

A Proposal for Integrated M.Tech. Programme in Civil Engineering

1. Rationale

India will invest as much as Rs. 5.97 trillion in creating and upgrading infrastructure in the next financial year (2018-19), said Finance minister in his budget speech. This investment will be many more times in coming decades in creating the network of roads, airports, railways, ports and inland waterways. This will require highly skilled civil engineers in structural, transportation and construction technology and management.

Today, quality of faculty teaching engineering in technical institutions is a great cause of concern. AICTE has made M.Tech. as a minimum qualification for entry to teaching profession. However, the persons entering teaching engineering do not have any exposure to the principles of teaching and learning and pedagogy. In view of this, it is proposed to start Dual degree (B.Tech. and M.Tech.) Programmes in Civil engineering. The main feature of this programme will be integration of pedagogy, state-of-art technology and holistic development of an individual with career opportunities in teaching, research and industries. Our goals as engineering educators should include equipping our students with problem-solving, communication, teamwork, self-assessment, change management and lifelong learning skills.

The programmes will be designed based on Outcome Based Education (OBE) approach. The focus will be on development of holistic individual who is work ready. Therefore, three summer trainings at the end of 2nd, 3rd, 4th year (In NGO, Industry, Research organisations) are included in the design along with provision of audit courses for life skills and personality development such as Yoga, music, drama, painting, debate, creative writing, etc. and compulsory participation in sports as an audit course in place of NCC and NSS.

Focus will be on preparation of graduates for the fourth industrial revolution. Therefore, emphasis will be on green technologies, artificial intelligence, machine learning, automation, modern tools and softwares, etc. These along with basic science courses will be integrated all through the curriculum rather than providing separate subjects. Courses in the state-of-art technology will be included in the specialization.

It is proposed to start five years integrated fully residential programme with three specializations in the field of, Structural engineering, Construction Technology & Management, and Transportation Engineering

2. Programme Highlights & Structure

FIVE YEARS INTEGRATED M.TECH. PROGRAMMES OF DCEE

The department proposes to start Integrated M.Tech. degree Programmes in Civil engineering in three disciplines. It is proposed to start five years integrated fully residential programme with three specializations in the field of, Structural engineering, Construction Technology & Management, and Transportation Engineering. The main features of this programme are :

- Integration of pedagogy in the programme. There will be six courses (18 credits) related to teaching-learning process (Technical Education) in the Programme.
- The focus will be on development of holistic individual who is work ready. Therefore, 3 summer trainings at the end of 2nd, 3rd, 4th year (In NGO, Industry, Research organisations) are included in the design of the programme.
- To incorporate state-of-art technology and futuristic development, there will be 5 discipline specific electives .
- For holistic development of an individual, 4 open elective courses on various streams of science, technology, programming and management have been included.
- In addition 3 mandatory audit courses on Indian Constitution, Indian tradition and Organizational Behavior have been included.
- For broadening the horizons of the students, 4 audit courses for life skills and personality development such as Yoga, music, drama, painting, debate, creative writing, humanities, etc have been included.
- There will be compulsory participation in sports as an audit course in place of NCC and NSS.
- The programmes will be designed based on Outcome Based Education (OBE) approach.
- Focus will be on preparation of graduates for the fourth industrial revolution. Therefore, emphasis will be on green technologies, artificial intelligence, machine learning, automation, modern tools and softwares, etc
- Our goals as engineering educators will be to equip our students with problem-solving, communication, teamwork, self-assessment, change management and lifelong learning skills.
- The graduates will have career opportunities in teaching, research and industries.

Programme Structure

S. No.	Category	Suggested Breakup of Credits(Total)
1	Humanities and Social Sciences including Management courses (HSMC)	3+6+2+0+0 +2 = 13
2	Basic Science courses (BSC)	4+8+0+0+6 =18
3	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc (ESC)	13+6+12+0 +0= 31
4	Professional core courses (PCC)	0+0+9+20+ 20+10 = 59
5	Professional Elective courses relevant to chosen specialization/branch of PG (PEC)	
6	Open Electives OE	3
7	Educational Technology- Core Courses (ETC)	
8	Educational Technology- Elective Courses (ETEC)	
9	Seminar (SEM)	
10	Internships 3 in No. one at the end of 2 nd Year, 3 rd Tear and 4 th Year of 6 to 8 weeks duration (INT)	
11	Project (PRJ)	
12	Mandatory Audit Courses (MAC) [Environmental Sciences, Induction training, Indian Constitution, Essence of Indian Knowledge Tradition]	Audit (3+2)
13	Elective audit Courses (aim is to broadening horizons)Personality development Audit courses such as Yoga, music, drama, painting, debate, creative writing, humanities etc. (EAC)	Audit (3)
14	Sports	Audit (3 hrs per week per semester)
	Total	124

I. Semester-wise structure of curriculum

Semester I (First year] Branch/Course Civil Engineering

Three Week Induction Programme as Per AICTE Guidelines (See Appendix 1)

Sl. No.	Category	Course Code	Course Title	Hours per week			Credits
				L	T	P	C
1	HSMC		Technical English	2	0	2	3
2	BSC		Mathematics	3	1	0	4
3	ESC		Basic Electrical & Electronics Engineering	3	1	2	5
4	ESC		Engineering Graphics & Drafting	0	0	6	3
5	ESC		Programming for Problem Solving	3	0	4	5
6			Sports			3	0
7							
Total Contact Hours =30Hrs				Total credits			20

Type of Course	No.	Credits	Contact hours
HSMC	1	3	4
BSC	1	4	4
ESC	3	13	19
Sports	1	0	3

Semester II (First year] Branch/Course CivilEngineering

Sl. No.	Category	Code	Course Title	Hours per week			Credits
				L	T	P	
1	HSMC		Principles of Micro Economics	3	0	0	3
2	HSMC		Effective Technical Communication	2	1	0	3
3	BSC		Mathematics –II (Differential Equations)	3	1	0	4
4	BSC		Physics	3	0	2	4
6	ESC		Engineering Mechanics	3	1	0	4
7	ESC		Workshop Practice	0	0	4	2
8	MAC		Introduction to Indian Constitution	3	0	0	0
9			Sports			3	0
10							
Total Contact hours = 28 Hours				Total credits			20

Type of Course	No.	Credits	Contact hours
HSMC	2	6	6
BSC	2	8	8
ESC	2	6	8
Sports	1	0	3
MAC	1	0	3

Semester III (Second year] Branch/Course CivilEngineering

Sl. No.	Category	Code	Course Title	Hours per week			Credits
				L	T	P	
1	HSMC		Principles of Macro Economics	2	0	0	2
2	ESC		Mechanical Engineering	2	1	0	3
3	ESC		Solid Mechanics	3	1	0	4
4	ESC		Computer-aided Civil Engineering Drawing	1	0	2	2
5	ESC		Introduction to Fluid Mechanics	3	0	0	3
6	PCC		Digital Surveying & Geomatics	1	1	2	3
7	PCC		Construction Materials and testing	3	0	2	4
8			Sports			3	0
	Total Contact Hours	27					21

Type of Course	No.	Credits	Contact hours
HSMC	1	2	2
BSC	0	0	0
ESC	4	12	13
PCC	2	7	9
Sports	1	0	3
MAC			

Semester IV (Second year]
Branch/Course Civil Engineering

Sl. No.	Category	Code	Course Title	Hours per week			Credits
				L	T	P	
1	PCC		Structural analysis	3	1	0	4
2	PCC		Engineering Geology	1	0	2	2
3	PCC		Geotechnical Engineering	3	0	2	4
4	PCC		Transportation Engineering I	3	0	2	4
5	PCC		Instrumentation & Sensor Technologies for Civil Engineering Applications	1	1	2	3
6	PCC		Applied Hydraulic Engineering	2	1		3
7	MAC		Management I (Organizational Behavior)	2	0	0	0
8			Sports			3	
	Total Contact Hours - 29 hrs		Total				20

Type of Course	No.	Credits	Contact hours
HSMC		0	
BSC	0	0	0
ESC	0	0	0
PCC	6	20	24
Sports	1	0	3
MAC	1	0	2

Semester V
(Third year]
Branch/Course
CivilEngineering

Sl. No.	Category	Code	Course Title	Hours per week			Total contact hours	Credits
				L	T	P		
1.	PCC		Construction Economics and Finance	2	0	2		3
2	PCC		Design of Concrete structures	3	1	0		4
3	PCC		Environmental Engineering	2	0	0		2
4	PCC		Concrete Technology	3	0	2		4
5	PCC		Transportation engineering II	3	0	0		3
6	PCC		Foundation Engineering	3	0	2		4
7	MAC		Essence of Indian Knowledge Tradition	2	-	-		0
8			Sports			3		
Contact Hours 28				Total credits				20

Type of Course	No.	Credits	Contact hours
HSMC	0	0	0
BSC	0	0	0
ESC	0	0	0
PCC	6	20	23
Sports	1	0	3
MAC	1	0	2
EAC	0	0	0

Semester VI
(Third year]
Branch/Course
CivilEngineering

Sl. No.	Category	Code	Course Title	Hours per week			Credits
				L	T	P	
1.	HSMC		Professional ethics and Practice	2	0	0	2
2.	BSC		Numerical Methods and FEM	2	0	2	3
3	BSC		Probability and Statistics for Civil engineers	2	1	0	3
4	PCC		Data Analytics and AI in Civil engineering	2	-	2	3
5	PCC		Design of Steel structures	3	1	0	4
6	PCC		Construction Technology	3	0	0	3
7	OEC		Open Elective I	3	0	0	3
	EAC		EAC 1	3			0
			Sports			3	0
	Total Contact Hours = 29 Hours						21

Type of Course	No.	Credits	Contact hours
HSMC	1	2	2
BSC	2	6	7
ESC	0	0	0
PCC	3	10	11
Sports	1	0	3
MAC	0	0	0
EAC	1	0	3
OEC	1	3	3

**M.Tech.
Construction Technology and Management**

Semester VII (Fourth year] Branch/Course Construction Technology and Management

Sl. No.	Category	Code	Course Title	Hours per week			Credits
				L	T	P	
1	PRJ		Mini Project				3
2	PCC		Construction Contract Management	3	0	0	3
3	PCC		Construction Practices and equipment	3	0	0	3
5	PCC		Computational Laboratory for Construction Management	0	0	6	3
6	ETC		Education Technology	3	0	0	3
7	ETC		Educational Psychology	3	0	0	3
8	OEC		Open Elective II	3	0	0	3
	EAC		EAC 2	3			
			Sports			3	
Total Contact Hours = 27				Total credits			21

Type of Course	No.	Credits	Contact hours
PRJ + SEM	1	3	0
ETC + ETE	2	6	6
PCE			
PCC	3	9	12
Sports	1	0	3
	0	0	0
EAC	1	0	3
OEC	1	3	3

Semester VIII (Fourth year] Branch/Course Construction Technology and Management

Sl. No.	Category	Code	Course Title	Hours per week			Credits
				L	T	P	
1	HSMC		Managerial accounting and Financial Management	2	1		3
2	PCC		Green materials and Green Construction	3	0	0	3
3	HSMC		Project Management	3	0	0	3
4	SEM		Seminar	0	0	0	2
5	ETC		Student assessment and Evaluation	3	0	0	3
6	ETC		Technology enabled Learning	3	0	0	3
7	OEC		Open Elective III	3	0	0	3
	EAC		EAC 3	3			0
			Sports			3	0
Contact Hours -26				Total credits			20

Type of Course	No.	Credits	Contact hours
HSMC	2	6	6
PRJ + SEM	1	2	0
ETC + ETE	2	6	6
PEC			
PCC	1	3	3
Sports	1	0	3
	0	0	0
EAC	1	0	3
OEC	1	3	3

Semester IX (Fifth year] Branch/Course Construction Technology and Management

Sl. No.	Category	Code	Course Title	Hours per week			Credits
				L	T	P	
1	PEC		Specialization Elective I	3	0	0	3
2	PEC		Specialization Elective II	3	0	0	3
3	PEC		Specialization Elective III	3	0	0	3
4	PRJ		Project I	0	0	0	3
5	ETE		Research methodology	3	0	0	3
6	ETE		ET Elective I	3	0	0	3
7	OEC		Open Elective IV	3	0	0	3
8	EAC		EAC IV	3			
			Sports			3	
Contact Hours 24				Total credits			21

Type of Course	No.	Credits	Contact hours
PRJ + SEM	1	3	0
ETC + ETE	2	6	6
PEC	3	9	9
PCC	0	0	0
Sports	1	0	3
	0	0	0
EAC	1	0	3
OEC	1	3	3

Semester X (Fifth year] Branch/Course Construction Technology and Management

Sl. No.	Category	Code	Course Title	Hours per week			Credits
				L	T	P	
1	PEC		Specialization Elective IV	3			3
2	PEC		Specialization Elective V	3			3
3	PRJ		Project II	0	0	0	15
			Sports			3	
Total credits							21

Type of Course	No.	Credits	Contact hours
PRJ + SEM	1	15	
ETC + ETE	0	0	0
PCE	2	6	6
PCC	0	0	0
Sports	1	0	3

M.Tech. Structural engineering

Semester VII (Fourth year] Branch/Course Structural engineering

Sl. No.	Category	Code	Course Title	Hours per week			Credits
				L	T	P	
	PRJ		Mini Project			0	3
1	PCC		Structural dynamics	2	0	0	2
2	PCC		Advanced Structural analysis	2	0	0	2
3	PCC		Advanced Solid Mechanics	3	0	0	3
	PCC		Computational Laboratory for Structural Engineering			6	3
5	ETC		Education Technology	3	0	0	3
6	ETC		Educational Psychology	3	0	0	3
7	OEC		Open Elective II	3	0	0	3
	EAC		EAC 2	3			
			Sports			3	
Total Contact Hours = 28				Total credits			22

Type of Course	No.	Credits	Contact hours
PRJ + SEM	1	3	0
ETC + ETE	2	6	6
PCE			
PCC	4	10	13
Sports	1	0	3
	0	0	0
EAC	1	0	3
OEC	1	3	3

Semester VIII (Fourth year] Branch/Course Structural engineering

Sl. No.	Category	Code	Course Title	Hours per week			Credits
				L	T	P	
1	PCC		Earthquake analysis and design	2	0	0	2
2	PCC		Theory of concrete structures	3	0	0	3
3	PCC		Theory of steel structures	3	0	0	3
4	PCC		Structural engineering Lab			4	2
5	SEM		Seminar	0	0	0	2
6	ETC		Student assessment and Evaluation	3	0	0	3
7	ETC		Technology enabled Learning	3	0	0	3
8	OEC		Open Elective III	3	0	0	3
	EAC		EAC 3	3			0
			Sports			3	0
Total Contact Hours - 27				Total credits			21

Type of Course	No.	Credits	Contact hours
PRJ + SEM	1	3	0
ETC + ETE	2	6	6
PCE			
PCC	4	10	12
Sports	1	0	3
	0	0	0
EAC	1	0	3
OEC	1	3	3

Semester IX (Fifth year] Branch/Course Structural Engineering

Sl. No.	Category	Code	Course Title	Hours per week			Credits
				L	T	P	
1	PEC		Specialization Elective I	3	0	0	3
2	PEC		Specialization Elective II	3	0	0	3
3	PEC		Specialization Elective III	3	0	0	3
4	PRJ		Project I	0	0	0	3
5	ETE		Research methodology	3	0	0	3
6	ETE		ET Elective I	3	0	0	3
7	OEC		Open Elective IV	3	0	0	3
8	EAC		EAC IV	3			
			Sports			3	
Contact Hours 24				Total credits			21

Type of Course	No.	Credits	Contact hours
PRJ + SEM	1	3	0
ETC + ETE	2	6	6
PEC	3	9	9
PCC	0	0	0
Sports	1	0	3
	0	0	0
EAC	1	0	3
OEC	1	3	3

Semester X (Fifth year] Branch/Course Structural Engineering

Sl. No.	Category	Code	Course Title	Hours per week			Credits
				L	T	P	
1	PEC		Specialization Elective IV	3			3
2	PEC		Specialization Elective V	3			3
3	PRJ		Project II	0	0	0	15
			Sports			3	
Total credits							21

Type of Course	No.	Credits	Contact hours
PRJ + SEM	1	15	
ETC + ETE	0	0	0
PCE	2	6	6
PCC	0	0	0
Sports	1	0	3

M.Tech.
Transportation engineering
Semester VII (Fourth year) Branch/Course Transportation engineering

Sl. No.	Category	Code	Course Title	Hours per week			Credits
				L	T	P	
	PRJ		Mini Project			0	3
1	PCC		Pavement Material and Pavement Design	3	1	0	4
2	PCC		Urban and regional transportation Planning	3	1	0	4
3	ETC		Education Technology	3	0	0	3
4	ETC		Educational Psychology	3	0	0	3
5	OEC		Open Elective II	3	0	0	3
6	EAC		EAC 2	3			
7			Sports			3	
Total Contact Hours = 23				Total credits			20

Type of Course	No.	Credits	Contact hours
PRJ + SEM	1	3	6
ETC + ETE	2	6	6
PCE			
PCC	2	8	8
Sports	1	0	3
	0	0	0
EAC	1	0	3
OEC	1	3	3

Semester VIII (Fourth year] Branch/Course Transportation Engineering

Sl. No.	Category	Code	Course Title	Hours per week			Credits
				L	T	P	
1	HSMC		Managerial accounting and Financial Management	2	1		3
2	PCC		Traffic Engineering and management	3	0	0	3
	PCC		Intelligent transport systems	2	0	0	2
3	HSMC		Project Management	3	0	0	3
4	SEM		Seminar	0	0	0	2
5	ETC		Student assessment and Evaluation	3	0	0	3
6	ETC		Technology enabled Learning	3	0	0	3
7	OEC		Open Elective III	3	0	0	3
	EAC		EAC 3	3			0
			Sports			3	0
Contact Hours -26				Total credits			22

Type of Course	No.	Credits	Contact hours
HSMC	2	6	6
PRJ + SEM	1	2	0
ETC + ETE	2	6	6
PEC			
PCC	2	5	5
Sports	1	0	3
	0	0	0
EAC	1	0	3
OEC	1	3	3

Semester IX (Fifth year] Branch/Course Transportation Engineering

Sl. No.	Category	Code	Course Title	Hours per week			Credits
				L	T	P	
1	PEC		Specialization Elective I	3	0	0	3
2	PEC		Specialization Elective II	3	0	0	3
3	PEC		Specialization Elective III	3	0	0	3
4	PRJ		Project I	0	0	0	3
5	ETE		Research methodology	3	0	0	3
6	ETE		ET Elective I	3	0	0	3
7	OEC		Open Elective IV	3	0	0	3
8	EAC		EAC IV	3			
			Sports			3	
Contact Hours 24				Total credits			21

Type of Course	No.	Credits	Contact hours
PRJ + SEM	1	3	0
ETC + ETE	2	6	6
PEC	3	9	9
PCC	0	0	0
Sports	1	0	3
	0	0	0
EAC	1	0	3
OEC	1	3	3

Semester X (Fifth year] Branch/Course Transportation Engineering

Sl. No.	Category	Code	Course Title	Hours per week			Credits
				L	T	P	
1	PEC		Specialization Elective IV	3			3
2	PEC		Specialization Elective V	3			3
3	PRJ		Project II	0	0	0	15
			Sports			3	
			Total credits				21

Type of Course	No.	Credits	Contact hours
PRJ + SEM	1	15	
ETC + ETE	0	0	0
PCE	2	6	6
PCC	0	0	0
Sports	1	0	3

List of Open Electives

1. Engineering Chemistry
2. Mathematics (Transforms and discrete mathematics)
3. Biology
4. Quantum Mechanics and its applications
5. Introduction to R Programming
6. Introduction to Java Programming
7. C++
8. Python
9. Web based programming
10. Technology and society
11. Disaster Management
12. Entrepreneurship Development
13. Marketing management
14. Financial management
15. Investment analysis and Portfolio management
16. Thermodynamics and Heat Transfer
17. Quantum Computing
18. Cyber Law and Ethics
19. IPRs
20. ICT for Development
21. Innovations Management
22. History of Engineering and Technology
23. HRD and OD
24. Operations Research

List of Elective Audit Courses

1. Soft Skills and Interpersonal Communication
2. Introduction to Philosophical Thoughts
3. Comparative Study of Literature
4. Indian Music System
5. Introduction to Art and Aesthetics
6. Economic Policies in India
7. Sociology
8. Psychology
9. Indian History
10. Introduction to Drama
11. Creative writing
12. Research Paper writing
13. Debate
14. Yoga
15. Political thoughts
16. Public policy
17. Media and its impact on society
18. Educational video development
19. Sanskrit Literature
20. English Literature
21. Hindi Literature
22. Non verbal communication
23. Public speaking
24. Critical thinking
25. Logic

List of Electives from Technical Education

1. Curriculum Development and Implementation (E1)
2. ISDD (E2)
3. Education Management(E3)
4. NBA Accreditation
5. Outcome based Education and Assessment
6. Development of Blended learning and MOOC

CONSTRUCTION TECHNOLOGY & MANAGEMET

ELECTIVES

- Sustainable Material & Green Building	3 0 0 3
- Repair & rehabilitation of Structure	2 0 2 3
- GIS	2 0 2 3
- Infrastructures and Material management	3 0 0 3
- Quality & Safety in Construction	3 0 0 3
- Building Services & Maintenance Management	3 0 0 3
- Transportation Safety & Environment	3 0 0 3
- Field Exploration & Geotechnical Processes	3 0 0 3
- Fire Engineering & Design	3 0 0 3
- Optimization Techniques in Water Resources	3 0 0 3
- Intelligent Transportation Systems	3 0 0 3
- Planning and Design of Sustainable Transport Systems	3 0 0 3
- Transportation Infrastructure Management	3 0 0 3
- Concrete Mechanics	3 0 0 3
- Prestressed and Composite Structures	2 0 2 3
- Structural Health Monitoring	2 0 2 3
- Advanced Concrete Technology	3 0 0 3
- Formwork for Concrete Structures	3 0 0 3
- Independent Study	0 3 0 3

TRANSPORTATION ENGINEERING

ELECTIVES

- Analytical & Numerical Methods in Structural Engineering	3 0 0 3
- Environmental Statistics and Experimental Design	2 0 2 3
- Probability and Statistics in Civil Engineering	3 0 0 3
- Optimization Techniques in Water Resources	3 0 0 3
- Minor Project in Transportation Engineering	0 0 6 3
- Airport Planning and Design	3 0 0 3
- Transportation Infrastructure Design	2 0 2 3
- Modeling of Pavement Materials	2 0 2 3
- Public Transportation Systems	3 0 0 3
- Transportation Safety and Environment	3 0 0 3
- Intelligent Transportation Systems	3 0 0 3
- Planning and Design of Sustainable Transport Systems	3 0 0 3
- Advanced Transportation Modeling	2 0 2 3
- Geometric Design of Roads	2 0 2 3
- Transportation Infrastructure Management	3 0 0 3
- Viscoelastic Behavior of Bituminous Materials	3 0 0 3
- Transportation System Management	3 0 0 3
- Transportation Economics	3 0 0 3
- Traffic Flow Modeling	3 0 0 3
- Transportation Logistics	3 0 0 3
- Special Topics in Transportation Engineering	3 0 0 3
- Independent Study	0 3 0 3

STRUCTURAL ENGINEERING

ELECTIVES

- Minor Project in Structural Engineering	0 0 6 3
- Analytical and Numerical Methods for Structural Engineering	3 0 0 3
- Blast Resistant Design of Structures	2 0 2 3
- Concrete Mechanics	3 0 0 3
- Design of Bridge Structures	3 0 0 3
- Design of Fiber Reinforced Composite Structures	3 0 0 3
- Design of Masonary Structures	3 0 0 3
- Design of Tall Buildings	3 0 0 3
- Prestressed and Composite Structures	2 0 2 3
- Strengthening and Retrofitting of Structures	3 0 0 3
- Structural Safety and Reliability	3 0 0 3
- Theory of Plates and Shells	3 0 0 3
- Theory of Structural Stability	3 0 0 3
- Advanced Finite Element Method and Programming	2 0 2 3
- Design of Offshore Structures	3 0 0 3
- General Continuum Mechanics	3 0 0 3
- Structural Health Monitoring	2 0 2 3
- Structural Vibration Control	3 0 0 3
- Wind Resistant Design of Structures	3 0 0 3
- Independent Study	0 3 0 3
- Advanced Concrete Technology	3 0 0 3
- Fire Engineering and Design	3 0 0 3
- Formwork for Concrete Structures	3 0 0 3

CTM Programme Structure

S. No.	Category	Suggested Breakup of Credits(Total)
1	Humanities and Social Sciences including Management courses (HSMC)	0+6
2	Basic Science courses (BSC)	
3	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc (ESC)	
4	Professional core courses (PCC)	9 +3
5	Professional Elective courses relevant to chosen specialization/branch of PG (PEC)	0+0+9 +6
6	Open Electives OE	3 +3+3
7	Educational Technology- Core Courses (ETC)	6 + 6 +3
8	Educational Technology- Elective Courses (ETEC)	3
9	Seminar (SEM)	0+2+0+0
10	Internships 3 in No. one at the end of 2 nd Year, 3 rd Tear and 4 th Year of 6 to 8 weeks duration (INT)	
11	Project (PRJ)	3 +0 +3+15
12	Mandatory Audit Courses (MAC) [Environmental Sciences, Induction training, Indian Constitution, Essence of Indian Knowledge Tradition]	
13	Elective audit Courses (aim is to broadening horizons)Personality development Audit courses such as Yoga, music, drama, painting, debate, creative writing, humanities etc. (EAC)	Audit (3 + 3 +3)
14	Sports	Audit (3 hrs per week per semester)
	Total	83

Structures Programme Structure

S. No.	Category	Suggested Breakup of Credits(Total)
1	Humanities and Social Sciences including Management courses (HSMC)	
2	Basic Science courses (BSC)	
3	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc (ESC)	
4	Professional core courses (PCC)	10 +10 =20
5	Professional Elective courses relevant to chosen specialization/branch of PG (PEC)	0+0+9 +6 =15
6	Open Electives OE	3 +3+3 =9
7	Educational Technology- Core Courses (ETC)	6 + 6 +3 =15
8	Educational Technology- Elective Courses (ETEC)	3
9	Seminar (SEM)	0+2+0+0
10	Internships 3 in No. one at the end of 2 nd Year, 3 rd Tear and 4 th Year of 6 to 8 weeks duration (INT)	
11	Project (PRJ)	3 +0 +3+15 =21
12	Mandatory Audit Courses (MAC) [Environmental Sciences, Induction training, Indian Constitution, Essence of Indian Knowledge Tradition]	
13	Elective audit Courses (aim is to broadening horizons)Personality development Audit courses such as Yoga, music, drama, painting, debate, creative writing, humanities etc. (EAC)	Audit (3 + 3 +3)
14	Sports	Audit (3 hrs per week per semester)
	Total	85

Transportation Programme Structure

S. No.	Category	Suggested Breakup of Credits(Total)
1	Humanities and Social Sciences including Management courses (HSMC)	0+6
2	Basic Science courses (BSC)	
3	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc (ESC)	
4	Professional core courses (PCC)	8 +5 =13
5	Professional Elective courses relevant to chosen specialization/branch of PG (PEC)	0+0+9 +6
6	Open Electives OE	3 +3+3
7	Educational Technology- Core Courses (ETC)	6 + 6 +3
8	Educational Technology- Elective Courses (ETEC)	3
9	Seminar (SEM)	0+2+0+0
10	Internships 3 in No. one at the end of 2 nd Year, 3 rd Tear and 4 th Year of 6 to 8 weeks duration (INT)	
11	Project (PRJ)	3 +0 +3+15
12	Mandatory Audit Courses (MAC) [Environmental Sciences, Induction training, Indian Constitution, Essence of Indian Knowledge Tradition]	
13	Elective audit Courses (aim is to broadening horizons)Personality development Audit courses such as Yoga, music, drama, painting, debate, creative writing, humanities etc. (EAC)	Audit (3 + 3 +3)
14	Sports	Audit (3 hrs per week per semester)
	Total	84