R-16

CURRICULUM ESSENTIALS

Handbook on Outcome Based Education

CIVIL ENGINEERING

NARULA INSTITUTE OF TECHNOLOGY
WWW.NIT.AC.IN

Institute Vision

To make the Institute excellent in technological education and research by imparting equitable, inclusive, ethical, flexible and multidisciplinary knowledge to budding technologists to serve the society.

Institute Mission

- To establish continuously improving academic ambience in the Institute in order to prepare the students with beyond curriculum knowledge, creativity, innovation, problem solving abilities, teamwork, communication skills etc. for their holistic development.
- To collaborate with Institutes of higher education, Professional Societies, R&D and Industrial organisations for continuous improvement of academic, research environment in the Institute and to build a strong Industry-Institute interface.
- To promote and nurture entrepreneurial and innovative quality of the students providing proper education, training and supportive facilities so that future entrepreneurs emerge with flying colors.
- To strengthen quality and knowledge-base of faculty through faculty development programmes for continuous upgradation to remain in tune with dynamically changing technology.
- To become a responsible contributor in the socio-economic development of the society through excellence in education and research.

Institute Quality Policy

- Adoption of appropriate standards and practices for good governance, to bring in transparency of all operations and thereby improve credibility at all levels.
- Industry-ready professionals to be developed through interactive teaching learning process involving state of the art class rooms, laboratories, libraries, corporate exposure and innovative project work.
- Higher studies/research for faculty & staff to be encouraged for up gradation of knowledge through participation in Quality Improvement Programs, Seminars, Workshops, Webinars etc.
- Laboratory facilities would be upgraded in emerging areas to promote R&D activities including participation in Govt. and Industry funded projects.
- Industrial consultancy to be carried out in an effective manner for developing sense of accomplishment.
- Interaction with Professional Societies would be encouraged for the professional growth and development of the students, faculties and staff for mutual benefit.
- NBA Accreditation for all AICTE approved programs to be obtained at the earliest and maintained on a long-term basis.
- The innovative and entrepreneurial skills of the students to be nurtured through Innovation & Incubation center, finally culminating in start-ups.

Department Vision

- To produce a new generation of Civil Engineers by providing state-of-the-art education in Civil Engineering recognized worldwide for excellence leading to extensive research in technology and management for industrial and social needs for sustainable development

Department Mission

- **DM 1-** To make the department a highest seat of learning in the field of Civil Engineering and allied research
- **DM 2-** To develop required skills and knowledge so that students are readily employable.
- **DM 3-** To motivate students with high ethical values to serve the society and nation.
- **DM 4-** To provide state of the art resources that contributes to a congenial learning environment.
- **DM 5-** To inculcate innovative and original thinking to budding engineers to face the challenges and changes of future.

Program Educational Objects (PEOs)

- **PEO I: Technical Knowledge:** Graduates will be able to analyze, design and propose a feasible solution to civil engineering problems by applying basic principles of mathematics, science and engineering.

- **PEO II: Professional skills:** Graduates will be inculcated with necessary professional skills, effective oral and written communication to be productive Engineers.

- **PEO III: Problem Solving ability:** Graduates will be able to work as a team in intra and interdisciplinary end over for development of new ideas and products to serve in contemporary societal contexts.

- **PEO IV: Knowledge application:** Graduates will be able to face challenges of the world economic order by incorporating expertise gained by faculty in consultancy work, for educating students, involving modern tools and techniques.

- **PEO V: Technical expertise:** Graduates will achieve a high level of technical and managerial expertise to achieve excellence, outstanding leadership to succeed in positions in Civil Engineering profession with higher threshold start in employment background.

Program outcomes (POs)

Engineering Graduates will be able to:

I. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

II. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

III. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

IV. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

V. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

VI. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

VII. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

VIII. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

IX. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

X. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

XI. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

XII. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

Program Specific Outcomes (PSOs)

At the end of the program, the student will able to-

- **PSO1:** Apply the basic concept of civil engineering skill in the field of Structural, Geotechnical, Environmental, Water resources and Transportation engineering for proper employability.
- **PSO2:** Apply theoretical and experimental knowledge to extend in research and pursue higher studies.
- **PSO3:** Develop skills in appropriate design procedures, construction planning and management, to implement in various projects.

DEPARTMENT OF CIVIL ENGINEERING

Syllabus
of

1st Semester

Autonomy Curriculum and Syllabus of B.Tech ProgrammeImplemented from the Academic Year 2016

Group A: ECE, EE, BME, AEIE/EIE

Group B: CSE, IT, FT, ME,CE

First Year First Semester

CURRICULUM

A. THEORY							
Sl No	**Paper Code**	**Theory**	**Contact Hours /Week**				**Credit Points**
			L	**T**	**P**	**Total**	
1	M 101	Mathematics -I	3	1	0	4	4
2	CH 101/ PH 101	Chemistry (Gr. A) / Physics -I(Gr. B)	3	1	0	4	4
3	EE 101/ EC 101	Basic Electrical Engineering (Gr. A) / Basic Electronics Engineering (Gr. B)	3	1	0	4	4
4	HU 101	Communicative English	2	0	0	2	2
5	ME 101	Engineering Mechanics	3	1	0	4	4
Total of Theory						18	18
B. PRACTICAL							
7	HU181	Extra Curricular Activity (NSS/ NCC)	0	0	2	2	1
8	HU191	Lang. Lab. and Seminar Presentation	0	0	2	2	1
9	CH 191/ PH191	Chemistry Lab (Gr. A) / Physics -I Lab(Gr. B)	0	0	3	3	2
10	EE 191/ EC 191	Basic Electrical Engineering Lab (Gr. A) /Basic Electronics Engineering Lab(Gr. B)	0	0	3	3	2
11	ME 191	Engg Drawing & Graphics(Gr A)/ Workshop Practice (Gr-B)	0	0	3	3	2
Total of Practical						13	08

Detailed Syllabus

Theory

Paper Name: Mathematics
–IPaper Code: M101

Total Contact Hours:
40Credit: 4

Prerequisite: Any introductory course on matrix algebra, calculus, geometry.

Course outcome:

On successful completion of the learning sessions of the course, the learner will be able to:

M101.1: Recall the distinctive characteristics of Matrix Algebra, Calculus of Single and SeveralVariables and Vector Analysis.

M101.2: Understand the theoretical concept of Matrix Algebra, Calculus of Single and SeveralVariables and Vector Analysis.

M 101.3: Apply the principles of Matrix Algebra, Calculus of Single and Several Variables and VectorAnalysis to solve various problems.

CO-PO mapping:

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
M 101.1	3	2	-	-	-	-	-	-	-	-	-	1
M 101.2	3	2	-	-	-	-	-	-	-	-	-	1
M 101.3	3	2	2	-	-	-	-	-	-	-	-	1

Paper Name: Physics -I
Paper Code: PH 101 Total
Contact Hours: 41Credit: 4

Pre requisites: Knowledge of Physics up to 12th standard.

Course Outcome:

At the end of the course students should have the

PH 201.1: Ability to state and recall De-Broglie hypothesis, and Heisenberg's Uncertainty Principle, Amplitude and Velocity Resonance, Malus's Law, Brewster's Law, Characteristics of LASER light
PH 201.2 : Ability to understand and explain Polarizer and analyzer, basic principles and different types of LASER and Optical Fibre, structure of solids, Miller indices, theory of Matter Wave, equation of motion of Matter Wave, wave function and its role in representing wave nature of matter.
PH 201. 3 : Ability to apply the knowledge of mechanical vibration in electrical circuits, superposition principle in Newton's ring phenomenon, diffractionphenomenon, quantum nature of e.m. waves for production of laser, total internal reflection in transmitting light through optical fibres, x-ray diffraction in crystal structure, probability interpretation in Heisenberg's uncertainty principle.
PH 201.4: Ability to analyze, grating as many slit system, role of Q factor in a resonating circuit, conditions of different types of resonance, minimum requirements for lasing action, importance of light as a carrier of information, the failures of classical physics in microscopic situation and need of quantum physics, Einstein's A, B coefficient and predict the wavelength domain of Lasing action, Requirement of Miller indices for describing crystallographic planes
PH 201.5: Ability to evaluate / justify / compare, X-ray production process is inverse of the process of Photoelectric Effect, different crystallographic structures according to their Co-ordinationnumber and packing factors, the outcome of Photo-electric effect, Compton effect and Davission-Germer experiment to justify wave-particle duality of matter.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
PH 201.1	1											
PH 201.2		2										
PH 201.3	3											
PH 201.4		1										
PH 201.5												1

Paper Name: Basic Electronics Engineering

Paper code: EC101

Total Contact Hours: 40
Credits: 4

Prerequisites

A basic course in Electronics and Communication Engineering Progresses from the fundamentals of electricity, direct current (DC) devices and circuits , series and parallel circuits to the study of active and passive components, Ohm's Law, Kirchoff's Law i.e. KVL,KCL, Ampere's Law etc.

Course Outcomes:

EC 201.1	Study PN junction diode, ideal diode, diode models and its circuit analysis, application of diodes and special diodes.
EC 201.2	Learn how operational amplifiers are modeled and analyzed, and to design Op-Amp circuits to perform operations such asintegration, differentiation on electronic signals.
EC 201.3	Study the concepts of both positive and negative feedback in electronic circuits.
EC 201.4	Develop the capability to analyze and design simple circuits containing non-linear elements such as transistors using the concepts of load lines, operating points and incremental analysis.
EC 201.5	Learn how the primitives of Boolean algebra are used to describe the processing of binary signals.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
EC 201.1	3	-	-	-	-	-	-	-	-	-	-	-
EC 201.2	2	3	-	-	-	-	-	-	-	-	-	1
EC 201.3	1	3	-	-	-	-	-	-	-	-	-	-
EC 201.4	1	2	3	-	-	-	-	-	-	-	-	1
EC 201.5	3	1	-	-	-	-	-	-	-	-	-	-

Paper Name: Communicative English
Paper Code: HU101

Total Contact Hours: 26
Credits: 2

Pre requisites:

Basic knowledge of high school English.

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Course Outcomes:

At the end of this course, students willbe

HU101.1: Able to comprehend and communicate in English through exposure to communication skills theory andpractice.

HU101.2: Apply the basic grammatical skills of the English language through intensive practice.

HU101.3: Able to develop reading and comprehension skills.

HU101.4: Able to develop writing proficiency skills by writing Official Letters, Technical report, memo, notice, minutes, agenda, resume, curriculum vitae.

HU101.5: Able to apply/illustrate all sets of English language and communication skills in creative and effective ways in the professional sphere of theirlife

CO-PO Mapping:

CO	PO 1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
HU101.1	-	-	1	-	-	1	-	1	3	3	3	3
HU 101.2	-	-	-	-	-	2	-	-	2	3	3	3
HU 101.3	-	3	2	2	-	3	2	2	3	3	3	3
HU 101.4	-	-	-	2	-	2	-	-	3	3	2	3
HU 101.5	-	2	1	-	-	2	2	1	3	3	2	3

Paper Name: Engineering Mechanics
Paper Code: ME101

Total Contacts Hours: 45
Credit: 4

Pre requisites: Higher Secondary with Physics, Chemistry & Mathematics.

Course Outcome:
Upon successful completion of the course, student should be able to:
ME 101.1. Construct free body diagram and calculate the reactions necessary to ensure static equilibrium.
ME 101.2. Study the effect of friction in static and dynamic conditions.
ME 101.3. Understand the different surface properties, property of masses and material properties.
ME 101.4. Analyze and solve different problems of kinematics and kinetics.

CO-PO Mapping:

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12
ME101.1	3	3	2	2	-	-	-	-	1	-	-	-
ME101.2	3	3	2	2	-	-	-	-	1	-	-	1
ME101.3	3	2	3	2	1	-	-	-	1	-	-	1
ME101.4	3	3	3	3	-	-	-	-	1	-	1	-

Practical

Paper Name: Lang. Lab. and Seminar PresentationPaper
Code: HU191
Total Contact Hours: 26
Credit: 1

Pre requisites: Basic knowledge of LSRW skills.

Course Outcome:
HU191.1: Able to understand advanced skills of Technical Communication in English through Language Laboratory.
HU191.2: Able to apply listening, speaking, reading and writing skills in societal and professional life.
HU191.3: Able to demonstrate the skills necessary to be a competent Interpersonal communicator.
HU191.4: Able to analyze communication behaviors.
HU191.5: Able to adapt to multifarious socio-economical and professional arenas with the help of effective communication and interpersonal skills.

CO-PO-Mapping:

CO	PO 1	PO2	PO3	PO4	PO5	PO 6	PO 7	PO8	PO9	PO10	PO11	PO12
HU 191.1	-	3	-	-	-	3	2	1	3	3	3	3
HU 191.2	-	3	-	2	-	3	-	-	3	3	3	3
HU 191.3	-	3	-	-	-	3	-	-	3	3	3	3
HU 191.4	-	3	2	3	-	3	2	-	3	3	3	3
HU 191.5	-	3	2	2	-	2	-	3	3	3	3	3

Paper Name: Physics I Lab
Paper Code: PH 191

Total Contact Hours: 40
Credit: 4

Pre requisites: Knowledge of Physics upto 12th standard.

Course Outcome of Physics-I practical (PH 191) At the

end of the course students' should have the

PH 191.1 : Ability to define, understand and explain ✓ Error estimation, Proportional error calculation ✓ superposition principle in Newton's ring, Fresnel's bi-prism, laserdiffraction ✓ Basic circuit analysis in LCR circuits
PH 191.2 : Ability to conduct experiments using ➢ LASER, Optical fibre ➢ Interference by division of wave front, division of amplitude,diffraction grating, polarization of light ➢ Quantization of electronic energy inside an atom ➢ Torsional pendulum
PH 191.3 : Ability to participate as an individual, and as a member or leaderin groups in laboratory sessions actively
PH 191.4 : Ability to analyze experimental data from graphical representations , and to communicate effectively them in Laboratory reportsincluding innovative experiments

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
PH 191.1	**2**											
PH 191.2	**1**											
PH 191.3				**2**								
PH 191.4									**3**			

Paper Name: Basic Electronics Engineering Lab
Paper Code: EC191

Total Contact Hours: 36
Credit: 2

Prerequisites

A basic course in electronics and Communication engineering Progresses from the fundamentals of electricity, active and passive components, basic electronics laws like Ohm's law, Ampere's law

Course Outcomes:

EC191.1	Knowledge of Electronic components such as Resistors, Capacitors, Diodes, Transistors measuring equipment like DC power supply, Multimeter, CRO, Signal generator, DC power supply.
EC191.2	Analyze the characteristics of Junction Diode, Zener Diode, BJT & FET and different types of Rectifier Circuits.
EC191.3	Determination of input-offset voltage, input bias current and Slew rate, Common-mode Rejection ratio, Bandwidth and Off-set null of OPAMPs.
EC191.4	Able to know the application of Diode, BJT &OPAMP.
EC191.5	Familiarization and basic knowledge of Integrated Circuits

CO-PO Mapping

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**P10**	**P11**	**P12**
EC 191.1	3	3	-	-	-	-	-	-	-	-	-	-
EC 191.2	2	3	-	-	-	-	-	-	**1**	**1**	-	1
EC 191.3	1	3	3	-	-	-	-	-	-	2	-	-
EC 191.4	1	2	3	-	-	-	-	-	-	**1**	-	1
EC 191.5	3	1	**2**	-	-	-	-	-	-	-	-	-

Paper Name: Workshop Practice
Paper Code: ME191

Total Contact Hours: 36
Credit: 2

Pre requisites: Higher Secondary with Physics, Chemistry & Mathematics

Course Outcome:
Upon successful completion of this course, the student will be able to:

ME192.1 Gain basic knowledge of Workshop Practice and Safety useful for our daily living.
ME192.2 Identify Instruments of a pattern shop like Hand Saw, Jack Plain, Chisels etc and performing operations like such as Marking, Cutting etc used in manufacturing processes.
ME192.3 Gain knowledge of the various operations in the Fitting Shop using Hack Saw, various files, Scriber, etc to understand the concept of tolerances applicable in all kind of manufacturing.
ME192. 4 Get hands on practice of in Welding and various machining processes which give a lot of confidence to manufacture physical prototypes in project works.

CO-PO Mapping:

CO Codes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ME 192.1	2	-	-	-	-	2	-	1	-	-	1	-
ME 192.2	2	-	-	-	-	1	-	2	-	-	-	-
ME 192.3	2	-	-	-	-	1	-	1	-	-	-	-
ME 192.4	1	-	-	-	1	3	-	3	-	-	-	1

Sessional

Paper Name: Extra Curricular Activity (NSS/ NCC)Paper
Code: XC 181
Total Contact hours: 20
Credit: 1

DEPARTMENT OF CIVIL ENGINEERING

Syllabusof

2nd Semester

Autonomy Curriculum and Syllabus of B.Tech Programme
Implemented from the Academic Year 2016

Group A: ECE, EE, BME, AEIE/EIE

Group B: CSE, IT, FT, ME, CE

CURRICULUM **First Year Second Semester**

A. THEORY							
Sl No	**Paper Code**	**Theory**	**Contact Hours /Week**				**Credit Points**
			L	**T**	**P**	**Total**	
1	M 201	Mathematics -II	3	1	0	4	4
2	CH 201/ PH 201	Chemistry (Gr. B) / Physics - I(Gr. A)	3	1	0	4	4
3	EE 201/ EC 201	Basic Electrical Engineering (Gr. B) / Basic Electronics Engineering (Gr. A)	3	1	0	4	4
4	CS 201	Computer Fundamentals & Principle of Computer Programming	3	1	0	4	4
5	ME 201	Engineering Thermodynamics & Fluid Mechanics	3	1	0	4	4
Total of Theory						20	20
B. PRACTICAL							
7	CS291	Computer Fundamentals & Principle of Computer Programming Lab	0	0	3	3	2
8	CH 291/ PH291	Chemistry Lab (Gr. B) / Physics -I Lab (Gr. A)	0	0	3	3	2
9	EE 291/ EC 291	Basic Electrical Engineering Lab (Gr. B) /Basic Electronics EngineeringLab (Gr. A)	0	0	3	3	2
10	ME 291	Engg. Drawing & Graphics(Gr B)/ Workshop Practice (Gr-A)	0	0	3	3	2
Total of Practical						12	08
C.SESSIONAL							
11	MC 281	Soft Skill Development	0	0	2	2	0

Syllabus:

Theory

Paper Name: Mathematics-II
Paper Code: M 201

Total Contact Hours: 40
Credit: 4

Prerequisite: Any introductory course on calculus.

Course outcome:

On successful completion of the learning sessions of the course, the learner will be able to:

M 201.1: Recall the distinctive characteristics of Ordinary Differential Equations, Graph Theory and Laplace Transform.

M 201.2: Understand the theoretical workings of various algorithms related to graph theory and the theorems of differential equation and Laplace transforms.

M 201.3: Apply the principles of differential equation, graph theory and Laplace transforms to solve various problems.

CO-PO Mapping:

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**P10**	**P11**	**P12**
M 201.1	3	2	-	-	-	-	-	-	-	-	-	1
M 201.2	3	2	-	-	-	-	-	-	-	-	-	1
M 201.3	3	2	2	-	-	-	-	-	-	-	-	1

Paper Name:
ChemistryPaper Code:
CH 201 Total Contact
Hours: 40Credit: 4

Pre requisites: 10+2 science with

chemistry

Course Outcome

CH201.1: Able to apply fundamental concepts of thermodynamics in different engineeringapplications.

CH201.2: Able to analyze & design simple and technologically advanced electrical and energystorage devices.

CH201.3: Able to synthesize nanomaterials, composites, polymers.

CH201.4: Able to apply the basic concept of Organic Chemistry and knowledge of chemical reactionsto industries, and technical fields.

CH201.5: Able to apply the knowledge of different fuels and corrosion to different industries**CH201.6:** Able to analyse water quality parameter for its various parameters & its significance in industries.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
CH201.1	3	1	-	-	-	-	-	-	-	-	-	-
CH201.2	3	2	1	-	-	-	-	-	-	-	-	-
CH201.3	-	-	2	-	2	-	-	-	-	-	-	1
CH201.4	2	-	1	-	2	-	-	-	-	-	-	-
CH201.5	2	-	-	-	-	-	2	-	-	-	-	1
CH201.6	-	-	2	-	-	-	1	-	-	-	-	-

Paper Name: Basic Electrical EngineeringPaper Code: EE 201

Total Contact Hours: 41Credit: 4

Pre requisite: Basic 12st standard Physics and Mathematics

Course Outcomes:

At the end of this course, students will able

EE 201.1: To understand and analyse basic electric and magnetic circuits.

EE 201.2: To understand and analysis the AC single phase and three phase circuit

EE 201.3: To understand and analysis of the basic principles of various electrical machines

CO-PO mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EE 201.1	3	3	2	1								
EE 201.2	2	2	1									
EE 201.3	3	2	2									

Computer Fundamentals & Principle of Computer Programming

Code: CS 201

Total No. of Lectures:
40Credits: 4

Prerequisites:

1. Number system
2. BooleanAlgebra

Course Outcome:

CS201.1 Understanding the concept of input and output devices of Computers and how it works and recognize the basic terminology used in computer programming.
CS201.2 Write, Compile and Debug programs in C language and use different data types for writing the programs.
CS201.3 Design programs connecting decision structures, loops and functions.
CS201.4 Explain the difference between call by value and call by address.
CS201.5 Understand the dynamic behavior of memory by the use of pointers.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO	PO9	PO10	PO11	PO12
CS201.1	3	3										
CS201.2		2										
CS201.3	3	3										
CS201.4												
CS201.5	3		3	3	3							

Paper Name: Engineering Thermodynamics & Fluid Mechanics
Paper Code: ME 201

Total Contact Hours: 48
Credits: 4

Pre requisites: Higher Secondary with Physics, Chemistry & Mathematics.

Course Outcome:
Upon successful completion of this course, the student will be able to:

ME 201.1 Know about thermodynamic equilibrium, heat & work transfer, First law and its application.
ME 201.2 Understand the basic concepts of Heat Engine, Entropy from Second law of

thermodynamics.

ME 201.3 Know the thermodynamic characteristics of a pure substance and its application in power cycles (Simple Rankine cycles, Air Standard cycles)

ME 201.4 Knowledge of basic principles of fluid mechanics, and ability to analyze fluid flow problems with the application of the momentum and energy equations

CO-PO Mapping:

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
ME201.1	3	3	2	2	-	1	1	1	1	-	1	2
ME201.2	3	3	2	2	-	1	2	-	1	-	1	2
ME201.3	2	2	1	1	-	2	1	-	-	-	-	1
ME201.4	3	3	2	2	-	1	1	-	-	-	1	1

Practical

Paper Name: Computer Fundamentals & Principle of Computer Programming LabPaper Code: CS291

Total Contact Hours: 36

Credit: 2

Prerequisites:

3. Basic Computer Knowledge

Course Outcome:

CS291.1. Understanding the working of different operating systems like DOS, Windows, Linux.

CS291.2. Write, Compile and Debug programs in C language.

CS291.3. Design programs connecting decision structures, loops.

CS291.4. Exercise user defined functions to solve real time problems.

CS291.5. Inscribe C programs using Pointers to access arrays, strings, functions, structures and files.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO	PO9	PO10	PO11	PO12
CS291.1	3	3										
CS291.2		2										
CS291.3	3	3										
CS291.4												
CS291.5	3		3	3	3							

Paper Name: Chemistry
LabPaper Code: CH 291

Total Contact Hours:
36Credit: 2

Pre requisites: 10+2 science with chemistry

Course Outcome

CH291.1: Able to operate different types of instruments for estimation of small quantitieschemicals used in industries and scientific and technical fields.

CH291.2: Able to work as an individual also as an team member

CH291.3: Able to analyse different parameters of water considering environmental issuesCH291.4: Able to synthesize nano and polymer materials.

CH291.5: Capable to design innovative experiments applying the fundamentals of chemistry

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
CH 291.1	3	2	1	1	1	1	-	-	2	-	-	-
CH 291.2	-	-	-	-	-	-	-	-	3	-	-	-
CH 291.3	-	-	-	-	-	2	3	-	-	-	-	1
CH 291.4	-	-	-	-	2	1	-	-	-	-	-	-
CH 291.5	2	-	2	-	1	-	-	-	-	-	-	1

Paper Name: Basic Electrical Engineering LAB

Paper Code: EE 291
Total Contact Hours:
36Credit: 2

Pre requisites:

1. Basic Physics and applied physics.
2. Basic Mathematics.
3. Basic concept of Electric Circuit

Course Outcome:

COs	CO Statement
EE 291.1	Identify common electrical components and their ratings.
EE 291.2	Make Circuit connection by wires of appropriate ratings.
EE 291.3	Understand the usage of common electrical measuring instruments
EE 291.4	Understand the basic characteristics of transformers and electrical machines

CO-PO mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EE 291.1	2	3		1	3				1		2	1
EE 291.2	2		2	1	3				1	1		
EE 291.3		3				3	2				2	1
EE 291.4	3						1			2	2	2

Paper Name: Engineering Drawing & GraphicsPaper
Code: ME 291
Total Contact Hours: 36
Credit: 2

Pre requisites: Higher Secondary with Physics, Chemistry & Mathematics

Course Outcomes: Upon successful completion of this course, the student will be able to:

ME 291.1. Learn basics of drafting and use of drafting tools which develops the fundamental skills of industrialdrawings.

ME 291.2. Know about engineering scales, dimensioning and various geometric curves necessary to understand design of machine elements.

ME 291.3. Understand projection of line, surface and solids to create the knowledge base of orthographic and isometric view of structures and machine parts.

ME 291.4. Become familiar with computer aided drafting useful to share the design model to different section of industries as well as for research & development.

CO Codes	PO1	PO2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
ME 291.1	2	-	1	2	-	1	-	-	1	-	-	1
ME 291.2	3	-	2	2	-	1	-	-	1	1	-	1
ME 291.3	2	2	2	1	-	1	-	-	1	-	-	1
ME 291.4	1	-	2	2	2	1	-	-	1	1	-	1

SESSIONAL

Paper Name: Soft Skills Development
Paper Code: MC-281
Total Contact hours: 26

DEPARTMENT OF CIVIL ENGINEERING

Syllabusof

3rd Semester

Autonomy Curriculum and Syllabus of B.Tech Programme

Implemented from the Academic Year 2016

Second Year Third Semester

CURRICULUM

Subject Type	Subject Code	Subject Name	Contact Hours			Contact Hours/Week	Total Credits
THEORY:			L	T	P	Total	
ES	M(CS) 301	NUMERICAL METHODS	3	0	0	3	3
BS	PH(CE) 301	PHYSICS – II	3	0	0	3	3
PC	CE 301	SURVEYING – I	2	1	0	3	3
PC	CE 302	STRENGTH OF MATERIAL	2	2	0	4	3
PC	CE 303	BUILDING MATERIAL ANDCONSTRUCTION	2	1	0	3	3
PC	CE 304	ENGINEERING GEOLOGY	2	1	0	3	2
PRACTICAL:							
ES	M(CS) 391	NUMERICAL METHODS LAB	0	0	3	3	2
PC	CE 391	STRENGTH OF MATERIAL LAB	0	0	3	3	2
PC	CE 392	ENGINEERING GEOLOGY LAB	0	0	2	2	1
BS	PH(CE) 391	PHYSICS LAB	0	0	2	2	2
SESSIONAL:							
MC	MC381	TECHNICAL SKILL DEVELOPMENT	0	0	2	2	2 units
		TOTAL: ELEVEN	14	5	11	31	24

Syllabus:

Theory

Paper Name: **Numerical Methods**
Paper Code: **M(CS) 301** Contact:
32

Credit: 3

Pre requisites: Concept of Calculus and Algebra.

Course Outcome:

On successful completion of the learning sessions of the course, the learner will be able to:

M(CS) 301.1: Recall the distinctive characteristics of various numerical techniques and the associatederror measures.

M(CS) 301.2: Understand the theoretical workings of various numerical techniques and to solve theengineering problems.

M(CS) 301.3: Apply the principles of various numerical techniques to solve various problems.

CO- PO Mapping:

PO / CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**P10**	**P11**	**P12**
M(CS) 301.1	3	2	-	-	-	-	-	-	-	-	-	1
M(CS) 301.2	3	2	-	-	-	-	-	-	-	-	-	1
M(CS) 301.3	3	2	2	-	-	-	-	-	-	-	-	1

Paper Name: PHYSICS - II
Paper Code: PH(CE) 301 Total
Contact Hours: 36 Credit: 3
Pre requisites: Knowledge of Physics up B.Tech. 1st year Physics-I course

Course Outcome:

PH (CE) 301.1: state ➢ insulating and magnetic materials ➢ operator formalism in Quantum Mechanics ➢ categories of storage devices ➢ various types of nanostructures and their applications ➢ ultrasonic sound and its industrial applications ➢ energy band theory ➢ impact of defects in crystal structure ➢ condition of good acoustics of abuilding
PH (CE) 301.2: apply the knowledge of ➢ Magnetism and semiconductors in data storage ➢ Motion of charges under a field in CRT ➢ Band theory in explaining electron transport in solids ➢ Magnetostriction and piezoelectricity in ultrasonic sound generation and detection ➢ Reverberation principle in design of building acoustics
PH (CE) 301: **analyze** ➢ Role of degenerate states in predicting energy bands of semiconductors ➢ Which type of magnetic materials to be used for data storage purpose ➢ Role of quantum confinement in inducing novel feature of anano material ➢ Quantum size effects and size quantization in quantum dot nano-structure
Beyond the syllabus to meet to CO: ✓ Basics of probability interpretation ✓ Failures of band theory in organic semiconductors

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
PH (CE) 301.1	3	1	-	-	-	-	-	-	-	-	-	1
PH (CE) 301.2	3	2	-	-	-	-	-	-	-	-	-	2
PH (CE) 301.3	2	3	-	-	-	-	-	-	-	-	-	1
PH (CE) 301	2.6	2	-	-	-	-	-	-	-	-	-	1.3

Paper Name: SURVEYING - I
Paper Code: CE 301

Total Contact Hours: 36
Credit: 3
Pre requisites: Student should have knowledge about measurement and mathematical knowledge

Course Outcome:

CE 301.1	Students will summarize surveying techniques that will remain correct for long period of time.
CE 301.2	Students will experiment about different methods using instrument such as Chain, Compass, Leveling, minor instruments like planimeter, etc.
CE301.3	Students will learn about Area & Volume calculation.
CE301.4	Students will evaluate about Trigonometrically leveling.
CE301.5	Students will analyze about simple & complex problems of different instrument methods of Survey.

CO-PO mapping:

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CE301.1	3	3	3	2	3	1	1	1	3	3	3	3
CE301.2	3	3	3	2	2	2	1	1	3	2	3	2
CE301.3	-	-	-	-	-	-	-	-	-	-	-	-
CE301.4	3	3	3	3	2	2	1	1	3	2	2	2
CE301.5	3	3	3	3	2	1	1	1	3	2	1	2
CE301	3	3	3	2.5	2.25	1.5	1	1	3	2.25	2.25	2.25

Paper Name: STRENGTH OF MATERIAL

Paper Code: CE 302 Total

Contact Hours: 42Credit:

3

Pre requisites: Student should have the knowledge about Elements of Civil Engineering & Mechanics.

Course Outcome:

CE 302.1	Interpret the concepts of stress and strain at a point as well as the stress-strain relationships for homogenous, isotropic materials.
CE 302.2	Analyze the stresses and strains associated with thin-wall spherical and cylindrical pressure vessels.
CE 302.3	Demonstrate the capability to conduct experiments, as well as to analyze and interpret data
CE 302.4	Ability to classify a component to meet desired needs within realistic constraints of safety.

CO-PO mapping

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CE302.1	3	3	3	3	-	-	-	-	-	1	-	2
CE302.2	3	3	3	2	1	-	-	-	-	1	-	3
CE302.3	2	3	3	3	1	1	-	-	1	1	1	2
CE302.4	3	2	3	3	1	-	2	-	-	-	-	1
CE302	2.75	2.75	3	2.75	1	1	2	-	1	1	1	2

Paper Name: BUILDING MATERIAL AND CONSTRUCTION

Paper Code: CE 303 Total

Contact Hours: 36Credit:

3

Pre requisites: No Pre Requisite required (NPR)

Course Outcome:

CE 303.1	Students will summaries basic knowledge about various kind of materials used in construction work.
CE 303.2	Students will differentiate about different types of building foundation i.e. shallow and deep foundation, their mechanisms and uses.
CE 303.3	summaries knowledge about various structural members of a building like-walls, door, window, stair, flooring, roof etc.
CE 303.4	Extend to apply their knowledge at the time of decision making for application of structural member including material used.

CO-PO mapping

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CE303.1	3	2	-	-	-	1	-	-	-	-	-	-
CE303.2	2	3	1	-	-	-	-	-	-	-	-	-
CE303.3	3	2	1	-	-	-	-	-	-	-	-	-
CE303.4	2	3	1	-	-	-	-	-	-	-	-	-
CE303	2.5	2.5	1	-	-	-	-	-	-	-	-	-

Paper Name: ENGINEERING GEOLOGY

Paper Code: CE 304 Total

Contact Hours: 36Credit:

2

Pre requisites: Basic knowledge of Geography & Earth Science

Course Outcome:

CE304.1	Students will have knowledge about Engineering properties of Rocks andtheir Minerals.
CE304.2	Student will be appraised about Dam, reservoir, tunnel
CE304.3	Studentwill understand about Earthquakephenomena.
CE304.4	Student will able to carry out Physical exploration
CE304.5	Student will able to estimate various geological parameters by use of modern tools & techniques

CO-PO mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE304.1	3	2	1	2	1	-	1	1	1	1	1	2
CE304.2	3	2	1	2	1	-	1	1	1	1	1	2
CE304.3	3	2	2	2	2	1	1	1	1	1	1	-
CE304.4	3	3	3	3	3	-	-	1	-	2	1	1
CE304.5	3	2	1	3	3	2	1	1	2	2	1	2
CE304	3	2.2	1.6	2.4	2	1.5	1	1	1.25	1.4	1	1.75

Practical

Paper Name: NUMERICAL METHODS LAB
Paper Code: M(CS) 391
Total Contact Hours: 36
Credit: 2

Pre requisites: Basics of procedural programming (C/C++).

Course Outcome:

M(CE)391.1:To understand numerical methods and how they apply to computer engineering.
M(CE)391.2: To apply the knowledge of these methods to solve practical problems.
M(CE)391.3: Be competent with loss of significant digits in numerical calculations.
M(CE)391.4: Master using the bisection method, Newton's method, and the secant method in single variable root finding.

CO-PO mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
M(CE)391.1:	3	2	-	-	2	-	-	-	-	-	-	-
M(CE)391.2:	2	3	2	-	3	-	-	-	-	-	-	3
M(CE)391.3:	-	3	1	2	-	-	-	-	-	-	-	-
M(CE)391.4:	-	2	3	3	-	-	-	-	-	-	-	-
M(CE)391	2.5	2.5	2	2.5	2.5	-	-	-	-	-	-	3

Paper Name: STRENGTH OF MATERIAL LAB

Paper Code: CE 391 Total
Contact Hours: 36Credit: 2

Pre requisites: Student should have the knowledge about strength of materials theory.

Course Outcome:

CE 391.1	Measure tensile and compressive strength of a specimen for applying in a practical design based project work
CE391.2	Determine hardness, impact strength, fatigue strength to analyze the application of a specific material for a given design requirements for different loading conditions of structures.
CE391.3	Observe bending in beams and calculate the bending stresses which further builds the foundation of using modern analysis software.
CE391.4	Judge the capacity of a material to withstand torsional stresses for a safe and sustainable design of machine elements.

CO Codes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE391.1	1	-	3	-	-	-	-	-	3	-	2	-
CE391.2	1	-	2	-	-	-	-	-	2	-	2	-
CE391.3	1	-	2	-	3	1	-	1	2	-	2	-
CE391.4	1	2	3	-	-	-	-	-	2	-	2	-

Paper Name: ENGINEERING GEOLOGY LAB

Paper Code: CE 392 Total

Contact Hours: 24Credit:

1

Pre requisites: Student should have the knowledge about Engineering geology theory.

Course Outcome:

CE392.1	Student should acquire knowledge about engg. properties of rocks and their minerals.
CE392.2	Student should be able to identify rocks and minerals
CE392.3	Student should be able to use modern tools live microscope to explore samples.
CE392.4	Student should be able to interpret map.

CO-PO mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE392.1	3	2	1	2	1	-	1	1	1	1	1	1
CE392.2	3	2	2	3	2	1	2	-	1	1	-	1
CE392.3	2	2	1	3	3	2	-	1	1	1	1	1
CE392.4	2	2	2	1	1	3	1	1	-	1	-	1
CE392	2.5	2	1.5	2.25	1.75	2	1.33	1	1	1	1	1

Paper Name: PHYSICS LAB
Paper Code: PH(CE)391 Total
Contact Hours: 24 Credit: 2
Pre requisites: Knowledge of Physics upto B. Tech. 1st year Physics-I course

Course Outcome: At the end of the course students would be able to

PH(CE)391.1: demonstrate ✓ Dipolar magnetic behaviour ✓ Action of capacitors ✓ Fermi levels and band gap in a semiconductor ✓ Function of Light emitting diode ✓ Magnetic and semiconductor storage devices ✓ Motion of electron under cross fields
PH(CE)391.2: conduct experiments using ➢ Insulators, Semiconductors (extrinsic and intrinsic), Light emitting diodes ➢ Cathode ray oscilloscope ➢ Various types of magnetic materials ➢ Determination of velocity of ultrasonic wave using piezo electric crystal
PH(CE)391.3: Function effectively as an individual, and as a member or leader in laboratory sessions
PH(CE)391.4: communicate effectively, **write reports and make effective presentation using available technology** ➢ on presentation of laboratory experiment reports ➢ on presentation of innovative experiments

CO-PO mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
PH (CE) 391.1	3	2	-	-	-	-	-	-	-	-	-	1
PH (CE) 391.2	1	2	-	3	-	-	-	-	-	-	-	1
PH (CE) 391.3	1	2	-	-	-	-	-	-	3	-	-	1
PH (CE) 391.4	1	2	-	-	-	-	-	-	-	3	-	1
PH (CE) 391	1.5	2	-	3	-	-	-	-	3	3	-	1

SESSIONAL

Paper Name: TECHNICAL SKILL DEVELOPMENT

Paper Code: MC381

Total Contact Hours: 24

Credit: 2

Pre requisites: Student should have knowledge about basic of civil engineering, drawing etc

Course Outcome:

MC381. 1	Student will be able to analyze critical and reflective thinking abilities in different domain of civil engineering
MC381. 2	Student will be able to organize responsible decision-making and personal accountability
MC381. 3	Student will be able to discover ability to work effectively with those different from themselves
MC381. 4	Student will be able to interpret a commitment to social justice in different civil engineering domain.

CO-PO mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
MC381.1	2	1	-	-	-	2	-	-	-	-	-	-
MC381.2	1	2	-	-	-	3	-	2	2	1	-	2
MC381.3	-	1	1	-	-	2	-	2	2	2	1	-
MC381.4	-	2	-	-	-	3	1	3	2	2	-	2
MC381	1.5	1.5	1	-	-	2.5	1	2.33	2	1.67	1	2

DEPARTMENT OF CIVIL ENGINEERING

Syllabusof

4th Semester

Second Year Fourth Semester

CURRICULUM

Subject Type	Subject Code	Subject Name	Contact Hours			Contact Hours/ Week	Credits
THEORY:			L	T	P	Total	Total
HS	HU401	ENVIRONMENTAL SCIENCE	2	0	0	2	2
BS	M401	MATHEMATICS - III	3	1	0	4	4
PC	CE 401	SURVEYING - II	2	2	0	4	3
PC	CE 402	STRUCTURAL ANALYSIS - I	3	1	0	4	3
PC	CE 403	CONCRETE TECHNOLOGY	3	1	0	4	3
PC	CE 404	SOIL MECHANICS	3	1	0	4	3
PRACTICAL:							
PC	CE 491	SURVEYING PRACTICE – I	0	0	3	3	2
PC	CE 492	BUILDING PLANNING AND DRAWING	0	0	3	3	2
PC	CE 493	CONCRETE LAB	0	0	3	3	2
HS	HU481	TECHNICAL REPORT WRITING &LANGUAGEPRACTICE	0	0	2	2	1
		TOTAL: NINE	16	6	11	33	25

Syllabus:

Theory

Paper Name: ENVIRONMENTAL SCIENCE
Paper Code: HU401 Total
Contact Hours: 24Credit:
2

Pre requisites: qualified B.Tech 1st year

Outcome(s)

- To understand the natural environment and its relationships with humanactivities.
- To apply the fundamental knowledge of science and engineering to assess environmental and health risk.
- To develop guidelines and procedures for health and safety issues obeying the environmental laws andregulations.
- Acquire skills for scientific problem-solving related to air, water, noise & land pollution.

CO- PO Mapping

CO	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	Able to understand the natural environment and its relationships with human activities	2	2	3	-	-	2	3	3	-	-	1	2
2	The ability to apply the fundamental knowledge of science and engineering to assess environmental and health risk	3	3	3	1	1	2	3	3	-	-	1	2
3	Ability to understand environmental laws and regulations to develop guidelines and procedures for health and safety issues	3	3	3	2	1	2	3	3	-	-	1	2
4	Acquire skills for scientific problem-solving related to air, water, noise & land pollution.	1	1	1	1	2	2	3	3	-	-	1	2
CH 401(AVERAGE)		2	2	2	1	1	2	3	3	-	-	1	2

Paper Name: MATHEMATICS - III

Paper Code: M 401 Total
Contact Hours: 42Credit:4

Pre requisites: Any introductory course on Calculus and Combinatorics.

Course Outcome:

On successful completion of the learning sessions of the course, the learner will be able to:

M 401.1: Recall the distinctive characteristics of mathematical approaches like Fourier Series & Fourier Transform, Calculus of Complex Variables, Probability Distribution, Correlation & Regression, Ordinary Differential Equation, Partial Differential Equations.

M 401.2: Understand the theoretical workings of mathematical approaches like Fourier Series & Fourier Transform, Calculus of Complex Variables, Probability Distribution, Correlation & Regression, Ordinary Differential Equations, and Partial Differential Equations to evaluate the variousmeasures in related field.

M 401.3: Apply various principles of Fourier Series & Fourier Transform, Calculus of Complex Variables, Probability Distribution, Correlation & Regression, Ordinary Differential Equations, PartialDifferential Equations to solve various problems.

CO- PO Mapping:

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
M 401.1	3	2	-	-	-	-	-	-	-	-	-	1
M 401.2	3	2	-	-	-	-	-	-	-	-	-	1
M 401.3	3	2	2	-	-	-	-	-	-	-	-	1

Paper Name: SURVEYING - IIPaper
Code: CE 401
Total Contact Hours: 42
Credit: 3

Pre requisites: Student should have the knowledge about surveying -1

Course Outcome:

CE 401.1	Students will predict about differentaspectsof Traverse with the help of Theodolite.
CE 401.2	Students will analyze the method of triangulation
CE 401.3	Students will evaluate the different types of curves and methods to set them out.
CE 401.4	They will interpret different modern techniques using Surveying instrument such as Total Station, GPS etc.

CO-PO mapping

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CE401.1	3	3	2	3	-	2	1	1	3	3	3	3
CE401.2	3	3	3	2	2	2	1	2	2	2	2	2
CE401.3	3	3	3	3	2	1	1	2	3	1	1	2
CE401.4	3	3	3	3	3	2	1	1	3	2	3	3
CE401	3	3	2.92	2.92	2.33	1.75	1	1.5	2.92	2	2.25	2.25

Paper Name: STRUCTURAL ANALYSIS - I

Paper Code: CE 402 Total

Contact Hours: 42Credit:

3

Pre requisites: Student should have knowledge about the basic of strength of materials.

Course Outcome:

CE 402.1	Identify determinacy and indeterminacy of structure
CE 402.2	Different procedures to calculate slope and defection for determinate structure.
CE 402.3	Define strain energy and its application
CE 402.4	Interpret Influence line diagram and its detail application
CE 402.5	Analyze three hinged Arch and cable suspension bridge.

CO-PO mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE402.1	3	3	2	2	-	-	-	-	-	-	-	3
CE402.2	3	3	2	2	-	-	-	-	-	-	-	3
CE402.3	3	3	3	3	1	1	-	-	-	2	-	2
CE402.4	3	3	3	3	-	-	-	-	-	3	-	3
CE402.5	3	3	2	2	2	-	-	-	-	3	-	2
CE402	3	3	2.4	2.4	1.5	1	-	-	-	2.67	-	2.8

Paper Name: CONCRETE TECHNOLOGY

Paper Code: CE 403 Total

Contact Hours: 42Credit:

3

Pre requisites: Student should have knowledge about the building materials and construction.

Course Outcome:

CE 403.1	Identify the functional role of ingredients of concrete
CE 403.2	Student should be able to gather knowledge to mix design philosophy
CE403.3	Student will be able to differentiate various types of cement used for various specific purpose
CE 403.4	Student will beable to apply fundamental knowledge in the freshand hardened properties of concrete
CE 403.5	Student will be able to design ordinary and control concretes, replacement of cement and their specificapplications

CO-PO mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE403.1	3	2	3	3	-	-	2	-	-	-	1	3
CE403.2	3	3	3	2	3	1	2	-	-	1	1	2
CE403.3	3	1	2	1	3	-	-	1	-	1	-	1
CE403.4	3	-	2	-	3	2	2	-	-	-	-	2
CE403.5	3	3	-	2	2	2	3	-	1	1	-	2
CE403	3	2.25	2.5	2	2.75	2.67	2.25	1	1	1	1	2

Paper Name: SOIL MECHANICSPaper
Code: CE 404
Total Contact Hours: 42
Credit: 3

Pre requisites: Student should have knowledge about the basic of strength of materials, physics and chemistry.

Course Outcome:

CE404.1	Identify the fundamental differences in engineering behavior between cohesive and cohesion less soils
CE404.2	Compute the groundwater seepage and distribution of groundwater pressure.
CE404.3	Calculate the applied stress beneath the ground surface.
CE404.4	Demonstrate that you know the fundamental difference in the strength and deformation characteristics of cohesive and cohesion less soils.
CE404.5	Analyze field and laboratory data to determine the strength and deformation properties of cohesive and cohesion less soils.
CE404.6	Determine settlements due to consolidation of soil

CO-PO mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE404.1	3	2	2	1	1	1	1	1	1	1	1	2
CE404.2	2	2	3	3	2	3	1	1	2	2	2	3
CE404.3	2	2	3	2	2	1	1	3	2	1	1	2
CE404.4	3	3	3	3	3	2	1	3	2	1	3	3
CE404.5	2	3	1	2	1	3	1	2	2	2	2	2
CE404.6	2	2	2	3	1	2	2	2	3	2	3	2
CE404	3	2	2	1	1	1	1	1	1	1	1	2

Practical

Paper Name: SURVEYING PRACTICE – I

Paper Code: CE 491 Total

Contact Hours: 36Credit:

2

Pre requisites: Student should have knowledge about the basic Basic Survey Theory

Course Outcome:

CE 491.1	To interpret horizontalmeasurementwith the help of Chain & Compass Surveying in the field.
CE491.2	To enumerate about Plane Table surveying.
CE491.3	To estimate vertical measurement with the help of Leveling in the field.
CE491.4	To apply indirect methods& demonstration of minor instruments.

CO-PO mapping

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CE 491.1	3	2	3	-	-	2	1	1	3	2	2	1
CE 491.2	3	3	3	-	-	2	1	1	3	3	3	-
CE 491.3	3	3	3	-	-	2	1	1	3	2	3	1
CE 491.4	3	3	3	-	-	2	1	1	3	3	3	2
CE 491	3	2.75	3	-	-	2	1	1	3	2.25	275	1.33

Paper Name: BUILDING PLANNING AND DRAWING

Paper Code: CE 492 Total

Contact Hours: 36Credit:

2

Pre requisites: Student should have knowledge about building materials and construction and alsomathematics

Course Outcome:

CE 492.1	Prepare simple layout of buildings.
CE 492.2	Produce working drawings for individual components like doors and windows etc.
CE 492.3	Develop line diagram, building section, elevation, key plan and sectional elevation.
CE 492.4	Illustrate hand drafting any parts of a building and implement the regulations for layout of plan.

CO-PO mapping

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CE 492.1	3	2	-	1	2	-	-	-	1	-	-	1
CE 492.2	3	2	-	1	2	-	-	-	1	-	-	1
CE 492.3	3	2	-	1	2	-	-	-	1	-	-	1
CE 492.4	3	2	-	1	2	-	-	-	1	-	-	1
CE 492	3	2	-	1	2	-	-	-	1	-	-	1

Paper Name: CONCRETE LABPaper
Code: CE 493
Total Contact Hours: 36
Credit: 2

Pre requisites: Student should have the basic knowledge about concrete technology theory

Course Outcome:

CE 493.1	Identify the functional role of ingredients of concrete
CE 493.2	Apply this knowledge to mix design philosophy to get different grade of concrete
CE 493.3	Student should be able to test of different concrete property to specify quality of concrete
CE 493.4	Student shall learn to work in a team to achieve the objective

CO-PO mapping

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CE 493.1	3	2	2	2	2	-	-	-	1	1	-	1
CE 493.2	3	2	2	2	2	1	1	1	1	-	-	1
CE 493.3	3	2	2	2	2	1	-	-	1	-	-	1
CE 493.4	1	1	1	1	1	-	1	1	3	2	2	1
CE 493	2.5	1.75	1.75	1.75	1.75	1	1	1	1.5	1.5	2	1

SESSIONAL

Paper Name: TECHNICAL REPORT WRITING &LANGUAGE PRACTICE

Paper Code: HU481 Total

Contact Hours: 24Credit:

1

Pre requisites: Communication Competence

Course Outcome:

CO	Statement
CO1	Able to develop advanced verbal and non verbal communication skills through Power Point presentation.
CO2	Able demonstrate interpersonal skills through Group Discussion both for organizational communication and campus recruitment drive.
CO3	Able to face various types of interviews.
CO4	Able to be industry ready professionals by various personality development programs.

CO-PO mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
HU 481.1	–	-	-	-	-	2	-	-	3	3	3	3
HU 481.2	-	-	-	-	-	3	-	-	3	3	3	3
HU 481.3	-	-	-	-	-	2	-	-	3	3	3	3
HU 481.4	-	-	-	-	-	3	-	-	3	3	3	3
HU 481	-	-	-	-	-	2.5	-	-	3	3	3	3

DEPARTMENT OF CIVIL ENGINEERING

Syllabusof

5th Semester

Autonomy Curriculum and Syllabus of B.Tech ProgrammeImplemented from the Academic Year 2016

Third Year Fifth Semester

CURRICULUM

Subject Type	Subject Code	Subject Name	Contact Hours			Contact Hours/Week	Credits
THEORY:			L	T	P	Total	Credits
HS	HU502	VALUE AND ETHICS IN PROFESSION	2	0	0	2	2
PC	CE 501	STRUCTURAL DESIGN – I	2	2	0	4	3
PC	CE 502	QUANTITY SURVEYING, SPECIFICATION AND VALUATION	2	1	0	3	2
PC	CE 503	STRUCTURAL ANALYSIS - II	3	1	0	4	3
PC	CE 504	FOUNDATION ENGINEERING	3	1	0	4	3
PE -I	CE 505A	HYDRAULICS	3	1	0	4	4
	CE 505B	WATER SUPPLY AND PLUMBING					
	CE 505C	WASTE WATER AND TREATMENT					
PRACTICAL							
PC	CE 591	SURVEYING PRACTICE - II	0	0	3	3	2
PC	CE 592	SOIL MECHANICS LAB - I	0	0	3	3	2
PC	CE 593	CIVIL ENGINEERING LAB	0	0	3	3	2
SESSIONAL:							
MC	MC 581	PRESENTATION SKILL	0	0	2	2	2 units
		TOTAL: TEN	15	6	11	32	23

Syllabus:

Theory

Paper Name: VALUE AND ETHICS IN PROFESSION
Paper Code: HU502 Total Contact Hours: 24 Credit: 2

Pre requisites:

Course Outcome: On Completion of this course student will be able to

Co.1	Understand the core values that shape the ethical behavior of an engineer and Exposed awareness on professional ethics and human values.
Co.2	understand the basic perception of profession, professional ethics, various moral issues & uses of ethical theories
Co.3	understand various social issues, industrial standards, code of ethics and role of professional ethics in engineering field
Co.4	Aware of responsibilities of an engineer for safety and risk benefit analysis, professional rights and responsibilities of an engineer.
Co.5	acquire knowledge about various roles of engineers in variety of global issues and able to apply ethical principles to resolve situations that arise in their professional lives

CO-PO mapping

CO	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
Co-1	_	_	_	_	_	**1**	**1**	**1**	**1**	**2**	_	_
Co-2	_	_	_	_	_	**1**	**1**	**3**	**1**	**2**	_	_
Co-3	_	_	_	_	_	**3**	**2**	**3**	_	**1**	_	_
Co-4	_	_	_	_	_	**3**	**2**	**1**	_	_	_	_
Co-5	_	_	_	_	_	**3**	**2**	**2**	_	**1**	**3**	_

Paper Name: STRUCTURAL DESIGN – I

Paper Code: CE 501 Total
Contact Hours: 42Credit: 3

Pre requisites: Student should have knowledge about how to solve analysis of structural problem.

Course Outcome:

CE501.1: Exhibit the knowledge of concrete design philosophies, by working and limit state methodology
CE501.2: Design the structural details of beam and slab
CE501.3: Design the structural details of column
CE501.4: Interpret and use the I.S Code specifications
CE501.5: Explain the detailing of the structural components

CO-PO mapping

CO	***PO1***	**PO 2**	**PO3**	**PO 4**	**PO5**	**PO 6**	**PO7**	**PO8**	**PO 9**	**PO1 0**	**PO1 1**	**PO1 2**
CE501. 1	3	3	3	2	-	1	2	1	-	3	3	2
CE501. 2	3	3	3	3	-	2	-	-	-	1	2	2
CE501. 3	3	3	3	2	-	-	-	-	-	-	2	2
CE501. 4	3	3	3	2	-	-	-	-	-	-	2	2
CE501. 5	3	3	3	2	-	-	-	-	-	1	2	2
CE501	3	3	3	2.2	-	1	2	1	-	1.67	2.2	2

Paper Name: QUANTITY SURVEYING, SPECIFICATION AND VALUATION

Paper Code: CE502 Total
Contact Hours: 36Credit: 2

Pre requisites: Student should have knowledge about building construction and material details.

Course Outcome:

CE502.1: Student will be able to prepare specification for using materials of construction and its items ofworks.

CE502.2: Student will be able to illustrate a detailed estimation of material consumption and abstracts for entire construction projects

CE502.3: Student will learn how to analyze the rates for different items of works including labor and material.

CE502.4: Interpret fundamental concepts of valuation

CE502.5: Students will be able to identify various legal issues related to construction.

CO-PO mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO 9	PO1 0	PO1 1	PO1 2
CE502. 1	3	3	2	2	1	2	1	-	-	-	2	2
CE502. 2	3	3	3	2	-	-	-	-	-	-	1	2
CE502. 3	3	3	3	1	-	-	-	-	-	-	2	2
CE502. 4	3	3	3	2	-	-	-	-	-	-	2	2
CE502. 5	3	3	3	2	1	2	-	-	2	2	2	2
CE502	3	3	2.8	1.8	1	2	1	-	2	2	1.8	2

Paper Name: STRUCTURAL ANALYSIS - II

Paper Code: CE503 Total
Contact Hours: 42Credit: 3

Pre requisites: Should have knowledge about structural analysis -1

Course Outcome:
CE503.1: Apply basic methods of analysis of indeterminate structures
CE503.2: Illustrate knowledge of advanced methods of analysis of indeterminate structures
CE503.3: To solve structural analysis problems involving analysis of two pinned arches
CE503.4: To analyze structural analysis problems involving moving loads

CO-PO mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE503.1	3	3	2	2	1	-	-	-	-	-	-	2
CE503.2	3	2	2	2	2	-	-	-	-	-	-	2
CE503.3	3	3	2	2	2	-	-	-	-	-	-	2
CE503.4	3	3	2	3	2	-	-	-	-	-	-	2
CE503	3	2.75	2	2.25	1.75	-	-	-	-	-	-	2

Paper Name: FOUNDATION ENGINEERING

Paper Code: CE504 Total

Contact Hours: 42Credit:

3

Pre requisites: Student should have knowledge about basic of Soil Mechanics.

Course Outcome:

CE504.1: Describe bearing capacity of soil.
CE504.2: Define earth pressure theories
CE504.3: Design of shallow foundations
CE504.4: Classify piles & their loading capacity for deep foundation.
CE504.5: Compare methods & process of Geotechnical Exploration and Ground Improvementtechniques

CO-PO mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE504.1	2	2	2	2	1	1	1	2	3	1	2	3
CE504.2	2	2	2	3	2	2	1	2	3	1	2	3
CE504.3	2	2	1	2	1	1	1	1	2	1	1	2
CE504.4	2	1	1	2	3	2	1	1	2	1	2	2
CE504.5	1	2	1	2	2	2	1	1	2	1	2	3
CE504	1.8	1.8	1.4	2.2	1.8	1.6	1	1.4	2.4	1	1.8	2.6

Paper Name: HYDRAULICS
Paper Code: CE505A
Total Contact Hours: 42
Credit: 4

Pre requisites: Basic knowledge of Fluid Mechanics

CourseOutcome:
CE505A.1: Students will be able to recognize with different water resources terminology like hydrology, ground water, hydraulics of pipelines and open channel.
CE505A.2: Students will be able to explain and be able to use the energy and momentum equations.
CE505A.3: Students will be able to separate flow in closed pipes, and design and recommend of pipes including sizes.
CE505A.4: Students will be able to summarize pumps classification and be able to select a system curve used in pump selection.
CE505A.5: Students will be able to categorize and order pumps (single or multiple) for different hydraulic applications.
CE505A.6: Students will be able to identify with open channel cross sections, hydrostatic pressure distribution and Manning's law.

CO-PO mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE505A.1	3	2	1	-	-	-	-	-	-	-	-	-
CE505A.2	2	3	1	-		-	-	-	-	-	-	-
CE505A.3	3	2	1	-	1	-	-	-	-	-	-	-
CE505A.4	2	3	1	-	1	-	-	-	-	-	-	-
CE505A.5	3	2	1	-	1	-	-	-	-	-	-	-
CE505A.6	3	1	2	-	1	-	-	-	-	-	-	-
CE505A	2.67	2.17	1.16	-	1	-	-	-	-	-	-	-

Paper Name: WATER SUPPLY AND PLUMBING

Paper Code: CE505B

Total Contact Hours: 42

Credit: 4

Pre requisites: Student should knowledge about hydraulic

CourseOutcome:

CE505B.1: Student will be able to apply appropriate treatment to raw water i.e. surface water/ground water useful for domestic as well as drinking purpose, industries liquid waste and reuse ofwater.

CE505B.2: Student will be able to calculate and recommend the pipe- network for water supply and Sewage disposal effectively.

CE505B.3: Student may clarify and identify the impurities present in water used for domestic, different types of industrial as well as constructionworks.

CE505B.4: Student will able to produce and select water distribution and sewer-network system.

CE505B.5: Student will able toclarifyraw water as per the standard practices.

CE505B.6: Student able to select and implement building plumbing workeffectively.

CO-PO mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE505B.1	3	2	1	-	1	1	-	-	-	-	-	-
CE505B.2	2	3	2	-	1	1	-	-	-	-	-	-
CE505B.3	3	2	2	-	1	-	-	-	-	-	-	-
CE505B.4	3	2	2	-	1	-	-	-	-	-	-	-
CE505B.5	3	2	1	-	1	-	-	-	-	-	-	-
CE505B.6	2	3	1	-	1	-	-	-	-	-	-	-
CE505B	2.67	2.33	1.5	-	1	1	-	-	-	-	-	-

Paper Name: WASTE WATER AND TREATMENT

Paper Code: CE505C

Total Contact Hours: 42

Credit: 4

Pre requisites: Fluid Mechanics or an equivalent course in fluid flow or hydraulics.

Course Outcome:

CE505C.1: Students will be able to summarize the quality parameters typically used to differentiate wastewater and judge the different classes of treated wastewater

CE505C.2: Students will be able to describe various types of process units used for preliminary, primary and secondary treatment and explain how they achieve the target level oftreatment

CE505C.3: Students will be able to identify and summarize emerging technologies for advanced wastewater treatment and water recycling

CE505C.4: Students will be able to differentiate water and wastewater treatment on solid wastes management.

CE505C.5: Students will be able to choose a treatment system for a given wastewater to select a specified end use which will conduct basic design of treatmentunits

CE505C.6: Students will be able to differentiate the parameters that characterize the constituents justify in potable water and wastewater and Understand fundamental water chemistry.

CO-PO MAPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE505C.1	2	2	-	-	-	-	1	-	-	-	-	-
CE505C.2	2	2	3	-	1	-	-	-	-	-	-	-
CE505C.3	3	2	1	-	-	-	-	-	-	-	-	-
CE505C.4	3	2	1	-	1	2	-	-	-	-	-	-
CE505C.5	3	2	1	-	1	2	-	-	-	-	-	-
CE505C.6	2	3	1	1	-	-	-	-	-	-	-	-
CE505C	2.5	2.16	1.4	1	1	2	1	-	-	-	-	-

Practical

Paper Name: SURVEYING PRACTICE - II
Paper Code: CE591 Total
Contact Hours: 36Credit:
2

Pre requisites: Should have knowledge about surveying Theory.

Course Outcome:
CE591.1: Students will be able to operate instruments like Theodolite for angle measurements
CE591.2: Students will be able to explain about different readings & calculations with the help of Total Station.
CE591.3: Students will apply the importance of precision and accuracy in taking observations
CE591.4: Students will be able to pointed out Curve in the field

CO-PO mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE591.1	3	3	3	2	1	-	2	1	2	2	2	-
CE591.2	3	3	3	3	3	2	2	-	3	2	2	2
CE591.3	3	3	3	3	3	2	1	1	2	2	2	3
CE591.4	3	3	3	-	1	2	-	3	2	2	2	2
CE591	3	3	3	2.67	2	2	2.33	2.67	2.25	2	2	2.33

Paper Name: SOIL MECHANICS LAB - I

Paper Code: CE592 Total
Contact Hours: 36Credit: 2

Pre requisites:

Course Outcome:

CE592.1: Identify soils with reference to their characteristics
CE592.2: Describe the behavior and effect of water in soils
CE592.3: Examine modes of soil behavior
CE592.4: Calculate and plot soil strength parameters
CE592.5: Interpret different methods of improving soil stability including reference to compaction plant
CE592.6: Illustrate a variety of laboratory tests on soils
CE592.7: Calculate soil properties from test results

CO-PO mapping:

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CE592.1	3	1	2	3	3	2	1	-	1	3	2	2
CE592.2	3	3	2	2	3	2	1	1	-	2	3	1
CE592.3	3	2	1	2	1	3	1	2	-	2	1	2
CE592.4	2	3	2	3	1	1	2	1	2	1	2	3
CE592.5	2	3	3	2	2	1	1	1	2	1	2	2
CE592	2.6	2.4	2	2.4	2	1.8	1.2	1.25	1.67	1.8	2	2

Paper Name: CIVIL ENGINEERING LAB

Paper Code: CE593 Total
Contact Hours: 36Credit: 2

Pre requisites: Student should have the basic knowledge about building material and construction and also should have knowledge about basic concrete property.

Course Outcome:

CE593.1: Test of beams for deflection, flexure and shear
CE593.2: Experiments on Concrete, including Mix design
CE593.3: Illustrate knowledge on Non destructive testing (NDT) equipments – Rebound hammer, Ultra sonic pulse velocity meter

CO-PO mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE593.1	3	1	1	3	3	-	1	1	2	3	-	1
CE593.2	3	2	3	2	2	1	1	-	2	1	2	2
CE593.3	3	2	2	2	3	2	2	2	1	-	2	1
CE593	3	1.67	2	2.33	2.67	1.5	1.33	1.5	1.67	2	2	1.33

SESSIONAL

Paper Name: PRESENTATION SKILL

Paper Code: MC581

Total Contact Hours: 24

Credit: 2

Pre requisites: None

Course Outcome:

MC581.1: Able to develop advanced skills of Technical Communication in English through Revision of LSRW skills learnt.
MC581.2: Able demonstrate improved interpersonal skills through Group Discussion both for organizational communication and campus recruitment drive.
MC581.3: Able to face various types of interviews.
MC581.4: Able to be industry ready professionals by various personality development programs

CO-PO mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
MC581.1	_	-	-	-	-	2	-	-	3	3	3	3
MC581.2	-	-	-	-	-	3	-	-	3	3	3	3
MC581.3	-	-	-	-	-	2	-	-	3	3	3	3
MC581.4	-	-	-	-	-	3	-	-	3	3	3	3
MC581	-	-	-	-	-	2.5	-	-	3	3	3	3

DEPARTMENT OF CIVIL ENGINEERING

Syllabusof

6th Semester

Autonomy Curriculum and Syllabus of B.Tech Programme
Implemented from the Academic Year 2016

Third Year Sixth Semester

CURRICULUM

Subject Type	Subject Code	Subject Name	Contact Hours			Contact Hours/Week	Credits
THEORY:			L	T	P	Total	
HS	HU 603	ECONOMICS FOR ENGINEERS	2	1	0	3	2
PC	CE 601	STRUCTURAL DESIGN – II	2	2	0	4	3
PC	CE 602	ENVIRONMENTAL ENGINEERING	2	1	0	3	2
PC	CE 603	HIGHWAY AND TRANSPORTATION ENGINEERING	2	1	0	3	2
PE-II	CE 604A	ENGINEERING MATERIALS	2	2	0	4	4
	CE 604B	ELECTRICAL AND ELECTRONICS MEASUREMENT					
	CE 604C	MATERIAL HANDLING					
OE-I	CE 605A	OPERATION RESEARCH	2	2	0	4	4
	CE 605B	HUMAN RESOURCE MANAGEMENT					
	CE605C	STUDIES ON SIX SIGMA					
PRACTICAL:							
PC	CE 691	Transportation& Highway Engineering Lab	0	0	3	3	2
PC	CE 692	Structural Design And Detailing	0	0	3	3	2
PC	CE 693	Soil Mechanics Lab – II	0	0	3	3	2
PC	CE 681	Computer Aided Analysis & Design	0	0	2	2	1
		TOTAL: TEN	12	9	11	32	24

PAPER NAME: ECONOMICS FOR ENGINEERS

PAPER CODE: HU603 CONTACTS: 2L CREDITS: 2 TOTAL: 20 HRS

Prerequisites:

The Course of Economics and Accountancy for Civil Engineering introduces students the concepts and conventions of Economics and Accounting principles, policies and methods. It emphasizes the application of basic Microeconomic and Macroeconomic concepts to current economic events such as scarcity, opportunity cost, supply and demand, elasticity, market efficiency, consumer/producer behavior, market structures, time value of money and stabilization policy. In addition, the course will examine the basic accounting and cost conceptsto evaluate and project business performance.A combination of theory and practice will be tailored towards exuding engineering economics concepts.

Due to globalization and economic complexity, engineers are now required to have an in-depth understanding of the markets and how changes in these markets affect their bottom line. These can include a variety of things, such as understanding interest rates required to increase or sustain levels of capital stock, opportunity cost, net present value for calculating the value of investments, basic cost and revenue analysis, and more. Once we understand the mechanisms for learning engineering economics and its importance to 21st century engineers, it becomes apparent that this field will play a growing role in shaping successful engineers.

Course Outcome (CO):

- **CO1 : To Identify alternative uses for limited resources and obtain appropriate data.**
- **CO2 : To introduce and expand upon key economic concepts and to place them in a real world context facilitating practical insights.**
- **CO3 : To establish a framework of basic economic theory which can be extended and applied at later stages ofthe degree program.**
- **CO4 : To develop an appreciation of the importance of economic forces in shaping the contemporary world.**
- **CO5 :To employ critical thinking skills to analyze financial data as well as the effects of different financial accounting methods on the financial statement**
- **CO6 :To apply cost accounting principles to evaluate and project business performance.**
- **CO7 :To be able to analyze and evaluate information for cost ascertainment, planning, control and decisionmaking.**

Syllabus Description :

Subject Name: Economics for EngineersSubject Code : HU 603

Contracts: 2LCredits- 2

CO – PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO8	PO9	PO10	PO11	PO12
CO1		3										2	
CO2	3		2				3					2	
CO3				2	2	3						2	2
CO4				3	3							2	2
CO5												2	
CO6												2	
CO7												2	
HU 603	3	3	2	2.5	2.5	3	3					2	2

PAPER NAME: STRUCTURAL DESIGN -II

PAPER CODE: CE601CONTACTS: 2L +2T =4HRS CREDITS: 3 TOTAL: 42 HRS

Prerequisites:

A basic concept of material properties and behavior with basic knowledge of structural analysis and structural elements behaviorunder different loading pattern. Knowledge of stress and strain with fundamental concept of Engineering mechanics.

Course Outcome:

CE 601.1 Understand various types of design methodology as per limit and working stress method
CE 601.2 Interpret different type of connections
CE 601.3 Design compression, tension and beam members
CE 601.4 Analyze column bases
CE 6012.5 Design plate girder, uses of stiffeners
CE 601.6 Interpret and uses I.S Code specifications.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE 601.1	**3**	**3**	**3**	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**-**
CE 601.2	**-**	**2**	**3**	**3**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**
CE 601.3	**-**	**2**	**-**	**3**	**3**	**3**	**-**	**2**	**-**	**-**	**-**	**-**
CE 601.4	**-**	**-**	**2**	**3**	**2**	**2**	**-**	**2**	**-**	**-**	**-**	**-**
CE 601.5	**-**	**2**	**2**	**3**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**
CE 601.6	**3**	**1**	**3**	**-**	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**-**
CE 601	**3**	**2**	**2.6**	**3**	**2.6**	**2.6**	**-**	**2**	**-**	**-**	**-**	**-**

PAPER NAME: ENVIRONMENTAL ENGINEERING

PAPER CODE: CE602 CONTACTS: 2L +1T =3HRS CREDITS: 2

TOTAL: 36 HRS

Prerequisites:

The basic concept of hydraulics with knowledge of pressure, loss etc calculation. Fundamentals of chemistryand preliminary knowledge of Quantity estimation.

Course Outcome:

CE 602.1	Students will be able to understand key current environmental problems like level of pollution
CE 602.2	Be able to identify and value the effect of the pollutants on the environment: atmosphere, water and soil.
CE 602.3	Be able to analyze an industrial activity and identify the environmental problems.
CE 602.4	Be able to plan strategies to control, reduce and monitor pollution.
CE 602.5	Be able to select the most appropriate technique to purify and/or control the emission of pollutants.
CE 602.6	Be able to apply the basis of an Environmental Management System (EMS) to an industrial activity

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE 602.1	-	3	-	-	-	1	2	1	-	-	-	-
CE 602.2	-	-	2	-	1	1	-	-	-	-	-	-
CE 602.3	1	1	1	2	-	-	-	-	-	-	-	-
CE 602.4	-	-	2	-	2	-	-	-	-	-	-	-
CE 602.5	1	-	1	2	2	-	-	-	-	-	-	-
CE 602.6	-	-	-	-	-	-	2	1	-	2	3	-
CE 602	1	2	1.5	2	1.6	1	2	1	-	2	3	-

PAPER NAME: HIGHWAY AND TRANSPORTATION ENGINEERING

PAPER CODE: CE603 CONTACTS: 2L +1T =3HRS CREDITS: 2TOTAL: 36HRS

Pre requisites: Student should have knowledge about measurement and mathematical knowledge

Course Outcome:

CE 603.1	Students will receive the introduction and history of highway engineering and economics also which will remain correct for long period oftime.
CE 603.2	Students will calculate and design the different component of the highway such as sight distances, horizontal curves, superelevation, extra widening, transition curves and gradient, vertical curves etc.
CE 603.3	Students will learn about the design criteria of pavements by IRC guideline.
CE 603.4	Students will get the knowledge about the traffic engineering and components of traffic such as traffic signs, signals, design of traffic signalsdesign,rotary intersection, Volume studies, speed studies etc.
CE 603.5	Students will examine and test materials of highway such as Soil, Stone Aggregate, Bitumen, Marshal Stability Test etc. Also get knowledge about construction of highway.

CO-PO Mapping:

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CE 603.1	3	3	3	2	3	1	1	1	3	3	3	3
CE 603.2	3	3	3	2	2	2	1	1	3	2	3	2
CE 603.3	-	-	-	-	-	-	-	-	-	-	-	-
CE 603.4	3	3	3	3	2	2	1	1	3	2	2	2
CE 603.5	3	3	3	3	2	1	1	1	3	2	1	2
CE 603	3	3	3	2.5	2.25	1.5	1	1	3	2.25	2.25	2.25

PAPER NAME: ENGINEERING MATERIALS

PAPERCODE: CE604A CONTACTS: 2L+2T=4HRS CREDITS:4

TOTAL: 42HRS

Prerequisites:

Knowledge of materials and metals, Definition of crystal, Knowledge of alloys etc.

Course Outcome:

CE 604A.1	Understanding the behaviour and properties of materials
CE 604A.2	Understanding the features of crystals and alloys
CE 604A.3	Uses of polymers, ceramic etc

CO-PO Mapping:

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CE 604A.1	3	3	3	2	3	1	1	1	3	3	3	3
CE 604A.2	3	3	3	2	2	2	1	1	3	2	3	2
CE 604A.3	1	1	1	1	3	2	3	2	3	3	2	1
CE 604A.4	3	3	3	3	2	2	1	1	3	2	2	2
CE 604A.5	3	3	3	3	2	1	1	1	3	2	1	2
CE 604A	2.6	2.6	2.6	2.2	2.4	1.6	1.4	1,6	3	2.4	2.2	2

PAPER NAME: ELECTRICAL & ELECTRONICS MEASUREMENTPAPERCODE: CE604B CONTACTS: 2L+2T=4HRS CREDITS:4

TOTAL: 34HRS

Paper Name: Electrical and Electronic Measurement, **Paper Code:** CE 604B

Total Contact hours: 34**Credit:** 3

Pre-requisites: Concepts of basic Electrical Engineering

Course outcome:

On completion of the course students will be able to:

COs	CO Statement
CE 604B.1	Understand the basics of Electrical measuring system and their classification
CE 604B.2	Student will be able to measurement of voltage and current by the use of CT and PT for extending instruments ranges.
CE 604B.3	Understand and measure of Resistance, Inductance, Capacitance, Power, and Energy
CE 604B.4	Student will be able to understand the function of cathode ray oscilloscope with block diagram.
CE 604B.5	Internal and general repairing of instruments and problem solving capacity

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE604B.1	**2**	**2**	**2**	**3**	**1**	-	-	-	-	-	-	**1**
CE604B.2	**3**	**2**	**2**	**2**	**1**	-	-	-	-	-	-	**1**
CE604B.3	**2**	**2**	**2**	**2**	**2**	-	-	-	-	-	-	**1**
CE604B.4	**3**	**2**	**2**	**3**	**2**	-	-	-	-	-	-	**1**
CE604B	**2.5**	**2**	**2**	**2.5**	**1.5**	-	-	-	-	-	-	**1**

PAPER NAME: MATERIAL HANDLING

PAPERCODE: CE604C CONTACTS: 2L+2T=4HRS CREDITS:4

TOTAL: 42HRS

Prerequisites: Student should have knowledge about the materials and the working principals of machines.

Course Outcome:

CE 604C.1	Ability to identify about the materials and the load characteristics.
CE 604C.2	Understanding the working principal of different types of conveyors, elevators
CE 604C.3	Understanding the working principal of Cranes, load handling instrument.
CE 604C.4	Understanding the principal and design of AGV, EOT.

CO-PO Mapping:

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CE 604C.1	3	3	3	2	3	1	1	1	3	3	3	3
CE 604C.2	3	3	3	2	2	2	1	1	3	2	3	2
CE 604C.3	3	3	2	2	1	1	2	2	2	1	1	2
CE 604C.4	3	3	3	3	2	2	1	1	3	2	2	2
CE 604C.5	3	3	3	3	2	1	1	1	3	2	1	3
CE 604C	3	3	2.8	2.4	2	1.5	1	1	2.8	2	2	2.5

PAPER NAME: OPERATIONS RESEARACH

PAPERCODE: CE605A CONTACTS: 2L+2T=4HRS CREDITS:4TOTAL: 42HRS

Prerequisites: Basic concepts of Probability distribution , statistical estimation, regression analysis and ANOVA, BasicMathematics

Course Outcome:

CO-1. At the end of the course, the students will be able to identify and develop operational research models from the verbal description of the real System.

CO-2. Apply the mathematical tools that are needed to solve optimisation problems.

CO-3. Use mathematical software to solve the proposed models.

CO-4. Develop a report that describes the model and the solving technique, analyse the results and propose recommendations in language understandable to the decisionmaking processes in Management Engineering.

CO-PO Mapping:

CO	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
CO-1						3	2		3			3
CO-2						1		1		3		1
CO-3						2						1
CO-4						3	2		3	3		2
CE 605A						2.25	2	1	3	3		2.33

PAPER NAME: HUMAN RESOURCE MANAGEMENT PAPERCODE: CE605B
CONTACTS: 2L+2T=4HRS CREDITS:4

TOTAL: 30HRS

Prerequisites: Basic concepts of Management and Planning

Course Outcome:

CO-1: On completion of this course the students will be able to know resource
CO-2: planning and management in construction.
CO-3: Plan and manage key human resource functions within organizations.
CO-4: Contribute to employee performance management and organizational Effectiveness

CO-PO Mapping:

CO	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
CO-1					2	1	2		3			3
CO-2						1		1	3	3		3
CO-3					1	2				3		1
CO-4						3	2		3	3		2
CE 605B					1.5	2.33	2	1	3	3		2.25

PAPER NAME: STUDIES ON SIX SIGMA

PAPERCODE: CE605C CONTACTS: 2L+2T=4HRS CREDITS:4

TOTAL: 42HRS

Prerequisites:

Should have knowledge of Mathematics and Statistics.

Course Outcome:

CE 605C.1	Understand requirement of implementation of Six Sigma.
CE 605C.2	Relate Six Sigma concept to the overall business mission and objective.
CE 605C.3	Understand Six Sigma methodology including DMAIC.
CE 605C.4	Employ Six Sigma skills to lead a successful process improvement project for a meaningful result.

PRACTICAL SUBJECT NAME: TRANSPORTATION & HIGHWAY ENGINEERING LAB

PAPER CODE: CE691 CONTACTS: 3P=3HRS CREDITS: 2

Pre requisites: Student should have the basic knowledge about Highway&Transportation engineering.

Course Outcome:

CE 691.1	Identify the functional role of different materials of highway engineering.
CE 691.2	Apply this knowledge to mix design philosophy to get different suitable B.M. &S.D.B.C. Mix.
CE 691.3	Student should be able to test of existing highway and examine the quality of that highway by Benkelman Beam Test.
CE 691.4	Student shall learn to work in a team to achieve the objective.

CO-PO Mapping:

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CE 691.1	3	2	2	2	2	-	-	-	1	1	-	1
CE 691.2	3	2	2	2	2	1	1	1	1	-	-	1
CE 691.3	3	2	2	2	2	1	-	-	1	-	-	1
CE 691.4	1	1	1	1	1	-	1	1	3	2	2	1
CE 691	2.5	1.75	1.75	1.75	1.75	1	1	1	1.5	1.5	2	1

PRACTICAL SUBJECT NAME: STRUCTURAL DESIGN AND DETAILING

PAPER CODE: CE692 CONTACTS: 3P=3HRS CREDITS: 2

Pre requisites: Student should knowledge about rcc and steel structure design of various structural components and building structure.

Course Outcome:

CE 692.1	Design principle of R.C.C. sections. Limit state method of design Loads and stresses to be considered in the design as per I.S. code provision.
CE 692.2	Design & detailing of a i) simply supported R.C.C Beam ii) Continuous T- Beam
CE 692.3	Student should be able to Design & Detailing of columns, isolated and combined footing.
CE 692.4	Design of different units: Slab, beam column, roofing and staircase from floor plan of a multistoried frame building, typical detailing of a two way floor slab.
CE 692.5	Problems on general consideration and basic concepts
CE 692.6	Discussion on different loads (i.e. wind load, Dead load, live load and others) as per IS875
CE 692.7	Discussion on different loads (i.e. wind load, Dead load, live load and others) as per IS875
CE 692.8	Design & drawing of the components of a roof truss

CO-PO Mapping:

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CE 692.1	3	2	2	2	2	-	-	-	1	1	-	1
CE 692.2	3	2	2	2	2	1	1	1	1	-	-	1
CE 692.3	3	2	2	2	2	1	-	-	1	-	-	1
CE 692.4	3	1	1	1	1	-	1	1	3	2	2	1
CE 692.5	3	3	3	1	1	1	1	1	2	1	2	1
CE692.6	3	2	2	2	2	1	1	1	1	2	3	1
CE 692.7	3	2	2	1	1	1	1	1	3	3	2	1
CE 692.8	3	2	2	2	2	1	1	1	2	3	2	1
CE 692	3	2	2	1.63	1.63	0.75	0.75	0.75	1.75	1.38	1.38	1

PRACTICAL SUBJECT NAME: SOIL MECHANICS LAB-II

PAPER CODE: CE693 CONTACTS: 3P=3HRS CREDITS: 2

Prerequisites:

Basic course on soil mechanics with understanding of soil parameters, behavior and response against loading.

Course Outcome:

CE693.1	Ability to caculate the compressive strength of soil
CE693.2	Ability to perform shear strength of soil
CE693.3	Ability to understand standard penetration test
CE693.4	Ability to understand consolidation parameters of soil

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE693.1	3	3	-	3	3	-	-	-	-	2	-	2
CE693.2	3	3	-	3	3	-	-	-	-	2	-	2
CE693.3	3	3	-	3	3	-	-	-	-	2	-	2
CE693.4	3	3	-	3	3	-	-	-	-	2	-	2
CE693	3	3	-	3	3	-	-	-	-	2	-	2

PRACTICAL SUBJECT NAME: COMPUTER AIDED ANALYSIS AND DESIGN PAPER CODE: CE681

CONTACTS: 2P=2HRS CREDITS: 1

Prerequisites:

Fundamentals of computer operation with basic knowledge of Structure Analysis and Design for different structural components with basic knowledge of engineering drawing.

Course Outcome:

CE 681.1 Students will be able to integrate the role of graphic communication in the engineering design process
CE 681.2 Students will be able to use CAD software to generate a computer model and technical drawing for a simple, well-defined part or assembly.
CE 681.3 Students will be able to apply basic concepts to develop construction (drawing) techniques and produce 2D Orthographic Projections
CE 681.4 Understand and demonstrate dimensioning concepts and techniques
CE 681.5Become familiar with the use of Blocks, Design Center, and Tool Palettes, Solid Modeling concepts and techniques

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE 681.1	**1**	**2**	**1**	**1**	**3**	**-**	**-**	**-**	**-**	**3**	**2**	**-**
CE 681.2	**1**	**2**	**1**	**1**	**3**	**-**	**-**	**-**	**-**	**3**	**2**	**-**
CE 681.3	**1**	**2**	**1**	**1**	**3**	**-**	**-**	**-**	**-**	**3**	**1**	**-**
CE 681.4	**1**	**2**	**1**	**1**	**3**	**-**	**-**	**-**	**-**	**3**	**1**	**-**
CE681.5	**1**	**2**	**1**	**1**	**1**	**-**	**-**	**-**	**-**	**1**	**-**	**-**
CE 681	**1**	**2**	**1**	**1**	**2.6**	**-**	**-**	**-**	**-**	**3**	**1.5**	**-**

DEPARTMENT OF CIVIL ENGINEERING

Syllabusof

7th Semester

Autonomy Curriculum and Syllabus of B.Tech Programme
Implemented from the Academic Year 2016

Fourth Year Seventh Semester

CURRICULUM

Subject Type	Subject Code	Subject Name	Contact Hours			Contact Hours/Week	Credits
THEORY:			L	T	P	Total	
PC	CE 701	Water Resource And Irrigation Engineering	2	1	0	3	2
PE-III	CE702A	Bridge Engineering	3	1	0	4	4
	CE 702B	Prestressed Concrete					
	CE 702C	Structural Dynamics And Earthquake Engineering					
PC	CE 703	Construction Planning And Management	2	2	0	4	3
OE-II	CE704A	Transportation Engineering	3	1	0	4	3
	CE 704B	Traffic Engineering & Planning					
	CE 704C	Urban Planning					
PRACTICAL:							
PC	CE 791	ENVIRONMENTAL ENGINEERING LAB	0	0	3	3	2
SESSIONAL:							
PW	CE 781	Project I	0	0	6	6	4
MC	MC 782	Seminar	0	0	0	0	2 Units
PW	CE 782	Civil Engineering Practice Sessional	0	0	3	3	3
PW	CE 783	Industrial Training	0	0	0	0	3
		TOTAL: NINE	10	5	12	27	24

PAPER NAME: WATER RESOURCE AND IRRIGATION ENGINEERING

PAPER CODE: CE701 **CONTACTS: 2L +1T = 3HRS CREDITS: 2** **TOTAL: 36 HRS**

Prerequisites:

Basic course in Hydraulic Engineering with emphasis on behavior and utilization of groundwater with basic knowledge of interpretation of charts and mathematics.

Course Outcome:

CE 701.1	The student will be able to acquire knowledge of Hydrological Cycle and its component.
CE 701.2	The student will be able to understand irrigation water, use of irrigation water in farm land, different irrigation methods & effective usage of water resources.
CE 701.3	The student will be able to analyse Ground water and Surface water conveyance system.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE 701.1	**1**	**2**	**3**	**2**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**
CE 701.2	**1**	**-**	**3**	**1**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**
CE 701.3	**-**	**1**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CE 701	**1**	**1.5**	**2.69**	**1.2**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**

PAPER NAME: BRIDGE ENGINEERING

PAPER CODE: CE702A CONTACTS: 3L +1T =4HRS CREDITS: 4
TOTAL: 42 HRS

Pre requisites: Student should have knowledge about how to solve analysis of structural problem, reinforced concrete structure design and steel structure design.

Course Outcome:

CE702A.1	Exhibit the knowledge of the history of bridges and know about the IRC guidelines
CE702A.2	Design the RCC bridges of different type.
CE702A.3	Design the Balanced Cantilever Bridges.
CE702A.4	Design the steel bridges of different type.
CE702A.5	Exhibit the knowledge of Composite Bridges and Cable Stayed Bridges.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE702A.1	3	3	3	2	-	1	2	1	-	3	3	2
CE702A.2	3	3	3	3	-	2	-	-	-	1	2	2
CE702A.3	3	3	3	2	-	-	-	-	-	-	2	2
CE702A.4	3	3	3	2	-	-	-	-	-	-	2	2
CE702A.5	3	3	3	2	-	-	-	-	-	1	2	2
CE702A	3	3	3	2.2	-	1	2	1	-	1.67	2.2	2

PAPER NAME:PRESTRESSED CONCRETE

PAPER CODE: CE702B CONTACTS: 3L +1T =4HRS CREDITS: 4
TOTAL: 42 HRS

Prerequisites:

Basic understanding of R.C.C. design and analysis with fundamental knowledge of limit state behavior of R.C.C. with basic knowledge of structural analysis

Course Outcome:

CE702B.1 The student will get basic concept of pre-stressing materials and procedures.
CE702B.2 Detail understanding on losses in prestressed
CE702B.3 Become familiar with IS Codes on Prestressing.
CE702B.4 Understand design of various parts of a prestressed structure for many kind of loading.
CE702B.5 Detail Idea on anchorage zone and composite members

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE702B.1	**3**	**2**	**2**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**
CE702B.2	**3**	**2**	**1**	**2**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**
CE702B.3	**-**	**2**	**1**	**-**	**1**	**3**	**1**	**-**	**-**	**-**	**-**	**-**
CE702B.4	**2**	**2**	**3**	**2**	**2**	**-**	**1**	**-**	**-**	**-**	**-**	**-**
CE702B.5	**2**	**2**	**1**	**2**	**2**	**-**	**1**	**-**	**-**	**-**	**-**	**-**
CE702B	**2.5**	**2**	**1.6**	**2**	**1.66**	**3**	**1**	**-**	**-**	**-**	**-**	**-**

PAPER NAME: STRUCTURAL DYNAMICS & EARTHQUAKE ENGINEERING PAPER CODE: CE 702C CONTACTS: 3L+1T =4HRS CREDITS: 4

TOTAL: 36 HRS

Pre requisites: Student should knowledge about earthquake ,retrofitting and dynamics of the structure

Course Outcome:

CE702C.1	Student will be able know Degrees of freedom, Undamped single degree freedom system, Damped single degree freedom system
CE702C.2	Student will be able to know about *Response of single degree freedom system due to harmonic loading*
CE702C.3	Student will be able to know about Duhamel's Integral, Response due to constant force, Rectangular load, Introduction to numerical evaluation of Duhamel's integral of undamped system.
CE702C.4	Student will able to know about Fundamentals: Elastic rebound theory, Plate tectonics, Definitions of magnitude, Intensity, Epicenter etc., Seismographs, Seismic zoning, Response of Simple Structural Systems
CE702C.5	Student will able to know about *Principles of earthquake resistant design*

CO-PO Mapping:

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CE 704C.1	3	3	3	2	3	1	1	1	3	3	3	3
CE 704C.2	3	3	3	2	2	2	1	1	3	2	3	2
CE 704C.3	-	-	-	-	-	-	-	-	-	-	-	-
CE 704C.4	3	3	3	3	2	2	1	1	3	2	2	2
CE704.5	3	3	3	3	3	1	1	1	3	3	2	
CE 704C	3	3	3	2.5	2.5	1.5	1	1	3	2.5	2.5	2.5

PAPER NAME: CONSTRUCTION PLANNING & MANAGEMENT

PAPER CODE: CE703 CONTACTS: 2L +2T =4HRS CREDITS: 3
TOTAL: 42 HRS

Prerequisites:

Basic course in construction material and methodology with understanding of structural elements and their uses and sequence of construction, erection. Basic knowledge of quantity Estimation and valuation.

Course Outcome:

CE703.1 Students will be able to successfully apply business and Management skills in positions within the construction industry.
CE703.2 Use industry resources including associations and organizations,
CE703.3 Practice informed decision- making in personal and professional endovers.
CE703.4 Manage a quality construction project from start to completion while maintaining budget, schedule, and safety requirements.

Course contents:

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE603.1	**2**	**2**	**2**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**
CE603.2	**2**	**2**	**2**	**2**	**1**	**2**	**2**	**-**	**2**	**2**	**2**	**-**
CE603.3	**2**	**2**	**1**	**2**	**3**	**2**	**2**	**-**	**2**	**1**	**1**	**-**
CE603.4	**-**	**-**	**1**	**1**	**1**	**-**	**-**	**-**	**2**	**1**	**3**	**-**
CE603	**2**	**2**	**1.5**	**1.75**	**1.75**	**2**	**2**	**-**	**2**	**1.33**	**2**	**-**

PAPER NAME: TRANSPORTATION ENGINEERING

PAPER CODE: CE704A CONTACTS: 3L +1T =4HRS CREDITS: 3
TOTAL: 42 HRS

Pre Requisites:

Knowledge on IRC codes, Loading pattern base on IRC, Traffic features etc.

Course Outcome:

CE 704A.1 Understanding of traffic loading pattern
CE 704A.2 Understanding of traffic engineering and traffic management
CE 704A.3 Basic concept of railway engineering

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7		PO8	PO9	PO10	PO11	PO12
CE 704A.1	3	3	3	2	3	1	1		1	3	3	3	3
CE 704A.2	3	3	3	2	2	2	1		1	3	2	3	2
CE 704A.3	3	1	2	1	2	3	2		2	1	3	3	3
CE 704A.4	3	3	3	3	2	2	1		1	3	2	2	2

PAPER NAME: TRAFFIC ENGINEERING & PLANNING

PAPER CODE: CE704B CONTACTS: 3L +1T =4HRS CREDITS: 3
TOTAL: 36 HRS

Prerequisites:

Basic course on transportation engineering with preliminary knowledge of pavement design, alignment, and statutory regulations preliminary knowledge of statistics and probability.

Course Outcome:

704B.1	Learn about basic Traffic Engineering administration.
704B.2	Students would be aware of the basic principles of speed, journey time and delay time.
704B.3	Students will be able to understand volume counts and parking surveys.
704B.4	Students would be aware of the basic principles of design, planning and management of traffic system.
704B.5	Design a pretimed signalized intersection and determine the signal splits and design an actuated signalized intersection.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	-	-	-	-	-	-	-	-	-
CO2	2	3	-	-	2	-	-	-	-	-	-	1
CO3	1	2	3	-	-	2	-	-	-	-	2	-
CO4	1	1	3	-	-	2	-	-	-	-	-	1
CO5	-	-	3	2	-	2	-	-	-	-	-	1

PAPER NAME: URBAN PLANNING

PAPER CODE: CE704C CONTACTS: 3L +1T =4HRS CREDITS: 3
TOTAL: 42 HRS

Pre requisites: Student should knowledge about the procedure of urban planning

Course Outcome:

CE704C.1	Student will be able know the introduction of the man and Environment ,Biological and behavioral responses to human settlements, Role
CE704C.2	Student will be able to know about planning thought behind Jaipur and Delhi Studies of selected examples to include concentric city, , CIAM, linear industrial city and contemporary India Cities
CE704C.3	Student will be able to know about definitions of town planning, levels of planning and steps for preparation of a town plan

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE 704C.1	3	3	3	2	3	1	1	1	3	3	3	3
CE 704C.2	3	3	3	2	2	2	1	1	3	2	3	2
CE 704C.3	-	-	-	-	-	-	-	-	-	-	-	-
CE 704C.4	3	3	3	3	2	2	1	1	3	2	2	2
CE 704C	3	3	3	2.33	2.33	1.66	1	1	3	2.33	2.66	2.33

PRACTICAL SUBJECT NAME: ENVIRONMENTAL ENGINEERING LAB

PAPER CODE: CE791 CONTACTS: 3P=3HRS CREDITS: 2

Prerequisites:

Basic course of environmental engineering with preliminary knowledge of chemistry. Knowledge of different impurities and different dissolved solids with chemical behavior of that element.

Course Outcome:

CE791.1 Perform common environmental experiments relating to water and wastewater quality
CE791.2 Identify appropriate test for environmental problems.
CE791.3 Statistically analyze and interpret laboratorial results
CE791.4 Apply the laboratorial results to problem identification, quantification, and basic environmental design and technical solutions.
CE791.5 Understand and use of water and wastewater sampling procedures and sample preservations.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE 791.1	2	2	-	1	-	-	2	-	-	-	-	-
CE 791.2	1	1	3	1	-	-	-	-	-	-	-	-
CE 791.3	1	2	3	1	-	-	-	-	-	-	-	-
CE 791.4	3	3	1	-	-	-	-	-	-	-	-	-
CE791.5	1	2	3	-	-	-	-	-	-	-	-	-
CE 791	1.6	2	3	1	-	-	-	-	-	-	-	-

PRACTICAL SUBJECT NAME: CIVIL ENGINEERING PRACTICE SESSIONAL

PAPER CODE: CE782 CONTACTS: 3P=3HRS CREDITS: 3

Prerequisites:

Basic course on foundation/soil engineering with knowledge of soil parameters or behavior, structural design of foundation and hydrology and irrigation engineering knowledge on environmental engineering with water and water treatment knowledge on transportation Engineering with emphasis on designed and pavement signal.

Course Outcome:

CE 792.1	Demonstrate capability in RCC structural details
CE 792.2	Ability to know the steel structural details
CE 792.3	Ability to know the sewer design
CE 792.4	Ability to know the hydraulic structure design

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE 792.1	2	1	2	-	-	-	-	-	-	-	-	-
CE 792.2	2	2	2	-	-	-	-	-	-	-	-	-
CE 792.3	2	2	3	1	-	-	-	-	-	-	-	-
CE 792.4	2	2	3	1	-	-	-	-	-	-	-	-
CE 792	2	1.75	2.5	1	-	-	-	-	-	-	-	-

DEPARTMENT OF CIVIL ENGINEERING

Syllabusof

8th Semester

Autonomy Curriculum and Syllabus of B.Tech Programme
Implemented from the Academic Year 2016

Fourth Year Eighth Semester

CURRICULUM

Subject Type	Subject Code	Subject Name	Contact Hours			Contact Hours/ Week	Credits
THEORY:			L	T	P	Total	
PE-IV	CE 801A	Dynamics of Soil & Foundation	3	1	0	4	4
	CE 801B	Finite Element Analysis					
	CE 801C	Advanced Structural Analysis					
PE-V	CE 802A	Advanced Foundation Engineering	3	1	0	4	4
	CE 802B	Ground Improvement & Technique					
	CE 802C	Advanced Transportation Engineering					
	CE 802D	Pavement Design					
OE-III	CE 803A	Hydraulic Structure	3	0	0	3	3
	CE 803B	Water Resource Management And Planning					
	CE 803C	Air & Noise Pollution And Control					
	CE 803D	Remote Sensing And GIS					
HS	HU 806	Project Management	2	1	0	3	2
SESSIONAL:							
PW	CE881	Project II	0	0	12	12	6
PW	CE882	Grand Viva	0	0	0	0	4
HS	HU891	Technical Report Writing & Group Discussion	0	0	3	3	1
		TOTAL: SEVEN	11	3	15	29	24

PAPER NAME: DYNAMICS OF SOIL AND FOUNDATION

PAPER CODE: CE801A CONTACTS: 3L +1T=4HRS CREDITS: 4 TOTAL: 42 HRS

Pre requisites: Knowledge of Basic Soil Mechanics / Fundamental Geotechnical Engineering

Course Outcome:

CE801.1	Understand the dynamic behaviour of foundations.
CE801.2	Design foundations and isolation systems subjected to different kinds of vibrations,
CE801.3	Determine dynamic properties of soils by using laboratory and non-destructive field tests,
CE801.4	Design machine foundations.
CE801.5	Assess the liquefaction potential of a given site

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE801.1	3	3	2	2	2	1	2	2	3	3	2	3
CE801.2	3	3	1	2	2	3	2	2	3	3	1	3
CE801.3	3	3	2	2	3	3	2	2	1	3	1	3
CE801.4	3	3	1	3	1	2	2	2	2	2	1	3
CE801.5	3	3	1	1	2	1	2	2	3	2	2	3

PAPER NAME: FINITE ELEMENT ANALYSIS

PAPER CODE: CE801B CONTACTS: 3L +1T =4HRS CREDITS: 4TOTAL: 42 HRS

Prerequisites:

Basic knowledge of structural analysis for determinate and indeterminate structures, trusses and behavior of plates and preliminary knowledge of standard structural software and computer uses knowledge of matrices algebra.

Course Outcome:

Students will be able to:
CE801B .1 Obtain an understanding of the fundamental theory of the FEA method.
CE801B .2 Developed the ability to generate the governing FE equations for systems governed by partial differential equations.
CE801B .3 Understand the use of the basic finite elements for structural applications using truss, beam, frame, and plane elements.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE 801B.1	3	-	-	2	-	-	-	-	-	-	-	2
CE 801B.2	3	3	3	3	-	-	-	-	-	-	-	2
CE 801B.3	3	-	-	3	-	-	-	-	-	-	-	2
CE 801B	3	3	-	3	-	-	-	-	-	-	-	2

PAPER NAME: ADVANCED STRUCTURAL ANALYSIS

PAPER CODE: CE801C CONTACTS: 3L +1T =4HRS CREDITS: 4 TOTAL: 42 HRS

Prerequisites: Students should have knowledge about the subjects Strength of Materials and Structural Analysis-I& II.

Course Outcome:

CE801C.1	Students will understand matrix method of analysis.
CE801C.2	Students will learn to evaluate wind loads on structures.
CE801C.3	Students will learn to analyse plates and shell structures.
CE801C.4	Students will be able to apply knowledge of elasticity in different coordinate systems.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE 801C.1	**3**	**3**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CE 801C.2	**3**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CE 801C.3	**3**	**2**	**1**	**2**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**1**
CE 801C	**3**	**2**	**2**	**2**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**1**

PAPER NAME: ADVANCED FOUNDATION ENGINEERING

PAPER CODE: CE802A CONTACTS: 3L +1T =4HRS CREDITS: 4 TOTAL: 42 HRS

Prerequisites:

Basic knowledge of soil mechanics with emphasis on soil behavior, parameters, test procedure. Knowledge on foundation and bearing capacity and settlement analysis. Preliminary knowledge on vibration and dynamics of structures.

Course Outcome:

CE802A .1 Determine suitable soil parameters
CE802A .2 Design and analyze foundation systems using conventional methods
CE802A .3 Design a budget and proposal for a Geotechnical investigation
CE802A .4 Design appropriate foundation systems based on ground-investigation data and be able to select correct soil parameters for the designs
CE802A .5 Understand limitations and uncertainties in geotechnical design

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE802A.1	3	3	2	2	2	-	-	-	-	2	-	2
CE802A.2	3	3	2	3	-	-	-	-	-	1	-	2
CE802A.3	3	3	3	3	3	-	-	-	-	2	-	2
CE802A.4	3	3	3	3	3	2	-	-	-	2	-	2
CE802A.5	3	3	3	2	-	-	-	-	-	-	-	2
CE802A	3	3	2.6	2.6	2.67	2	-	-	-	1.75	-	2

PAPER NAME: GROUND IMPROVEMENT& TECHNIQUE

PAPER CODE: CE802B CONTACTS: 3L +1T =4HRS CREDITS: 4 TOTAL: 42 HRS

Pre requisites: Knowledge of Basic Soil Mechanics / Fundamental Geotechnical Engineering

Course Outcome:

CE802.1	Understand the different ground improvement techniques
CE802.2	Understand the methods of stabilisation
CE802.3	Understand the methods and properties of reinforced soil
CE802.4	Understand the basic concepts of geosynthetics
CE802.5	Understand the basic concept of consolidation of soil
CE802.6	Understand the concept of shear strength in soil

CO-PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE802.1	3	3	1	2	3	2	1	2	2	3	2	3
CE802.2	3	3	1	2	3	2	1	1	2	3	1	3
CE802.3	3	3	2	2	3	3	3	3	1	1	2	3
CE802.4	3	3	1	3	1	2	2	1	2	1	1	3
CE802.5	3	3	1	1	2	1	2	2	3	2	2	3
CE802.6	3	2	3	1	2	2	2	1	2	2	1	1

PAPER NAME: ADVANCED TRANSPORTATION ENGINEERING

PAPER CODE: CE802C CONTACTS: 3L +1T =4HRS CREDITS: 4 TOTAL: 42 HRS

Prerequisites:

Basic knowledge of on transportation engineering with fundamentals of pavement design alignment survey and testing procedure of road material understanding basic methodology of transportation models and uses.

Course Outcome:

CE 802C.1	Learn about highway engineering and traffic engineering.
CE 802C.2	Learnn about airport engineering
CE 802C.3	Learn about Railway engineering.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE802C.1	2	2	2	1	-	-	-	-	-	-	-	2
CE802C.2	2	2	3	-	-	-	-	-	-	-	-	-
CE802C.3	2	2	3	-	-	-	-	-	-	-	-	-
CE802C	2	2	2.6	1	-	-	-	-	-	-	-	2

PAPER NAME: PAVEMENT DESIGN

PAPER CODE: CE802D CONTACTS: 3L +1T =4HRS CREDITS: 4 TOTAL: 42 HRS

Pre Requisites:

Concept of different types of pavement and its features based on IRC.

Course Outcome:

CE **802.1**	Understanding the pavement performance under different circumstances
CE **802.2**	Concept of pavement design.

CO-PO Mapping:

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CE 802D.1	3	3	3	2	3	1	1	1	3	3	3	3
CE 802D.2	3	3	3	2	2	2	1	1	3	2	3	2

CE 802D.3	1	1	3	2	1	-	-	3	1	2	2	2
CE 802D.4	3	3	3	3	2	2	1	1	3	2	2	2

PAPER NAME: HYDRAULIC STRUCTURE

PAPER CODE: CE803A CONTACTS: 3L +0T =3HRS CREDITS: 3 TOTAL: 36 HRS

Prerequisites:

Basic course on hydraulics with emphasis on fluid behavior pressure losses and application of theories in real scenario knowledge of seepage and groundwater calculation.

Course Outcome:

CE803A.1	Students will able to analyze and design hydraulic structures using relevant code of practice.
CE803A.2	Students will able to Apply the basic design principles to engineering design practice
CE 803A.3	To define basic theories of hydraulic structure design concepts- cross drainage works, canal falls etc.
CE803A.4	To define basic theories of hydraulic structure design concepts- dams, culverts, siphons etc
CE803A.5	To identify seepage under hydraulic structures and protection methods.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE 803A.1	2	2	3	-	-	-	-	-	-	-	-	-
CE 803A.2	2	2	3	-	-	-	-	-	-	-	-	-
CE 803A.3	2	1	2	1	-	-	-	-	-	-	-	1
CE 803A.4	2	2	3	1	-	-	-	-	-	-	-	2
CE 803A.5	1	2	3	-	-	-	-	-	-	-	-	-
CE 803A	1.8	1.8	2.8	1	-	-	-	-	-	-	-	1.5

PAPER NAME: WATER RESOURCES MANAGEMENT AND PLANNING

PAPER CODE: CE 803B CONTACTS: 3L +0T =3HRS CREDITS: 3 TOTAL: 36 HRS

Prerequisites: Students will at prelimenary knowledge of hydraulics and water resource acquinted with statistical methods.

Course Outcome:

HU803B.1	Students will identify the resources needed for each stage, including involved stakeholders, tools and supplementary materials
HU803B.2	Students will be able to provide internal stakeholders with information regarding project costs by considering factors such as estimated cost, variances and profits
HU803B.3	Students will describe the time needed to successfully complete a project, considering factors such as task dependencies and task lengths
HU803B.4	Implement project management knowledge, processes, lifecycle and the embodied concepts, tools and techniques in order to achieve project success.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
HU803B.1	-	-	-	-	**3**	**2**	**2**	-	-	-	-	-
HU803B.2	-	-	-	-	-	**3**	**2**	**2**	-	-	**1**	-
HU803B.3	-	-	-	-	-	-	-	-	**3**	**2**	**2**	-
HU803B.4	-	-	-	-	**3**	**2**	**2**	-	-	-	**1**	-
HU803B	-	-	-	-	**3**	**2.33**	**2**	**2**	**3**	**2**	**1.33**	-

PAPER NAME: AIR & NOISE POLLUTION & CONTROL

PAPER CODE: CE803C CONTACTS: 3L +0T =3HRS CREDITS: 3 TOTAL: 36 HRS

Prerequisites:

Basic knowledge of environment pollution and its causes with preliminary knowledge of chemistry knowledge on different impurities are pollutants of air.

Course Outcome:

CE 803C.1	To learn about the air pollutants, sources and its effects.
CE 803C.2	To have a clear understanding on the air quality standards and its techniques.
CE 803C.3	To determine the fluid resistance for organic materials.
CE 803C.4	To find the Properties of air pollution and its control measures.
CE 803C.5	To learn about the effects and the sources of noise pollution.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CE 801A.1	2	2	2	3	1	2	2	-	2	-	-	2
CE 801A.2	2	2	2	3	1	-	-	-	-	-	-	-
CE 801A.3	-	3	2	3	1	-	-	-	-	-	-	-
CE 801A.4	-	1	2	2	1	-	3	-	1	-	-	2
CE 801A.5	-	1	-	2	1	2	3	-	-	-	-	2
CE 801A	1.6	2.33	2.67	2.6	1	2	2.67	-	1	-	-	2

PAPER NAME: REMOTE SENSING AND GIS

PAPER CODE: CE 803D CONTACTS: 3L +0T =3HRS CREDITS: 3
TOTAL: 36 HRS

Pre requisites: Student should knowledge about remote sensing and GIS.

CourseOutcome:

CE803D.1	Student will be able know the introduction of the remote sensing and Geodetics, Triangulation, Trilateration, Tachometry etc.
CE803D.2	Student will be able to know and apply the photogrammetric survey and analyze the problems.
CE803D.3	Student will be able to know and apply the satellite survey. Also analyze and evaluate the problems.
CE803D.4	Student will able to know about the astronomy and GPS system.
CE803D.5	Student will able to know about GIS concept.

CO-PO Mapping:

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CE 803D.1	3	3	3	2	3	1	1	1	3	3	3	3
CE 803D.2	3	3	3	2	2	2	1	1	3	2	3	2
CE 803D.3	-	-	-	-	-	-	-	-	-	-	-	-
CE 803D.4	3	3	3	3	2	2	1	1	3	2	2	2
CE 803D.5	3	3	3	3	2	1	1	1	3	2	1	2
CE 803D	3	3	3	2.5	2.25	1.5	1	1	3	2.25	2.25	2.25

PAPER NAME:PROJECT MANAGEMENT

PAPER CODE: HU 806 CONTACTS: 2L +1T =3HRS CREDITS: 2
TOTAL: 30 HRS

Prerequisites: Knowledge about Building Material , Construction

Course Outcome:

HU806.1	Students will identify the resources needed for each stage, including involved stakeholders, tools and supplementary materials
HU806.2	Students will be able to provide internal stakeholders with information regarding project costs by considering factors such as estimated cost, variances and profits
HU806.3	Students will describe the time needed to successfully complete a project, considering factors such as task dependencies and task lengths
HU806.4	Implement project management knowledge, processes, lifecycle and the embodied concepts, tools and techniques in order to achieve project success.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
HU806.1						3	2		3			3
HU806.2								1		3		3
HU806.3							3		3			1
HU806.4						3	2		3	3		2

NARULA INSTITUTE OF TECHNOLOGY

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81, Nilgunj Rd, Agarpara, Kolkata, West Bengal 700109
www.nit.ac.in | 033 2563 8888