



EXCEL ENGINEERING COLLEGE
(Autonomous)

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
Accredited by NBA(AERO,CSE,ECE&MECH), NAAC with "A+" and Recognised by UGC (2f &12B)
KOMARAPALAYAM - 637303

DEPARTMENT OF CIVIL ENGINEERING
REGULATION - 2017

Course Code:101 Sub Code & Name : HS8151 Communicative English

CO	COURSE OUTCOME
101.1	Read and understand articles of a general kind in magazines and newspapers.
101.2	Participate effectively in Formal and informal conversations; introduce themselves and their friends and express opinions in English
101.3	Comprehend conversations and short talks delivered in English
101.4	Write short essays of a general kind and personal letters and emails in English.
101.5	Speak in informal group activities

Course Code: 102 Sub Code & Name : MA8151 Engineering Mathematics – I

CO	COURSE OUTCOME
102.1	Use both the limit definition and rules of differentiation to differentiate functions.
102.2	Apply the functions of several variables in engineering field.
102.3	Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts.
102.4	Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.
102.5	Apply various techniques in solving differential equations

Course Code: 103 Sub Code & Name : PH8151 Engineering Physics

CO	COURSE OUTCOME
103.1	Gain knowledge on the basics of properties of matter and its applications
103.2	Acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics
103.3	Adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers
103.4	Get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes
103.5	Understand the basics of crystals, their structures and different crystal growth techniques.

Course Code: 104 Sub Code & Name : CY8151 Engineering Chemistry	
CO	COURSE OUTCOME
104.1	Understanding the techniques of treatment of water quality.
104.2	Acquaint with material analysis and properties of alloys.
104.3	Acquaint with material analysis and properties of alloys.
104.4	Know with Utilisation of fuels and energy sources.
104.5	Acquire knowledge of Energy sources and storage devices
Course Code: 105 Sub Code & Name : GE8151 Problem Solving and Python Programming	
CO	COURSE OUTCOME
105.1	Apply algorithm, pseudocode and flow chart for problem solving.
105.2	Write simple Python programs.
105.3	Develop Python programs with various programming constructs and functions.
105.4	Implement lists, tuples and dictionaries in various applications.
105.5	Use of files and file operations efficiently.
Course Code: 106 Sub Code & Name : GE8152 Engineering Graphics	
CO	COURSE OUTCOME
106.1	Perform free hand sketching of basic geometrical constructions, multiple views of objects and curves used in engineering practices.
106.2	Do orthographic projection of lines and plane surfaces inclined to both the principal planes by rotating object method.
106.3	Draw projections of solids like prisms, pyramids, cylinder, cone and truncated solids.
106.4	Draw development of surfaces of solids like prisms, pyramids, cylinder, cone and truncated solids.
106.5	Prepare isometric and perspective sectional views of simple solids with cut- outs and holes.

Course Code: 107 Sub Code & Name :GE8161 Problem Solving and Python Programming Laboratory	
CO	COURSE OUTCOME
107.1	Write, test, and debug simple Python programs.
107.2	Implement Python programs with suitable language constructs.
107.3	Use functions effectively for structuring Python programs.
107.4	Apply suitable data structures in various applications.
107.5	Develop python applications using files
Course Code: 108 Sub Code & Name : BS8161 Physics and Chemistry Laboratory	
CO	COURSE OUTCOME
108.1	Analyze the mechanical properties and thermal properties of materials
108.2	Acquire the practical knowledge about band gap of a semiconductor and in optics such as Interference & Diffraction
108.3	Gaining the knowledge of electrochemical redox reaction
108.4	Apply knowledge of measurement of hardness producing ions, alkalinity, conductance, EMF
108.5	Understand the impact of water quality and to solve engineering problems
Course Code: 109 Sub Code & Name : HS8251 Technical English	
CO	COURSE OUTCOME
109.1	Read technical texts and write area- specific texts effortlessly.
109.2	Listen and comprehend lectures and talks in their area of specialisation successfully.
109.3	Speak appropriately and effectively in varied formal and informal contexts
109.4	Write reports and winning job applications.
109.5	Perform better in interview through various soft skills

Course Code: 110 Sub Code & Name : MA8251 Engineering Mathematics – II	
CO	COURSE OUTCOME
110.1	Understand the use of matrix algebra techniques that is needed by engineers for practical applications.
110.2	Apply the concept of vector calculus in Engineering disciplines
110.3	Evaluate the standard techniques of complex variable to solve core Engineering problems.
110.4	Analysis the real integrals by applying concept of complex integration.
110.5	Understand the knowledge of Laplace Transforms in solving Ordinary Differential Equations.
Course Code: 111 Sub Code & Name : PH8201 Physics For Civil Engineering	
CO	COURSE OUTCOME
111.1	The students will have knowledge on the thermal performance of buildings
111.2	The students will acquire knowledge on the acoustic properties of buildings
111.3	The students will get knowledge on various lighting designs for buildings
111.4	The students will gain knowledge on the properties and performance of engineering materials
111.5	The students will understand the hazards of buildings
Course Code: 112 Sub Code & Name : BE8251 Basic Electrical and Electronics Engineering	
CO	COURSE OUTCOME
112.1	Ability to identify the electrical components and Discuss the essentials of electric circuits and Measurements
112.2	Ability to explain the characteristics of electrical machines.
112.3	Ability to identify electronics components and understand the characteristics
112.4	Ability to understand the digital electronics concepts
112.5	Ability to understand the Fundamentals Concepts of Communication Engineering

Course Code: 113 Sub Code & Name : GE8291 Environmental Science and Engineering

CO	COURSE OUTCOME
113.1	Understanding the Environment Ecosystem Biodiversity.
113.2	Learn the preventive methods of environmental pollution.
113.3	Acquaint with Natural resources and Energy resources.
113.4	Know the social issues and Environment.
113.5	Acquire knowledge of Human population and Environment.

Course Code: 114 Sub Code & Name : GE8292 Engineering Mechanics

CO	COURSE OUTCOME
114.1	Understand the vectorial and scalar representation of forces and moments
114.2	Describe static equilibrium of particles and rigid bodies both in two dimensions and also in three dimensions
114.3	Analyze the properties of surfaces & solids in relation to moment of inertia
114.4	Illustrate the laws of motion, kinematics of motion and their interrelationship
114.5	Comprehend the effect of Friction on general plane motion

Course Code: 115 Sub Code & Name : GE8261 Engineering Practices Laboratory

CO	COURSE OUTCOME
115.1	Illustrate the basic wiring connection of electrical components
115.2	Measure the electrical quantities of circuits
115.3	Recall and Apply the basics of electronic principles to the circuits
115.4	Develop the fabrication of electronic circuits to improve their knowledge.
115.5	Analyze the circuit for application oriented.

Course Code: 116 Sub Code & Name : CE8211 Computer Aided Building Drawing	
CO	COURSE OUTCOME
116.1	Able to draft the plan orientation and joinery details of the building
116.2	Able to draft the plan of load bearing and sloping roof
116.3	Able to draw thw RCC framed building drawings
116.4	Able to draw the industrial building structures
116.5	Able to draft the all kind of building elements by computer software
Course Code: 201 Sub Code & Name : MA8353 Transforms and Partial Differential Equations	
CO	COURSE OUTCOME
201.1	Understand how to solve the given standard partial differential equations
201.2	Solve differential equations using Fourier series analysis which plays a vital role in engineering applications
201.3	Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.
201.4	Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering
201.5	Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems.
Course Code: 202 Sub Code & Name : CE8301 Strength of Materials I	
CO	COURSE OUTCOME
202.1	Understand the concepts of stress and strain, principal stresses and principal planes
202.2	Determine Shear force and bending moment in beams and understand concept of theory of simple bending
202.3	Calculate the deflection of beams by different methods and selection of method for determining slope or deflection
202.4	Apply basic equation of torsion in design of circular shafts and helical springs,
202.5	Analyze the pin jointed plane and space trusses

Course Code: 203 Sub Code & Name : CE8302 Fluid Mechanics	
CO	COURSE OUTCOME
203.1	To get basic knowledge of fluids in static, kinematic and dynamic equilibrium
203.2	To understand and solve the problems related to equation of motion
203.3	To gain knowledge about dimensional and model analysis
203.4	To learn types of flow and losses of flow in pipes
203.5	To understand and solve the boundary layer problems
Course Code: 204 Sub Code & Name : CE8351 Surveying	
CO	COURSE OUTCOME
204.1	To know the various instruments and accessories used for surveying work
204.2	To understand the measurements of horizontal and vertical position and process of the leveling applications
204.3	To know the way of error correction, sources of error and precaution also
204.4	To understand the concepts and methods to determine the progress related to astronomical survey
204.5	To know the concepts and working principle of modern used instruments in surveying
Course Code: 205 Sub Code & Name : CE8391 Construction Materials	
CO	COURSE OUTCOME
205.1	Compost are common and the properties of advanced building materials.
205.2	understand the typical and potential applications of lime, cement and aggregates
205.3	know the production of concrete and also the method of placing and making of concrete elements
205.4	understand the applications of timbers and other materials
205.5	Understand the importance of modern material for construction

Course Code: 206 Sub Code & Name : CE8392 Engineering Geology	
CO	COURSE OUTCOME
206.1	Students able to understand various concepts of geology and Earth structure.
206.2	Students gain knowledge about various types of minerals
206.3	Students will know about various process involved in rocks and its properties
206.4	Students acquire the knowledge of geological structures and geophysical methods etc
206.5	Students gain knowledge about recent techniques involved in geological investigation
Course Code: 207 Sub Code & Name : CE8311 Construction Materials Laboratory	
CO	COURSE OUTCOME
207.1	Knowledge on Testing of Fine Aggregates
207.2	Knowledge on Testing of Coarse Aggregates
207.3	Knowledge on Testing of Concrete
207.4	Knowledge on Testing of Bricks
207.5	Knowledge on Testing of Blocks
Course Code:208 Sub Code & Name : CE8361 Surveying Laboratory	
CO	COURSE OUTCOME
208.1	Acquired Practical Knowledge on Theodolite
208.2	Acquired Practical Knowledge on Total Station
208.3	Acquired Practical Knowledge on GPS
208.4	Acquired to carry out Astronomical Survey
208.5	Acquired to carry out Triangulation Survey

Course Code: 209 Sub Code & Name : HS8381 Interpersonal Skills / Listening and Speaking	
CO	COURSE OUTCOME
209.1	Listen and respond appropriately.
209.2	Participate in group discussions
209.3	Make effective presentations
209.4	Participate confidently and appropriately in conversations formal
209.5	Participate confidently and appropriately in conversations informal
Course Code: 210 Sub Code & Name : MA 8491 Numerical Methods	
CO	COURSE OUTCOME
210.1	Understand the basic concepts and techniques of solving algebraic and transcendental equations.
210.2	Appreciate the numerical techniques of interpolation and error approximations in various intervals in real life situations.
210.3	Apply the numerical techniques of differentiation and integration for engineering problems.
210.4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations
210.5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.
Course Code: 211 Sub Code & Name : CE8401 Construction Techniques and Practices	
CO	COURSE OUTCOME
211.1	know the different construction techniques and structural systems
211.2	Understand various techniques and practices on masonry construction, flooring, and roofing
211.3	Plan the requirements for substructure construction
211.4	Know the methods and techniques involved in the construction of various types of super structures
211.5	Select, maintain and operate hand and power tools and equipment used in the building construction sites.
Course Code: 212 Sub Code & Name : CE8402 Strength of Materials II	

CO	COURSE OUTCOME
212.1	Determine the strain energy and compute the deflection of determinate beams, frames and trusses using energy principles.
212.2	Analyze propped cantilever, fixed beams and continuous beams using theorem of three moment equation for external loadings and support settlements.
212.3	find the load carrying capacity of columns and stresses induced in columns and cylinders
212.4	Determine principal stresses and planes for an element in three dimensional state of stress and study various theories of failure
212.5	Determine the stresses due to Unsymmetrical bending of beams, locate the shear center, and find the stresses in curved beams.

Course Code: 213 Sub Code & Name : CE8403 Applied Hydraulic Engineering

CO	COURSE OUTCOME
213.1	Apply their knowledge of fluid mechanics in addressing problems in open channels.
213.2	Able to identify a effective section for flow in different cross sections.
213.3	To solve problems in uniform, gradually and rapidly varied flows in steady state conditions.
213.4	Understand the principles, working and application of turbines
213.5	Understand the principles, working and application of pumps

Course Code: 214 Sub Code & Name : CE8404 Concrete Technology

CO	COURSE OUTCOME
214.1	The various requirements of cement, aggregates and water for making concrete
214.2	The effect of admixtures on properties of concrete
214.3	The concept and procedure of mix design as per IS method
214.4	The properties of concrete at fresh and hardened state
214.5	The importance and application of special concretes.

Course Code: 215 Sub Code & Name : CE8491 Soil Mechanics	
CO	COURSE OUTCOME
215.1	classify the soil and assess the engineering properties, based on index properties.
215.2	Understand the stress concepts in soils
215.3	Understand and identify the settlement in soils
215.4	Determine the shear strength of soil
215.5	Analyze both finite and infinite slopes.
Course Code: 216 Sub Code & Name : CE 8481 Strength of Materials Laboratory	
CO	COURSE OUTCOME
216.1	Acquire Knowledge on testing of steel rod
216.2	Acquire Knowledge on testing of wooden block
216.3	Have Knowledge on Testing of materials
216.4	Have Knowledge on Testing of structural components
216.5	Determine deflection of beams
Course Code: 217 Sub Code & Name : CE8461 Hydraulic Engineering Laboratory	
CO	COURSE OUTCOME
217.1	Able to measure flow in pipes
217.2	Determine frictional losses
217.3	Able to develop characteristics of pumps
217.4	Able to develop characteristics of turbines.
217.5	Acquire knowledge on flow through pipes

Course Code: 218 Sub Code & Name : HS8461 Advanced Reading and Writing

CO	COURSE OUTCOME
218.1	Write different types of essays.
218.2	Write winning job applications.
218.3	Read and evaluate texts critically.
218.4	Display critical thinking in various professional contexts
218.5	Acquire knowledge on communication

Course Code: 301 Sub Code & Name : CE8501 Design of Reinforced Cement Concrete Elements

CO	COURSE OUTCOME
301.1	Understand the various design methodologies for the design of RC elements.
301.2	Know the analysis and design of flanged beams by limit state method and sign of beams for shear, bond and torsion.
301.3	design the various types of slabs and staircase by limit state method.
301.4	Design columns for axial, uniaxial and biaxial eccentric loadings.
301.5	Design of footing by limit state method.

Course Code: 302 Sub Code & Name : CE8502 STRUCTURAL ANALYSIS I

CO	COURSE OUTCOME
302.1	Analyze continuous beams, pin-jointed indeterminate plane frames and rigid plane frames by strain energy method
302.2	Analyse the continuous beams and rigid frames by slope deflection method.
302.3	Understand the concept of moment distribution and analysis of continuous beams and rigid frames with and without sway.
302.4	Analyse the indeterminate pin jointed plane frames continuous beams and rigid frames using matrix flexibility method.
302.5	Understand the concept of matrix stiffness method and analysis of continuous beams, pin jointed trusses and rigid plane frames.

**Course Code: 303 Sub Code & Name : EN8491
WATER SUPPLY ENGINEERING**

CO	COURSE OUTCOME
303.1	an insight into the structure of drinking water supply systems, including water transport, treatment and distribution **
303.2	•the knowledge in various unit operations and processes in water treatment•
303.3	•an ability to design the various functional units in water treatment
303.4	an understanding of water quality criteria and standards, and their relation to public health••
303.5	•the ability to design and evaluate water supply project alternatives on basis of chosen• criteria.

Course Code: 304 Sub Code & Name : CE8591 FOUNDATION ENGINEERING

CO	COURSE OUTCOME
304.1	Understand the site investigation, methods and sampling.
304.2	Get knowledge on bearing capacity and testing methods.
304.3	Design shallow footings.
304.4	Determine the load carrying capacity, settlement of pile foundation.
304.5	Determine the earth pressure on retaining walls and analysis for stability.

Course Code: 305 Sub Code & Name : CE8511 SOIL MECHANICS LABORATORY

CO	COURSE OUTCOME
305.1	Students are able to conduct tests to determine both the index and engineering properties of soils and to characterize the soil based on their properties.

Course Code: 306 Sub Code & Name : CE8512 WATER AND WASTE WATER ANALYSIS LABORATORY

CO	COURSE OUTCOME
306.1	•Quantify the pollutant concentration in water and wastewater
306.2	•Suggest the type of treatment required and amount of dosage required for the treatment
306.3	•Examine the conditions for the growth of micro-organisms

Course Code: 307 Sub Code & Name : CE8513 SURVEY CAMP	
CO	COURSE OUTCOME
307.1	At the end of the camp, each student shall have mapped and contoured the area. The camp record shall include all original field observations, calculations and plots.
Course Code: 308 Sub Code & Name : GI8013 ADVANCED SURVEYING	
CO	COURSE OUTCOME
308.1	know the astronomical surveying
308.2	do the photogrammetric surveying and interpretation
308.3	solve the field problems with Total station
308.4	know the GPS surveying and the data processing
308.5	understand the route surveys and tunnel alignments
Course Code: 309 Sub Code & Name : Environmental and Agriculture	
CO	COURSE OUTCOME
309.1	Students will appreciate the role of environment in the current practice of agriculture and concerns of sustainability, especially in the context of climate change and emerging global issues. • Ecological context of agriculture and its concerns will be understood
309.2	Ecological context of agriculture and its concerns will be understood
Course Code: 310 Sub Code & Name : CE8601 DESIGN OF STEEL STRUCTURAL ELEMENTS	
CO	COURSE OUTCOME
310.1	Understand the concepts of various design philosophies
310.2	Design common bolted and welded connections for steel structures
310.3	Design tension members and understand the effect of shear lag.
310.4	Understand the design concept of axially loaded columns and column base connections.
310.5	Understand specific problems related to the design of laterally restrained and unrestrained steel beams.

Course Code: 311 Sub Code & Name : CE8602 STRUCTURAL ANALYSIS II

CO	COURSE OUTCOME
311.1	Draw influence lines for statically determinate structures and calculate critical stress resultants.
311.2	• Understand Muller Breslau principle and draw the influence lines for statically indeterminate beams.
311.3	• Analyse of three hinged, two hinged and fixed arches.
311.4	• Analyse the suspension bridges with stiffening girders
311.5	• Understand the concept of Plastic analysis and the method of analyzing beams and rigid frames.

Course Code: 312 Sub Code & Name : CE8603 IRRIGATION ENGINEERING

CO	COURSE OUTCOME
312.1	Have knowledge and skills on crop water requirements.
312.2	Understand the methods and management of irrigation.
312.3	Gain knowledge on types of Impounding structures
312.4	Understand methods of irrigation including canal irrigation.
312.5	Get knowledge on water management on optimization of water use.

Course Code: 313 Sub Code & Name : CE8604 HIGHWAY ENGINEERING

CO	COURSE OUTCOME
313.1	Get knowledge on planning and aligning of highway.
313.2	• Geometric design of highways
313.3	• Design flexible and rigid pavements.
313.4	• Gain knowledge on Highway construction materials, properties, testing methods
313.5	• Understand the concept of pavement management system, evaluation of distress and maintenance of pavements.

Course Code: 314 Sub Code & Name : EN8592
WASTEWATER ENGINEERING

CO	COURSE OUTCOME
314.1	An ability to estimate sewage generation and design sewer system including sewage pumping stations **
314.2	• The required understanding on the characteristics and composition of sewage, self-purification of streams **
314.3	• An ability to perform basic design of the unit operations and processes that are used in sewage treatment ***
314.4	• Understand the standard methods for disposal of sewage. •
314.5	• Gain knowledge on sludge treatment and disposal.

Course Code: 315 Sub Code & Name : CE8611 HIGHWAY ENGINEERING LABORATORY	
CO	COURSE OUTCOME
315.1	Student knows the techniques to characterize various pavement materials through relevant tests.
Course Code: 316 Sub Code & Name : CE8612 IRRIGATION AND ENVIRONMENTAL ENGINEERING DRAWING	
CO	COURSE OUTCOME
316.1	The students after completing this course will be able to design and draw various units of Municipal water treatment plants and sewage treatment plants.
Course Code: 317 Sub Code & Name : HS8581 PROFESSIONAL COMMUNICATION	
CO	COURSE OUTCOME
317.1	Make effective presentations
317.2	Participate confidently in Group Discussions.
317.3	Attend job interviews and be successful in them.
317.4	Develop adequate Soft Skills required for the workplace
Course Code: 401 Sub Code & Name : CE8701 ESTIMATION, COSTING AND VALUATION ENGINEERING	
CO	COURSE OUTCOME
401.1	Estimate the quantities for buildings,
401.2	Rate Analysis for all Building works, canals, and Roads and Cost Estimate.
401.3	Understand types of specifications, principles for report preparation, tender notices types.
401.4	Gain knowledge on types of contracts
401.5	Evaluate valuation for building and land.