	0	3
6	PC2201L	Thermal Engineering Lab	0	0	3	1.5
7	PC2202L	Fluid Mechanics and Hydraulic Machines Lab	0	0	3	1.5
8	ES2201L	Python Programming Lab	0	0	3	1.5
9	SOC2201	Skill course2: Die design	1	0	2	2
Total Credits						21.5
Minor degree/Honours			3	0	2	4

* At the end of II Year II Semester, students must complete summer internship spanning between 1 to 2 months (Minimum of 6 weeks), @ Industries/ Higher Learning Institutions/ APSSDC.

Category	CREDITS
Basic Science Course	3
Professional Core courses	15
Engineering Science Course	1.5
Skill Oriented Course	2
TOTAL CREDITS	21.5

Summer Internship 2 months (Mandatory) during summer vacation

III Year I Semester (Semester-5)						
S.No.	Course Code	Course Title	L	T	P	C
1	PC3101	Design of Machine Members – II	3	0	0	3
2	PC3102	Metal Cutting and Machine Tools	3	0	0	3

3	HS3101	Engineering Economics and Management	3	0	0	3
4	PE3101X	Professional Elective- I	3	0	0	3
5	OE3101X	Open Elective- I	3	0	0	3
6	PC3103L	Theory of Machines Lab	0	0	3	1.5
7	PC3102L	Machine Tools Lab	0	0	3	1.5
8	SAC3101	Skill Course3: Soft Skills	1	0	2	2
9	MC3101	Environmental Science	2	0	0	0
10	INTERN3101	Summer Internship 2 months (Mandatory) during summer vacation.	0	0	0	1.5
Total Credits						21.5
			Minor degree/Honours			3 0 2 4

Category	CREDITS
Professional Core courses	9
Professional Elective courses	3
Open Elective courses	3
Humanities and Social Science	3
Skill Oriented Course	2
Summer Internship	1.5
TOTAL CREDITS	21.5

III Year II Semester (Semester-6)						
S.No.	Course Code	Course Title	L	T	P	C
1	PC3201	Heat Transfer	3	0	0	3
2	PC3202	Instrumentation Control Systems and Engineering Metrology	3	0	0	3
3	HS3201	Universal Human Values-2	3	0	0	3
4	PE3201X	Professional Elective- II	3	0	0	3
5	OE3201X	Open Elective- II	3	0	0	3
6	PC3201L	Heat Transfer Lab	0	0	3	1.5
7	PC3202L	Instrumentation Control Systems and Engineering Metrology Lab	0	0	3	1.5

8	PC3203L	Design Analysis Lab	0	0	3	1.5
9	SAC3201	Skill Course4: ANOVIA / CNC Programming and Machining	1	0	2	2
10	MC3201	Entrepreneurial Skill development	2	0	0	0
Total Credits						21.5
			Minor degree/Honours			3 0 2 4

Category	CREDITS
Humanities and Social Science	3
Professional Core courses	10.5
Professional Elective courses	3
Open Elective courses	3
Skill Oriented Course*	2
TOTAL CREDITS	21.5

Summer Internship 2 months (Mandatory) during summer vacation

IV Year I Semester (Semester-7)						
S.No.	Course Code	Course Title	L	T	P	C
1	PC4101	Applied Thermodynamics –II	3	0	0	3
2	PE4101X	Professional Elective- III	3	0	0	3
3	PE4102X	Professional Elective- IV	3	0	0	3
4	PE4103X	Professional Elective- V	3	0	0	3
5	OE4101X	Open Elective- III	3	0	0	3
6	OE4102X	Open Elective- IV	3	0	0	3
7	SAC4101	Skill Course5: Advanced Simulation/DELMIA	1	0	2	2
8	INTERN4101	Summer Internship 2 months (Mandatory) during summer vacation	0	0	0	3
Total Credits						23
			Minor degree/Honours			3 0 2 4

Category	CREDITS
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Professional Core courses	3
Professional Elective courses	9
Open Elective courses	6
Skill Oriented Course	2
Summer Internship	3
TOTAL CREDITS	23

IV Year II Semester (Semester-8)						
S. No.	Code	Course Title	Hours Per week			Credits
			L	T	P	
1	PROJ4201	Major Project Project work, Seminar & Internship in Industry	0	0	0	12
		Total Credits				12

PROFESSIONAL ELECTIVES

Professional Elective- I PE3101X	Professional Elective- II PE3201X	Professional Elective- III PE4101X	Professional Elective- IV PE4102X	Professional Elective- V PE4103X
Refrigeration and Air-conditioning	Finite Element Methods	Industrial Engineering and Management	CAD/CAM	Condition Monitoring
Materials management	Power Plant Engineering	Composites and Nano Materials	Product design	Optimization Techniques
Industrial robotics	Total Quality Management	Solar and Photo Voltaic systems	Renewable Energy Sources	Automobile Engineering
Advanced Mechanics of Solids	Mechatronics	Design for Manufacturing	Production Planning Control	Advanced Manufacturing process

OPEN ELECTIVES OFFERED BY DEPARTMENT

Open Elective- I OE3101X	Open Elective- II OE3201X	Open Elective- III OE4101X	Open Elective- IV OE4102X
MEMS	Green Engineering Systems	Organisational Behaviour	Human Resource Management
Optimization methods	Robotics	Marketing Management	Product Design & Development
Operations Management	Additive Manufacturing (3 D printing)	Ergonomics	Consumer Behaviour
Nano Technology	Logistics and supply chain management	Strategic Management	Materials for Engineering

VVIT LIFE SKILLS

S No	Year/Sem	Course
1	I-I	Quantitative Aptitude
2	I-II	Verbal Ability
3	II-I	Understanding Self for Effectiveness
4	II-II	Design Thinking
5	III-I	Stress and Coping Strategies
6	III-II	Research Skills

CREDIT BREAKUP

CATEGORY	CREDITS
Basic Science Courses	21
Engineering Science Courses	24
Humanities and Social Science Courses	10.5
Professional Core Courses	51
Mandatory Courses	0
Professional Elective Courses	15
Open Elective Courses	12
Skill Oriented Courses	10
Summer Internships and Projects	16.5
TOTAL CREDITS	160

MINOR DEGREE COURSES

MINOR DEGREE COURSES							
S.No	Name of SUBJECT	Pre-requisites	L	T	P	Credits	SEM
1	Thermodynamics	NIL	4	0	0	4	II-II
2	Engineering Mechanics and Strength of Materials	NIL	4	0	0	4	
3	Production Technology	Nil	4	0	0	4	
4	Materials Science	Nil	4	0	0	4	
5	Mechanics of Solids and Fluids	Engineering Mechanics	4	0	0	4	III-I
6	Applied Thermodynamics	Thermodynamics	4	0	0	4	
7	Theory of Machines	Engineering Mechanics	4	0	0	4	
8	Additive Manufacturing	Production Technology	4	0	0	4	
9	Fundamentals of Machine Design	Strength of Materials	4	0	0	4	III-II
10	Power Plant Engineering	Thermodynamics	4	0	0	4	
11	Heat Transfer	Thermodynamics	4	0	0	4	
12	Operations research	Mathematics	4	0	0	4	
13	Automobile Engineering	NIL	4	0	0	4	IV-I
14	Robotics	Engineering Mechanics	4	0	0	4	
15	Unconventional Manufacturing Processes	Manufacturing Technology	4	0	0	4	
16	B2B marketing	Engineering Economics and Management	4	0	0	4	

HONOURS COURSES

HONOURS COURSES						
S.No	Name of SUBJECT	Pre-requisites	L	T	P	Credits
POOL – 1						
(II B.Tech II Semester)						
1	Advanced Thermodynamics	Thermodynamics	4	0	0	4
2	Waste heat Recovery Systems	Thermodynamics	4	0	0	4
3	Mechanical Behaviour of Materials	Mechanics of Solids	4	0	0	4
4	Analysis and Synthesis of	Kinematics of	4	0	0	4

	Mechanisms	Machinery				
5	Additive Manufacturing	Production Technology	4	0	0	4
POOL – 2						
(III B.Tech I Semester)						
1	Advanced Mechanics of Fluids	Fluid Mechanics	4	0	0	4
2	Alternative Fuels for I.C. Engines	Applied Thermodynamics-I	4	0	0	4
3	Mechanical Vibrations	Dynamics of Machinery	4	0	0	4
4	Design of Press Tools and Dies	Production Technology				
5	Computer Integrated Manufacturing	Production Technology				
POOL-3						
(III B.Tech II Semester)						
1	Computational Fluid Dynamics	Fluid Mechanics	4	0	0	4
2	Tribology	Design of Machine Members I and Design of Machine Members II	4	0	0	4
3	Design of Automobile Systems	Design of Machine Members I and Design of Machine Members II	4	0	0	4
4	Design of Jigs and Fixtures	MCMT	4	0	0	4
5	Design of Metal cutting tools and Accessories	MCMT	4	0	0	4
POOL-4						
(IV B.Tech I Semester)						
1	Design of Heat Transfer Equipment	Thermodynamics, Heat Transfer	4	0	0	4
2	Green Engineering	NIL	4	0	0	4
3	Gear Engineering	Kinematics of Machinery, Dynamics of Machinery, Design of Machine Members I and Design of Machine Members II	4	0	0	4
4	Automation in Manufacturing	Production Technology	4	0	0	4
5	Experimental Techniques and Data Analysis	ICS and Metrology	4	0	0	4

