





**DEPARTMENT OF CIVIL ENGINEERING**  
**CO-PO MAPPING (REGULATION -2017)**

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
MA8151	ENGINEERING MATHEMATICS -I	CO1: Define the function and limit	K1
		CO2: Solve the derivatives and maxima, minima.	K3
		CO3: Apply the Taylor series expansion in function.	K3
		CO4: Explain the concept of extreme values of the function.	K2
		CO5: Define the definite and indefinite	K1
		CO6: Explain the concept of substitution rule.	K2
		CO7: Apply the concept of double integrals and triple integrals in problems.	K3
		CO8: Solve the double integrals using polar coordinates.	K3
		CO9: Apply the concept of method of variation of parameters in problems.	K1
		CO10: Define complementary function and Particular integral.	K1
		CO11: Solve the simultaneous equations with constant coefficients.	K3

**CO-PO MAPPING**

Cos		Pos											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6							
C3O1.1	K1	1	-	-	-	1	-	-	-	-	-	-	-
C3O1.2	K3	3	2	1	1	1	-	-	-	-	-	-	-
C3O1.3	K3	3	2	1	1	1	-	-	-	-	-	-	-
C3O1.4	K2	2	1	-	-	-	-	-	-	-	-	-	-
C3O1.5	K1	1	-	-	-	1	-	-	-	-	-	-	-
C3O1.6	K2	2	1	-	-	-	-	-	-	-	-	-	-
C3O1.7	K3	3	2	1	1	1	-	-	-	-	-	-	-
C3O1.8	K3	3	2	1	1	1	-	-	-	-	-	-	-
C3O1.9	K3	3	2	1	1	1	-	-	-	-	-	-	-
C3O1.10	K1	1	-	-	-	1	-	-	-	-	-	-	-
C3O1.11	K3	3	2	1	1	1	-	-	-	-	-	-	-

# **DEPARTMENT OF CIVIL ENGINEERING**

## **CO-PO MAPPING (REGULATION -2017)**

Course Code	Course Name	Course Outcome (CO) Students will be able to	Knowledge Level
PH815  ENGINEERING PHYSICS		CO01: Interpret the fundamental knowledge of Physics and its applications in engineering and technology.	K2
		CO02: Apply the concept of depression/ elevation of the beam and get expertise through experimental evidence.	K3
		CO03: Analyze the properties of lasers for low and high energy application.	K3
		CO04: Apply the total internal reflection properties of light in the optical fiber to find out the physical parameters Like variation in temperature ,pressure and displacement using FOC.	K3
		CO05: Identify the mode of heat transfer in heat Exchangers.	K3
		CO06: Make use of the thermal properties of the material insulating Material in a wide range of applications.	K3
		CO07: Summarize the drawback of Classical Physics and overcome these drawback by quantum theory concept.	K2
		CO08: Make use of quantum theory concept to study the working of Scanning Tunneling Microscope technique And its Benefits.	K3
		CO09: Infer the basics of crystals and its structures.	K2
		CO10: Outline the different crystals growth techniques, and its advantages and disadvantages.	K2

## **CO-POMAPPING**



**DEPARTMENT OF CIVIL ENGINEERING  
REGULATION 2017  
B.E. CIVIL COURSE OUTCOMES (CO)**

Course code	Course Name	Course Outcome (CO) Students will be able to	Knowledge level
CY8151	Engineering Chemistry	CO1: Develop innovative methods to produce soft water for industrial use and potable water at cheaper cost	K3
		CO2: Identify and apply suitable water treatment techniques	K3
		CO3: Understand the types of adsorption and catalysis which is used in industries	K2
		CO4: Define and analyze engineering related problems and metal finishing in achieving a practical solution	K3
		CO5: Demonstrate the knowledge of phase rule applied in various industries	K2

CO – PO MAPPING



**DEPARTMENT OF CIVIL ENGINEERING  
REGULATION 2017**

**GE8161 PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY**

Course code	Course Name	Description	Knowledge Level
GE8161	<b>PROBLEM SOLVING AND PYTHON PROGRAMMING</b>	Write, test, and debug simple Python programs.	K1
		Apply the concept of conditionals and loops in Python programs.	K3
		Develop the Python programs step-wise by defining functions and calling them.	K4
		Use Python lists, tuples, dictionaries for representing compound data.	K3
		Read and write data from/to files in Python.	K1
		Apply the concept of Pygame.	K3
		Exhibit ethical principles in engineering practices	K3
		Perform task as an individual and / or team member to manage the task in time	K3
		Express the Engineering activities with effective presentation and report.	K3
		Interpret the findings with appropriate technological / research citation.	K2

Cos		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6							
C107.1	K1	1	1	1	1	-	-	-	-	-	-	-	-
C107.2	K3	3	2	2	1	3	-	-	-	-	-	-	-
C107.3	K4	3	3	3	2	3	-	-	-	-	-	-	-
C107.4	K3	3	2	2	1	3	-	-	-	-	-	-	-
C107.5	K1	1	1	1	1	1	-	-	-	-	-	-	-
C107.6	K3	3	2	2	1	3	-	-	-	-	-	-	-
C107.7	K3	-	-	-	-	-	-	-	3	-	-	-	-
C107.8	K3	-	-	-	-	-	-	-	-	3	-	3	-
C107.9	K3	-	-	-	-	-	-	-	-	-	3	-	-
C107.10	K2	-	-	-	-	-	-	-	-	-	-	-	3
Avg		2	2	2	1	3	-	-	3	3	3	3	3



**DEPARTMENT OF CIVIL ENGINEERING**  
**CO-PO MAPPING (REGULATION -2017)**

Course Code	Course Name	Course Outcome (CO) Students will be able to	Knowledge Level
GE8152	Engineering Graphics	<b>CO1:</b> Know freehand sketching of basic geometrical constructions.	K1
		<b>CO2:</b> Draw orthographic projections of lines and plane surfaces.	K3
		<b>CO3:</b> Develop 3D solid computer models.	K3
		<b>CO4:</b> Develop the visualize and to project isometric and perspective sections of simple solids.	K3
		<b>CO5:</b> Apply the knowledge of development of surface in manufacturing and Rapid Prototyping Methods.	K3
		<b>CO6:</b> Make use of the fundamentals and standards of Engineering graphics.	K3
		<b>CO7:</b> Draw isometric and perspective views of the simple solids.	K3
		<b>CO8:</b> Apply Orthographic projections of real time parts in the engineering Field.	K3
		<b>CO9:</b> Project the sectioned solids and true shape of the section.	K4

CO-PO Mapping

CO		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5 /K6							
CO1	K2	1	-	-	-	-	-	-	-	-	-	-	-
CO2	K2	3	2	1	1	-	-	-	-	-	-	-	-
CO3	K3	3	2	1	1	-					1		
CO4	K2	3	2	1	1	-	-	-	-	-	-	-	-
CO5	K2	3	2	1	1	-					1		
CO6	K2	3	2	1	1	3	-	-	-	-	-	-	-
CO7	K2	3	2	1	1	3							
CO8	K3	3	2	1	1	3	-	-	-	-	1	-	-
CO9	K4	3	3	2	2	3							



**UG/CIVILENGG – II SEMESTER /FIRST YEAR**

**DEPARTMENT OF CIVIL ENGINEERING**

**COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome			Knowledge Level
		Students will be able to			
HS8251	HS8251 TECHNICAL ENGLISH	C101.1	Communicate and discuss a broad range of technical information with colleagues and clients related to the Engineering industry.(K3)	K3	
		C101.2	Explain and produce summaries that include correctly written introductory sentences and accurate paraphrases of the main ideas and key details, approximately one fourth in length of the original passages, without plagiarizing. (K2)	K2	
		C101.3	Identify the common types of support in arguments, their relevance or irrelevance, common argument flaws, opposing points of views, and refutations. (K1)	K1	
		C101.4	Understand the functions of essays and reports and demonstrate writing skills (K2)	K2	
		C101.5	Execute the method of participation in the Group Discussion and acquire the oral skills and the body language used for effective Group Discussion.(K5)	K5	

**CO-PO Mapping**

CO		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5 /K6							
C101.1	K3	2	-	-	-	-	-	-	-	-	2		1
C101.2	K2	1	-	-	-	-	-	-	-	-	1		-
C101.3	K1	-	-	-	-	-	-	-	-	-	-		-
C101.4	K2	1	-	-	-	-	-	-	-	-	1		-
C101.5	K5	2	-	-	-	-	-	-	-	-	2		2
C101		1.2	-	-	-	-	-	-	-	-	1.2		0.6

## DEPARTMENT OF CIVIL ENGINEERING

### COURSE OUTCOMES – REGULATION 2017

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
MA8251	ENGINEERING MATHERMATICS - II	CO1:Define the characteristic equation	K1
		CO2: Understand the Eigen values and Eigen vectors	K2
		CO3: Define Vector identities	K1
		CO4: Explain the theorems of Gauss divergence, Green's and Stoke's	K2
		CO5:Explain the Cauchy-Riemann equations	K2
		CO6: Evaluate the problems based on Conformal mapping	K3
		CO7: Define Cauchy's integral formula	K1
		CO8: Evaluate the problems based on contour integration	K3
		CO9: Understand the Laplace transforms of Elementary functions	K2
		CO10: Evaluate the linear second order differential equations with constant coefficients	K3

### CO-PO MAPPING

COs		POs											
		P O 1	P O 2	P O 3	P O 4	P O 5	P O 6	P O 7	P O 8	P O 9	P O 10	P O 11	P O 12
		K 3	K 4	K 5	K 5	K3/K5/K 6	K 4	K 2	K 3	K 3	K 2	K 3	K 3
C2O1.1	K1	1	-	-	-	-	-	-	-	-	-	-	-
C2O1.2	K2	2	1	1	-	-	-	-	-	-	-	-	-
C2O1.3	K1	1	-	1	-	-	-	-	-	-	-	-	-
C2O1.4	K2	2	1	-	-	-	-	-	-	-	-	-	-
C2O1.5	K2	2	1	-	-	-	-	-	-	-	-	-	-
C2O1.6	K3	3	2	1	1	1	-	-	-	-	-	-	-
C2O1.7	K1	1	-	-	-	-	-	-	-	-	-	-	-
C2O1.8	K3	3	2	-	1	1	-	-	-	-	-	-	-
C2O1.9	K2	2	1	1	-	-	-	-	-	-	-	-	-
C2O1.10	K3	3	2	-	1	1	-	-	-	-	-	-	-



**DEPARTMENT OF CIVIL ENGINEERING**  
**COURSE OUTCOMES – REGULATION 2017**

<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcome (CO) Students will be able to</b>	<b>Knowledge Level</b>
PH8253	ENGINEERING PHYSICS II	CO01: Classify the materials into metals, semiconductors and insulators on the basis of band theory of solids.	K2
		CO02: Identify the properties of intrinsic and extrinsic semiconductors.	K3
		CO03: Compare the magnetic and dielectric properties of materials.	K2
		CO04: Apply the concept of optoelectronics and get expertise in photodiode, LED, solar cells etc.	K3
		CO05: Make use of quantum theory concepts to study the density of states in various dimensions.	K2

**CO-PO MAPPING**

COs		POs											
		P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
CO1	K2	2	1	-	-	-	-	-	-	-	-	-	-
CO2	K3	3	2	-	-	-	-	-	-	-	-	-	-
CO3	K2	2	1	-	-	-	-	-	-	-	-	-	-
CO4	K3	3	2	-	-	-	-	-	-	-	-	-	-
CO5	K2	2	1	-	-	-	-	-	-	-	-	-	-
AVERAGE:		2.4	1.4	-	-	-	-	-	-	-	-	-	-

\*\* 3 – High Correlation, 2- Medium Correlation, 1- Low Correlation.



**DEPARTMENT OF CIVIL ENGINEERING**  
**COURSE OUTCOMES – REGULATION 2017**

Course code	Course Name	Course Outcome (CO) Students will be able to	Knowledge level
GE8291	Environmental science and engineering	CO1: Ecological succession process	K2
		CO2: Threats to biodiversity	K3
		CO3: Solid waste management	K1
		CO4: Role of individual in prevention of pollution	K3
		CO5: Timber extraction and forest resources	K2

**CO – PO MAPPING**

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
CO1	K2	2	1	-	-	2	-	-	-	-	-	-	-
CO2	K3	3	2	1	1	3	-	-	-	-	-	-	-
CO3	K1	1	-	-	-	1	-	-	-	-	-	-	-
CO4	K3	3	2	1	1	3	-	-	-	-	-	-	-
CO5	K2	2	1	-	-	2	-	-	-	-	-	-	-
Average		2.2	1.2	0.4	0.4	2.2	-	-	-	-	-	-	-



**DEPARTMENT OF CIVIL ENGINEERING**  
**COURSE OUTCOMES – REGULATION 2017**

<b>Course code</b>	<b>Course Name</b>	<b>Course Outcome (CO)</b> <b>Students will be able to</b>	<b>Knowledge level</b>
BE8251	Basic Electrical and Electronics Engineering	understand the concepts related with electrical circuits	K1
		identify the electrical components and explain the characteristics of electrical machines.	K1
		identify electronics components and understand the characteristics	K1
		understand the working principle of electronic devices such as diode and zener diode	K1
		understand the concept of communication Engineering	K1

## CO-PO Mapping



# **DEPARTMENT OF CIVIL ENGINEERING**

## **CO-PO MAPPING (REGULATION -2017)**

Course Code	Course Name	Course Outcome (CO) Students will be able to	Knowledge Level
GE8292	Engineering Mechanics	<b>CO1:</b> Calculate the various representations of scalar and vector.	K2
		<b>CO2:</b> Determine the resultant forces and /or moments.	K2
		<b>CO3:</b> Apply Newton's law and conservation laws to elastic collisions and motion of rigid bodies.	K3
		<b>CO4:</b> Identify the moment of inertia of composite figures.	K2
		<b>CO5:</b> Determine the centroid and second moment of area of section s.	K2
		<b>CO6:</b> Calculate the dynamic forces exerted in rigid bodies.	K2
		<b>CO7:</b> Determine the translational motions in dynamics of particles.	K2
		<b>CO8:</b> Apply laws of mechanics to determine efficiency of simple machines with consideration of friction.	K3
		<b>CO9:</b> Analyze the simple systems with sliding friction wedge friction.	K4

CO-PO Mapping

### UG/CIVILENGG – III SEMESTER

#### DEPARTMENT OF CIVIL ENGINEERING

#### COURSE OUTCOMES – REGULATION 2017

Course Code	Course Name	Course Outcome (CO) Students will be able to			Knowledge Level	
MA8353	TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS	C201.1	CO1: Understand how to solve the given standard partial differential equations			K2
		C201.2	CO2: Solve differential equations using Fourier series analysis which plays a vital role in engineering applications			K2
		C201.3	CO3: Appreciate the physical significance of Fourier series techniques in solving one- and two-dimensional heat flow problems and one-dimensional wave equations.			K3
		C201.4	CO4: 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.			K3
		C201.5	CO5: Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems.			K3

#### CO-PO MAPPING

COs		Pos											
		PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
C201.1	K2	2	1	-	-	1	-	-	-	-	-	-	-
C201.2	K2	2	1	-	1	-	-	-	-	-	-	-	-
C201.3	K3	3	2	1	-	1	-	-	-	-	-	-	-
C201.4	K3	3	2	1	1	1	-	-	-	-	-	-	-
C201.5	K3	3	2	1	1	-	-	-	-	-	-	-	-
201		2.6	1.6	1	1	1	-	-	-	-	-	-	-



DEPARTMENT OF CIVIL ENGINEERING

## **COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
CE8301	STRENGTH OF MATERIALS - I	C202.1	<b>Interpreting</b> the fundamental concepts of stress, strain and deformation of solids. (K2)	K2
		C202.2	<b>Find</b> the shear force and bending moment in beams and understanding the concept of theory of simple bending. (K3)	K3
		C202.3	<b>Find</b> the deflection of beams by different methods and selection of method for determining slope or deflection. (K3)	K3
		C202.4	<b>Use</b> the basic equation of torsion in design of circular shafts and helical springs. (K3)	K3
		C202.5	<b>Analyse</b> the pin jointed plane and space trusses. (K3)	K3

CO-PO MAPPING



**DEPARTMENT OF CIVIL ENGINEERING**

**COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
CE8302	FLUID MECHANICS	C203.1	<b>Interpreting</b> the basic knowledge of fluids in static, kinematic and dynamic equilibrium.	K2
		C203.2	<b>Understand</b> and solve the problems related to equation of motion.	K2
		C203.3	<b>Apply</b> the knowledge about dimensional and model analysis.	K3
		C203.4	<b>Comparing</b> the types of flow and losses of flow in pipes.	K2
		C203.5	<b>Understand</b> and solve the boundary layer problems.	K2

CO-PO MAPPING





**DEPARTMENT OF CIVIL ENGINEERING**  
**COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
CE8391	CONSTRUCTION MATERIALS	C205.1	Compare the properties of most common and advanced building material (K3)	K3
		C205.2	Understand the typical and potential applications of lime, cement and aggregates (K2)	K2
		C205.3	Know the production of concrete and also the method of placing and making of concrete elements(K2)	K2
		C205.4	Understand the applications of timbers and other materials (K2)	K2
		C205.5	Understand the importance of modern material for construction. (K2)	K2

CO-PO MAPPING





### UG/CIVILENGG – IV SEMESTER

#### DEPARTMENT OF CIVIL ENGINEERING

#### COURSE OUTCOMES – REGULATION 2017

Course Code	Course Name	Course Outcome				Knowledge Level		
		Students will be able to						
MA8491	Numerical Methods	C201.1	CO1: Define algebraic and transcendental equations.				K3	
		C201.2	CO2: Solve the equations and Eigen value problems.				K3	
		C201.3	CO3: Appreciate the numerical techniques of interpolation and error approximations in various intervals in real life situations.				K2	
		C201.4	CO4: Apply the numerical techniques of differentiation and integration for engineering problems.				K2	
		C201.5	CO5: Understand the knowledge of various numerical techniques and methods for solving first and second order ordinary differential equations				K2	

#### CO-PO MAPPING

CO	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	K3	K4	K5	K5	K3/K5 /K6							
C201.1	K3	3	2	1	1	-	-	-	-	-	-	-
C201.2	K3	3	2	1	1	-	-	-	-	-	-	-
C201.3	K2	2	1	0	0	-	-	-	-	-	-	-
C201.4	K2	2	1	0	0	-	-	-	-	-	-	-
C201.5	K2	2	1	0	0	-	-	-	-	-	-	-
C201		2.4	1.4	0.4	0.4	-	-	-	-	-	-	-

**DEPARTMENT OF CIVIL ENGINEERING**  
**COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
CE8401	CONSTRUCTION TECHNIQUES AND PRACTICES	C202.1	Know the different construction techniques and structural systems(K2)	K2
		C202.2	Understand various techniques and practices on masonry construction, flooring, and roofing (K2)	K2
		C202.3	Plan the requirements for substructure construction (K3)	K2
		C202.4	Know the methods and techniques involved in the construction of various types of super structures(K2)	K2
		C202.5	Select, maintain and operate hand and power tools and equipment used in the building construction sites (K2)	K3

## CO-PO Mapping



**DEPARTMENT CIVIL ENGINEERING**  
**COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome					Knowledge Level
		Students will be able to					
CE8402	<b>STRENGTH OF MATERIALS II</b>	C203.1	CO1: Application of energy theorems for computing deflections in determinate beams , plane frames and plane trusses				K2
		C203.2	CO2: Concept of Analysis, Propped cantilever and fixed beams, fixed end moments and reactions, sinking and rotation of supports				K2
		C203.3	CO3: Construct a unsymmetrical bending of beams of symmetrical and unsymmetrical sections				K3
		C203.4	CO4: Understand critical load for prismatic columns with different end conditions				K3
		C203.5	CO5: analysis of continuous beams, shear force and bending moment diagrams.				K3

**CO-PO MAPPING**

CO		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5 /K6							
C203.1	K2	2	1	-	-	1	-	-	-	-	-	-	-
C203.2	K2	2	1	-	1	-	-	-	-	-	-	-	-
C203.3	K3	3	2	1	-	1	-	-	-	-	-	-	-
C203.4	K3	3	2	1	1	1	-	-	-	-	-	-	-
C203.5	K3	3	2	1	1	-	-	-	-	-	-	-	-
C203		2.6	1.6	1	1	1	-	-	-	-	-	-	-

**DEPARTMENT CIVIL ENGINEERING**

**COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
CE8403	APPLIED HYDRAULIC ENGINEERING	C204.1	Compare pipe flow and channel flow.	K2
		C204.2	Apply the flow profiles in dynamic equation.	K3
		C204.3	Explain the type of Surges	K2
		C204.4	Classify the types of turbine based on specific speed.	K2
		C204.5	Solve the problems in centrifugal and reciprocating pump.	K3

CO-PO MAPPING



**DEPARTMENT OF CIVIL ENGINEERING**  
**COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
CE8404	Concrete Technology	C205.1	Understand the various requirements of cement, aggregates and water for making concrete. (k2)	K2
		C205.2	Understand the effect of admixtures on properties of concrete (k2)	K2
		C205.3	Understand the concept and procedure of mix design as per IS method (K2)	K2
		C205.4	Understand the properties of concrete at fresh and hardened state (K2)	K2
		C205.5	Understand the importance and application of special concretes. (k2)	K2

CO-PO MAPPING



**DEPARTMENT OF CIVIL ENGINEERING**  
**COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome			Knowledge Level		
		Students will be able to					
CE8491	Soil Mechanics	C206.1	Carryout the field investigations and to identify soils in geotechnical engineering practises (k3)			K3	
		C206.2	Carryout the soil parameters such as permeability, compaction (k3)			K3	
		C206.3	Understand the fundamental concepts of compaction, flow through soils, stress transformation, stress distribution, consolidation(k2)			K2	
		C206.4	Understand and identify the settlement in soils, stress concepts in soils(k2)			K2	
		C206.5	Compare both finite and infinite slopes(k2)			K2	

**CO-PO MAPPING**

CO	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	K3	K4	K5	K5	K3/K5 /K6							
C206.1	K3	3	2	1	1	-	-	-	-	-	-	-
C206.2	K3	3	2	1	1	-	-	-	-	-	-	-
C206.3	K2	2	1	0	0	-	-	-	-	-	-	-
C206.4	K2	2	1	0	0	-	-	-	-	-	-	-
C206.5	K2	2	1	0	0	-	-	-	-	-	-	-
C206		2.4	1.4	0.4	0.4	-	-	-	-	-	-	-



## UG/CIVILENGG – V SEMESTER

### DEPARTMENT OF CIVIL ENGINEERING

### COURSE OUTCOMES – REGULATION 2017

Course Code	Course Name	Course Outcome				Knowledge Level		
		Students will be able to						
CE8501	DESIGN OF REINFORCED CEMENT CONCRETE ELEMENTS	C301.1	<b>Apply and design</b> the various basic elements such as beams, slabs using working stress method and limit state method (k3)				K3	
		C301.2	<b>Apply</b> the behavior of the RC beams in shear and torsion (k3)				K3	
		C301.3	<b>Apply</b> the Design of different types of slabs and stair cases under different loading conditions (k3)				K2	
		C301.4	<b>Apply</b> the <b>design</b> of short rectangular and circular columns under different bending (k3)				K3	
		C301.5	<b>Explain</b> the different types of loadings on footings, column, beam, slab (k2)				K2	

### CO-PO Mapping

CO	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	K3	K4	K5	K5	K3/K5 /K6							
C301.1	K3	2	1	-	-	-	-	-	-	-	-	-
C301.2	K3	3	2	1	1	-	-	-	-	-	-	-
C301.3	K2	3	2	1	1	-	-	-	-	-	-	1
C301.4	K3	3	2	1	-	-	-	-	-	-	-	-
C301.5	K2	3	2	1	1	-	-	-	-	-	-	1
C301.1		2.8	1.8	0.8	0.6	-	-	-	-	-	-	0.4



**DEPARTMENT OF CIVIL ENGINEERING**  
**COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome			Knowledge Level
		Students will be able to			
CE8502	STRUCTURAL ANALYSIS I	C302.1	Analyze continuous beams, pin-jointed indeterminate plane frames and rigid plane frames by strain energy method (k4)	K4	
		C302.2	Analyse the continuous beams and rigid frames by slope deflection method (k4)	K4	
		C302.3	Understand the concept of moment distribution and analysis of continuous beams and rigid frames with and without sway (k2)	K2	
		C302.4	Analyse the indeterminate pin jointed plane frames continuous beams and rigid frames using matrix flexibility method (k4)	K4	
		C302.5	Understand the concept of matrix stiffness method and analysis of continuous beams, pin jointed trusses and rigid plane frames (k2)	K2	

**CO-PO Mapping**

CO	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	K3	K4	K5	K5	K3/K5 /K6							
C302.1	K4	3	2	3	-	-	-	-	-	-	-	-
C302.2	K4	3	2	3	-	-	-	-	-	-	-	-
C302.3	K2	2	1	2	1	1	-	-	-	-	-	-
C302.4	K4	2	2	3	1	1	-	-	-	-	-	-
C302.5	K2	2	1	2	1	1	-	-	-	-	-	-
C302		2.4	1.6	1.6	2.6	0.6	-	-	-	-	-	-



**DEPARTMENT OF CIVIL ENGINEERING**  
**COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome			Knowledge Level
		Students will be able to			
EN8491	WATER SUPPLY ENGINEERING	C304.1	Understand an insight into the structure of drinking water supply systems, including water transport, treatment and distribution. (k2)	K2	
		C304.2	Apply the knowledge in design of transmission. (k3)	K3	
		C304.3	Apply the design of water treatment plant units. (K3)	K3	
		C304.4	Understand the concepts of advanced water treatment. (k2)	K2	
		C304.5	Understand the concept of analysis of distribution networks. (k2)	K2	

CO-PO Mapping



## **DEPARTMENT OF CIVIL ENGINEERING**

## **COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
CE8591	FOUNDATION ENGINEERING	C304.1	Understand the site investigation, methods and sampling (K2)	K2
		C304.2	Get knowledge on bearing capacity and testing methods (K2)	K2
		C304.3	Design shallow footings (K3)	K3
		C304.4	Determine the load carrying capacity, settlement of pile foundation (K3)	K3
		C304.5	Determine the earth pressure on retaining walls and analysis for stability (K3)	K3

## CO-PO Mapping



**DEPARTMENT OF CIVIL ENGINEERING  
REGULATION 2017**

**B. E. CIVIL ENGINEERING - COURSE OUTCOMES (CO)**

Course Code	Course Name	Course Outcome (CO) Students will be able to	Knowledge Level
GE8071	DISASTER MANAGEMENT	CO1: Differentiate the types of disasters, causes and their impact on environment and society Assess vulnerability and various methods of risk reduction measures as well as mitigation	K2
		CO2: Draw the hazard and vulnerability profile of India, Scenarios in the Indian context, Disaster damage assessment and management.	K2
		CO3: To develop rudimentary ability to respond to their surroundings with potential disaster response in areas where they live, with due sensitivity	K3
		CO4: To gain a preliminary understanding of approaches of Disaster Risk Reduction (DRR)	K3
		CO5: analysis of continuous beams, shear force and bending moment diagrams.	K3

**CO-PO MAPPING**

COs		Pos											
		PO1	PO2	PO3	PO4	PO5	PO 6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
CO1	K2	2	1	-	-	1	-	-	-	-	-	-	-
CO2	K2	2	1	-	1	-	-	-	-	-	-	-	-
CO3	K3	3	2	1	-	1	-	-	-	-	-	-	-
CO4	K3	3	2	1	1	1	-	-	-	-	-	-	-
CO5	K3	3	2	1	1	-	-	-	-	-	-	-	-
<b>Average</b>		2.6	1.6	1	1	1	-	-	-	-	-	-	-

\*3- High correlation; 2- Medium correlation; 1- Low correlation



**DEPARTMENT OF CIVIL ENGINEERING  
REGULATION 2017**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
: ORO551	RENEWABLE ENERGY SOURCES	C306.1	<b>Interpreting</b> the solar radiation and its environmental impacts to power.(K2)	K2
		C601.2	Compute the bolt value for bolted connections.	K3
		C306.2	<b>Classify</b> the various collectors used for storing solar energy. (K2)	K2
		C306.3	<b>Explaining</b> the various applications in solar energy.(K2)	K2
		C306.4	<b>Summarizing</b> the wind energy and biomass and its economic aspects.(K2)	K2

CO-PO MAPPING





**DEPARTMENT OF CIVIL ENGINEERING**  
**COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome			Knowledge Level
		Students will be able to			
CE8602	STRUCTURAL ANALYSIS II	C311.1	<b>Apply</b> and design principles of influence lines for member forces in determining reactions in pin jointed plane frames (k3)		K3
		C311.2	<b>Implement</b> Muller Breslau's principle in solving problems (k3)		K3
		C311.3	<b>Use</b> analysis of three hinged arches in solving complex problems (k3)		K3
		C311.4	<b>Carryout</b> problems of cables with three hinged stiffening girders (k3)		K3
		C311.5	<b>Clarify</b> why plastic hinge and mechanism are being used (k2)		K2

**CO-PO Mapping**

CO	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	K3	K4	K5	K5	K3/K5 /K6							
C311.1	K3	3	2	1	1	1	-	-	-	2	2	-
C311.2	K3	3	2	1	1	1	-	-	-	2	2	-
C311.3	K3	3	2	1	1	1	-	-	-	2	2	-
C311.4	K3	3	2	1	1	1	-	-	-	2	2	-
C311.5	K2	2	1	-	-	2	-	-	-	-	-	-
C311		2.8	1.8	0.8	0.8	1.2	-	-	-	1.6	1.6	-



## DEPARTMENT CIVIL ENGINEERING

### COURSE OUTCOMES – REGULATION 2017

Course Code	Course Name	Course Outcome				Knowledge Level		
		Students will be able to						
CE8603	IRRIGATION ENGINEERING	C603.1	<b>Interpreting</b> need and classification of irrigation.(K2)				K2	
		C603.2	<b>Classify</b> the various methods irrigation system.(K2)				K2	
		C603.3	<b>Explaining</b> the design of channels and other irrigation structures.				K2	
		C603.4	<b>Classify</b> the cross drainage works and canal alignments (K2)				K2	
		C603.5	<b>Explaining</b> water management in irrigation. (K2)				K2	

#### CO-PO Mapping

CO		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5 /K6							
C603.1	K2	2	1	-	-	-	-	1	-	-	-	-	-
C603.2	K2	2	1	1		-	-	-	-	-	-	-	-
C603.3	K2	2	1	1	-	-	-	1	-	-	-	-	-
C603.4	K2	2	1	-	-	-	-	-	-	-	-	-	-
C603.5	K2	2	1	-	-	-	-	-	-	-	-	-	-
C603		2	1	1	-	-	-	0.4	-	-	-	-	-



**DEPARTMENT OF CIVIL ENGINEERING**

**COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
CE8604	CE8604 HIGHWAY ENGINEERING	C304.1	Understand the knowledge on planning and aligning of highway. (k2)	K2
		C304.2	Apply the knowledge in Geometric design of highways. (k3)	K3
		C304.3	Apply the design flexible and rigid pavements.(K3)	K3
		C304.4	Understand the highway construction materials, properties, testing methods (k2)	K2
		C304.5	Understand the concept of pavement management system, evaluation of distress and maintenance of pavements.. (k2)	K2

CO-PO Mapping



**DEPARTMENT OF CIVILENGINEERING**  
**COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome					Knowledg e Level
		Students will be able to					
EN8592	WASTEWATER ENGINEERING	C306.1	<b>Carrying</b> out to estimate sewage generation and design sewer system including sewage pumping stations				K3
		C306.2	<b>Classify</b> the characteristics and composition of sewage, self-purification of streams.				K2
		C306.3	<b>Comparing</b> the perform basic design of the unit operations and processes that are used in sewage treatment.				K2
		C306.4	<b>Explain</b> the standard methods for disposal of sewage.				K2
		C306.5	<b>Interpret</b> knowledge on sludge treatment and disposal.				K2

**CO-PO Mapping**

CO		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5 /K6							
C306.1	K3	3	2	1	-	-	-	-	-	-	-	-	-
C306.2	K2	2	1	-	-	-	-	-	-	-	1	-	-
C306.3	K2	2	1	-	-	-	-	-	-	-	1	-	-
C306.4	K2	2	1	-	-	-	-	-	-	-	1	-	-
C306.5	K2	2	1	-	-	-	-	-	-	-	1	-	-
C306		2.2	1.2	0.2	-	-	-	-	-	-	0.8	-	-



**DEPARTMENT OF CIVIL ENGINEERING**  
**COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome				Knowledge Level	
		Students will be able to					
CE8005	AIR POLLUTION AND CONTROL ENGINEERING	C302.1	Understanding of the nature and characteristics of air pollutants, noise pollution and basic concepts of air quality management (k2)				
		C302.2	Identify, formulate and solve air and noise pollution problems (k2)				
		C302.3	Design stacks and particulate air pollution control devices to meet applicable standards (k3)				
		C302.4	Ability to select control air pollution equipments (k2)				
		C302.5	ability to ensure quality, control and preventive measures (k2)				

**CO-PO Mapping**

CO	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	K3	K4	K5	K5	K3/K5 /K6							
C302.1	K2	2	1	2	1	1	-	-	-	-	-	-
C302.2	K2	2	1	2	1	1	-	-	-	-	-	-
C302.3	K3	3	2	1	-	-	-	1	2	-	1	-
C302.4	K2	2	2	3	1	1	-	-	-	-	-	-
C302.5	K2	2	1	2	1	1	-	-	-	-	-	-
C302		2.4	1.6	1.6	2.6	0.6	-	-	-	-	-	-

**UG/CIVILENGG – VII SEMESTER**

**DEPARTMENT OF CIVIL ENGINEERING**

**COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
CE6704	Estimation and quantity surveying	C404.1	Apply basic concepts of estimation in evaluating construction cost	K3
		C404.2	Use the standard rules for taking measurements and recording dimensions	K3
		C404.3	Apply logical thoughts and prepare the rate analysis and bills	K3
		C404.4	Find the depreciation value for machineries and buildings using principles of valuation	K4
		C404.5	Explain the principles for report preparation	K2

CO-PO Mapping



**DEPARTMENT OF CIVIL ENGINEERING**  
**COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
CE8702	RAILWAYS, AIRPORTS, DOCKS AND HARBOUR ENGINEERING	C402.1	Understand the knowledge on railway planning and construction (k2)	K2
		C402.2	Understand the concept on railway construction and maintenance (k2)	K2
		C402.3	Apply the knowledge in airport planning (K3)	K3
		C402.4	Apply the design of airport design (K3)	K3
		C402.5	Understand the planning and design of harbors (k2)	K2

**CO-PO Mapping**

CO		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5 /K6							
C402.1	K2	2	1	1	-	-	-	-	-	-	-	-	-
C402.2	K2	2	1	1	-	-	-	-	-	-	-	-	-
C402.3	K3	3	2	2	2	1	-	-	-	-	-	-	-
C402.4	K3	3	2	2	2	1	-	-	-	-	-	-	-
C402.5	K2	3	2	1	1	1	-	-	-	-	-	-	-
C402		2.6	1.6	1.6	1	0.6	-	-	-	-	-	-	-



**DEPARTMENT OF CIVIL ENGINEERING**  
**COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
CE8703	<b>STRUCTURAL DESIGN AND DRAWING</b>	C703.1	Explain the design procedure of Cantilever and Counter fort Retaining Walls	K2
		C703.2	Compute the reinforcement of RC Solid Slab Bridge	K3
		C703.3	Determine the forces in Hemispherical Bottomed Steel Water Tank	K3
		C703.4	Explain the behaviour of different Steel Roof Trusses under wind load	K2
		C703.5	Apply the codal provisions for the design of Industrial Gantry Girders	K3

**CO-PO Mapping**

CO		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5 /K6							
C703.1	K2	2	1	-	-	-	-	-	-	-	-	-	-
C703.2	K3	3	2	1	1	-	-	-	-	-	-	-	-
C703.3	K3	3	2	1	1	-	-	-	-	-	-	-	-
C703.4	K2	2	1	-	-	-	-	-	-	-	-	-	-
C703.5	K3	3	2	1	1	-	-	-	-	-	-	-	-
C703		2.6	1.6	1.6	1	0.6	-	-	-	-	-	-	-



**DEPARTMENT OF CIVIL ENGINEERING**

**COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
EN8592	MUNICIPAL SOLID WASTE MANAGEMENT	C404.1	<b>Understand</b> of the nature and characteristics of municipal solid wastes and the regulatory requirements regarding municipal solid waste management.	K2
		C404.2	<b>Explain</b> Reduction, reuse and recycling of waste	K2
		C404.3	<b>Ability</b> to plan and design systems for storage, collection, transport, processing and disposal of municipal solid waste	K3
		C404.4	<b>Comparing</b> knowledge on the issues on solid waste management from an integrated and holistic perspective, as well as in the local and international context.	K2
		C404.5	<b>Understand</b> to Design and operation of sanitary landfill	K2

CO-PO Mapping



**DEPARTMENT OF CIVIL ENGINEERING**  
**COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome				Knowledge Level	
		Students will be able to					
OTT 752	TEXTILE EFFLUENT TREATMENTS	C401.1	Understand the textile processing related causes for pollution. (k2)		K2		
		C401.2	Understand the textile processing related causes for pollution. (k2)		K2		
		C401.3	Understand the effluent discharge standards and different processes involved in waste water treatment. (k2)		K2		
		C401.4	Apply the Perform the research and development to produce zero discharge effluents. (k2)		K3		

**CO-PO Mapping**

CO	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
K3	K4	K5	K5	K3/K5 /K6								
C401.1	K2	2	1	-	-	-	-	-	-	1	1	-
C401.2	K2	2	2	-	-	-	-	2	2	1	-	1
C401.3	K2	2	1	-	-	-	-	-	-	-	1	-
C401.4	K3	3	2	1	-	-	-	1	2	-	1	-
C401		2.4	1.2	0.2		-	-	0.6	0.8	0.4	0.6	0.8



## UG/CIVILENGG – VIII SEMESTER

### **DEPARTMENT OF CIVIL ENGINEERING**

### **COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome				Knowledge Level
		Students will be able to				
GE 8076	PROFESSIONAL ETHICS IN ENGINEERING	C401.1	Understand the moral, values and ethics. (k2)			K2
		C401.2	Apply the knowledge in moral dilemmas and autonomy in engineering ethics. (k3)			K3
		C401.3	Understand the code of ethics, engineers as responsible. (k2)			K2
		C401.4	Understand the risk benefit and respect for authority. (k2)			K2
		C401.5	Apply the witnesses and advisors. (k3)			K3

#### CO-PO Mapping

CO		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5 /K6							
C401.1	K2	2	1	-	-	-	-	-	-	-	1	1	-
C401.2	K3	3	2	-	-	-	-	2	2	1	-	1	-
C401.3	K2	2	1	-	-	-	-	-	-	-	-	1	-
C401.4	K2	2	-	-	-	-	-	-	-	1	1	1	-
C401.5	K3	3	2	1	-	-	-	1	2	-	1	-	-
C401		2.4	1.2	0.2		-	-	0.6	0.8	0.4	0.6	0.8	-



**DEPARTMENT OF CIVIL ENGINEERING**

**COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
CE8022	PREFABRICATED STRUCTURES	C402.1	Able to <b>explain</b> the student will have good knowledge about design principles.	K2
		C402.2	Able to <b>comparing</b> the knowledge about large panel systems like slabs, walls roofs and floors.	K2
		C402.3	Have Knowledge to <b>use</b> the modular construction, industrialized construction and design of prefabricated elements and construction methods.	K3
		C402.4	<b>Classify</b> abnormal loads in Prefabricated Structures.	K2
		C402.5	<b>Explain</b> the types of walls used in precast construction, sealants, design of joints.	K2

CO-PO Mapping



### PG/CIVILENGG – I SEMESTER

### MOUNT ZION COLLEGE OF ENGINEERING AND TECHNOLOGY DEPARTMENT OF CIVIL ENGINEERING REGULATION 2017

### M. E. STRUCTURAL ENGINEERING - COURSE OUTCOMES (CO)

#### FIRST SEMESTER

Course Code	Course Name	Course Outcome (CO) Students will be able to	Knowledge Level
MA5151	ADVANCED MATHEMATICAL METHODS	C1O1.1 Application of Laplace and Fourier transforms to initial value, initial-boundary value and boundary value problems in Partial Differential Equations.	K2
		C1O1.2: Maximizing and minimizing the functional that occur in various branches of Engineering Disciplines.	K2
		C1O1.3: Construct conformal mappings between various domains and use of conformal mapping in studying problems in physics and engineering particularly to fluid flow and heat flow problems.	K3
		C1O1.4: Understand tensor algebra and its applications in applied sciences and engineering and develops ability to solve mathematical problems involving tensors.	K3
		C1O1.5: Competently use tensor analysis as a tool in the field of applied sciences and related fields	K3

#### CO-PO MAPPING

COs		Pos											
		PO 1	PO 2	PO3	PO4	PO5	PO 6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
C1O1.1	K2	2	1	-	-	1	-	-	-	-	-	-	-
C1O1.2	K2	2	1	-	1	-	-	-	-	-	-	-	-
C1O1.3	K3	3	2	1	-	1	-	-	-	-	-	-	-
C1O1.4	K3	3	2	1	1	1	-	-	-	-	-	-	-
C1O1.5	K3	3	2	1	1	-	-	-	-	-	-	-	-
<b>Average</b>		2.6	1.6	1	1	1	-	-	-	-	-	-	-

\*3- High correlation; 2- Medium correlation; 1- Low correlation



**DEPARTMENT OF CIVIL ENGINEERING**  
**CO-PO MAPPING (REGULATION -2017)**

Course Code	Course Name	Course Outcome			Knowledge Level		
		Students will be able to					
ST5101	Advanced concrete structures	C102.1	<b>Explain</b> the design philosophies in structural design			K2	
		C102.2	<b>Design</b> special RC elements			K3	
		C102.3	<b>Apply</b> the yield line based method of design			K3	
		C102.4	<b>Apply</b> the <b>design</b> inelastic behaviour in concrete column and beams			K3	
		C102.5	<b>Apply</b> the ductility detailing based method of design			K3	

#### CO-PO Mapping

CO		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5 /K6							
C102.1	K2	2	1	-	-	2	-	-	-	-	-	-	-
C102.2	K3	3	2	1	1	1	-	-	-	-	2	-	-
C102.3	K3	3	2	1	1	1	-	-	-	-	2	-	-
C102.4	K3	3	2	1	1	1	-	-	-	-	2	-	-
C102.5	K3	3	2	1	1	1	-	-	-	-	2	-	-
C102		3	2	1	1	1	-	-	-	-	2	-	-



**DEPARTMENT OF CIVIL ENGINEERING**

**COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
ST5102	Dynamics of Structures	C103.1	Compare static loading and dynamic loading in a structure(k2)	K2
		C103.2	Compute Eigen values and Eigen vectors of TDOF system (k3)	K3
		C103.3	Understand the concepts of response spectrum methods and MDOF (k3)	K3
		C103.4	Compute the frequencies, Eigen value and vector in continuous system(k3)	K3
		C103.5	Apply the substructure technique with the examples(k3)	K3

CO-PO Mapping



# **DEPARTMENT OF CIVIL ENGINEERING**

## **CO-PO MAPPING (REGULATION -2017)**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
ST5103	Theory of elasticity and plasticity	C104.1	Analyze some real problem and to formulate the conditions of theory of elasticity application	K3
		C104.2	Analyze the result of solution by standard computational programs	K3
		C104.3	Use the numerical methods for the problem of the theory of elasticity in practice.	K2
		C104.4	Execute a reasonable choice of parameters of the model (geometry, material properties, boundary conditions)	K3
		C104.5	Understand theory for solution of practice problem of stress and strain analysis final examination.	K2

CO-PO Mapping



**DEPARTMENT OF CIVIL ENGINEERING**  
**CO-PO MAPPING (REGULATION -2017)**

Course Code	Course Name	Course Outcome				Knowledge Level
		Students will be able to				
<b>ST5001</b>	<b>MAINTENANCE AND REHABILITATION OF STRUCTURES</b>	C105.1	Plan and understand the repair strategies for buildings and structure			K2
		C105.2	Understand and analyze the serviceability and Durability of concrete.			K3
		C105.3	Able to understand the materials and repair techniques or methods.			K3
		C105.4	Understand repairs, rehabilitation and retrofitting of Structures			K2
		C105.5	Able to get knowledge of “DEMOLITION TECHNIQUES” Engineered demolition techniques for Dilapidated structures – case studies			K2

**CO-PO Mapping**

CO	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	K3	K4	K5	K5	K3/K5 /K6							
C105.1	K2	2	1	-	-	2	-	-	-	-	-	-
C105.2	K3	2	1	1	1	2	-	-	-	-	-	-
C105.3	K3	2	1	1	1	2	-	-	-	-	-	-
C105.4	K2	2	2	-	-	3	-	-	-	-	-	-
C105.5	K2	2	1	-	-	2	-	-	-	-	-	-
C304		2	1	1	1	2.1	-	-	-	-	-	-



# **DEPARTMENT OF CIVIL ENGINEERING**

## **CO-PO MAPPING (REGULATION -2017)**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
<b>ST5002</b>	<b>PREFABRICATED STRUCTURES</b>	C106.1	analyze and design the flexural members	K4
		C106.2	design the tension and flexural member	K4
		C106.3	analyze the composites structure and continuous member	K4
		C106.4	enumerate the principles, manufacture and erection of prefabricated components	K4
		C106.5	formulate the design procedure to design the prefabricated slabs and beams	K4

CO-PO Mapping



**PG/CIVILENGG – II SEMESTER**  
**DEPARTMENT OF CIVIL ENGINEERING**  
**COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
ST5201	Advanced steel structures	C201.1	Analyze the concept of portal frame design	K3
		C201.2	Analyze the various types of trusses	K3
		C201.3	Explain the effect of shear force on plastic moment	K2
		C201.4	Carry out lateral buckling of beams	K3
		C201.5	Understand the various type of connections	K2

CO-PO Mapping



**DEPARTMENT OF CIVIL ENGINEERING**

**COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
ST5202	Stability of Structures	C202.1	Understand analysis for various boundary conditions - using Equilibrium, Energy methods. Approximate methods - Rayleigh Ritz, Galerkins approach (k2)	K2
		C202.2	Use of stability function to determine the critical load. (k3)	K3
		C202.3	Compute the Lateral buckling of beams, pure bending of simply supported and cantilever beams. (k3)	K3
		C202.4	Apply the Governing differential equation, Buckling of thin plates, various edge conditions and Analysis by equilibrium and energy approach (k3)	K3
		C202.5	Understand the Post buckling behaviour of plates. (k3)	K3

CO-PO Mapping



**DEPARTMENT OF CIVIL ENGINEERING**  
**CO-PO MAPPING (REGULATION -2017)**

Course Code	Course Name	Course Outcome				Knowledge Level		
		Students will be able to						
<b>ST5203</b>	<b>EXPERIMENTAL TECHNIQUES</b>	C203.1	Compare and classify the different types of strain gauges				K2	
		C203.2	apply the instrument techniques for the measurement of structural related problem in civil engineering				K3	
		C203.3	apply dynamic instruments for measuring the vibration motion in structures				K3	
		C203.4	quantify the structural characteristics by using the various measuring instruments				K2	
		C203.5	explain the principle of model laws in vibrational systems				K2	

**CO-PO Mapping**

CO	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	K3	K4	K5	K5	K3/K5 /K6							
C203.1	K2	2	1	-	-	2	-	-	-	-	-	-
C203.2	K3	3	2	1	1	1	-	-	-	-	-	-
C203.3	K3	3	2	1	1	1	-	-	-	-	-	-
C203.4	K2	3	2	1	1	1	-	-	-	-	-	-
C203.5	K2	3	2	1	1	1	-	-	-	-	-	-
C203		3	2	1	1	1	-	-	-	-	-	-



**DEPARTMENT OF CIVIL ENGINEERING**  
**CO-PO MAPPING (REGULATION -2017)**

Course Code	Course Name	Course Outcome (CO) Students will be able to	Knowledge Level
ST5204	<b>FINITE ELEMENT ANALYSIS OF STRUCTURES</b>	C2O4.1: Application: Axial deformation of bars, axial spring element.	K2
		C2O4.2: Maximizing and minimizing the functional that occur in various branches of Engineering Disciplines.	K2
		C2O4.3: Construct conformal mappings between various domains and use of conformal mapping in studying problems Boundary conditions and compatibility, convergence aspects	K3
		C2O4.4: Understand thick plate ,finite element analysis of skew plate - introduction to finite strip method	K3
		C2O4.5: Analysis Of Framed Structures: analysis of grid and space frame, two, dimensional solids, constant strain triangle, linear strain triangle, rectangular elements, numerical evaluation of element stiffness	K3

**CO-PO MAPPING**

COs		Pos											
		PO 1	PO 2	P O 3	PO4	PO5	PO 6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K 5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
C2O4.1	K2	2	1	-	-	1	-	-	-	-	-	-	-
C2O4.2	K2	2	1	-	1	-	-	-	-	-	-	-	-
C2O4.3	K3	3	2	1	-	1	-	-	-	-	-	-	-
C2O4.4	K3	3	2	1	1	1	-	-	-	-	-	-	-
C2O4.5	K3	3	2	1	1	-	-	-	-	-	-	-	-
<b>Average</b>		2.6	1.6	1	1	1	-	-	-	-	-	-	-

\*3- High correlation; 2- Medium correlation; 1- Low correlation

## DEPARTMENT OF STRUCTURAL ENGINEERING

### COURSE OUTCOMES – REGULATION 2013

Course Code	Course Name	Course Outcome			Knowledge Level
		Students will be able to			
<b>ST5009</b>	<b>PRESTRESSED CONCRETE</b>	S205.1	Illustrate the behaviour of prestressed concrete beams and slab(K2)		K2
		S205.2	Execute the tendon layout design, which satisfy the strength and serviceability limit states as required by design standards(k3)		K3
		S205.3	Use of anchorage zone stress and end block for prestressed concrete structures(k3)		K3
		S205.4	Find the design of prestressed composite beam (k4)		K4
		S205.5	Apply the recent techniques in prestressed concrete technology (k3)		K3

#### CO-PO Mapping

CO		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
S205.1	K2	2	1	-	-	-	-	-	-	-	-	-	-
S205.2	K3	3	2	1	-	-	-	-	-	-	-	-	-
S205.3	K3	3	2	1	-	-	-	-	-	-	-	-	-
S205.4	K4	1	3	2	-	-	-	-	-	-	-	-	-
S205.5	K3	3	2	1	1	1	-	-	-	-	-	-	-
S205		2.4	2	1	-	1.2	-	-	-	-	-	-	-



## **DEPARTMENT OF CIVIL ENGINEERING**

## **COURSE OUTCOMES – REGULATION 2017**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
ST 5010	WIND AND CYCLONE EFFECTS ON STRUCTURES	C206.1	Calculate wind velocity by different methods (K2)	K2
		C206.2	Understand code provisions for the design of structures for wind load (K2)	K2
		C206.3	Design high rise structures subjected to wind load(K3)	K3
		C206.4	Design high rise structures exposed to cyclone (K3)	K3

## CO-PO Mapping



## PG/CIVILENGG – III SEMESTER

### DEPARTMENT OF STRUCTURAL ENGINEERING

#### COURSE OUTCOMES – REGULATION 2013

Course Code	Course Name	Course Outcome			Knowledge Level
		Students will be able to			
<b>ST5301</b>	<b>EARTHQUAKE ANALYSIS AND DESIGN OF STRUCTURES</b>	S301.1	Interpret ground motion and its relationship to seismic design of structures.(K2)		K2
		S301.2	Execute earthquake induced lateral force on the structure(K3)		K3
		S301.3	Include earthquake resistant features in masonry buildings(K3)		K3
		S301.4	Apply the basic principles of conceptual design for earthquake resistant RC buildings and carry out the detailed design of earthquake resistant RC buildings.(K4)		K4
		S301.5	Adopt vibration control methods for buildings located in earthquake zone.(K3)		K3

#### CO-PO Mapping

CO		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
S301.1	K2	2	1	-	-	-	-	-	-	-	-	-	-
S301.2	K3	3	2	1	1	-	-	-	-	-	-	-	-
S301.3	K3	3	2	1	-	-	-	-	-	-	-	-	-
S301.4	K4	1	3	2	-	-	-	-	-	-	-	-	-
S301.5	K3	3	2	1	1	3	1	-	-	-	-	-	-
S301		2.4	2	1	0.4	0.6	0.2	-	-	-	-	-	-



## DEPARTMENT OF STRUCTURAL ENGINEERING

### COURSE OUTCOMES – REGULATION 2017

Course Code	Course Name	Course Outcome			Knowledge Level
		Students will be able to			
<b>ST5012</b>	<b>DESIGN OF SUB STRUCTURES</b>	S302.1	To gain familiarity with different types of foundation.(K2)		K2
		S302.2	To understand the pile foundation and its types(K3)		K3
		S302.3	To understand the well foundation and its types (K3)		K3
		S302.4	To understand the machine foundation and its types.(K4)		K4
		S302.5	To understand the special foundation and its types.(K3)		K3

#### CO-PO Mapping

CO		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
				K3	K4	K5	K5	K3/K5 /K6					
S302.1	K2	2	2	-	-	-	-	-	-	-	-	-	-
S302.2	K3	2	1	1	1	-	-	-	-	-	-	-	-
S302.3	K3	2	3	1	-	-	-	-	-	-	-	-	-
S302.4	K4	2	1	2	-	-	-	-	-	-	-	-	-
S302.5	K3	3	2	1	1	3	1	-	-	-	-	-	-
S302		2.4	2	1	0.4	0.6	0.2	-	-	-	-	-	-

## DEPARTMENT OF STRUCTURAL ENGINEERING

### COURSE OUTCOMES – REGULATION 2013

Course Code	Course Name	Course Outcome			Knowledge Level
		Students will be able to			
<b>ST5014</b>	<b>Design of Steel Concrete Composite Structures</b>	C303.1	calculate the deflection and crack width in the flexural members		K4
		C303.2	analysis and design the flat slabs and grid floors		K4
		C303.3	design the R.C walls, deep beams and yield analysis of slab		K4
		C303.4	formulate the procedure to design the slender column, corbels and spandrel beams		K4
		C303.5	evaluate the inelastic behavior of concrete structures		K4
		C303.6	analyze the building frames for various loads		K4
		C303.7	develop a design spread sheet to design various structural elements		K3
		C303.8	analyze and design the water retaining structures		K4

#### CO-PO Mapping

CO	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	K3	K4	K5	K5	K3/K5 /K6							
C303.1	K4	3	-	2	-	3	-	-	-	-	-	-
C303.2	K4	3	-	2	-	3	-	-	-	-	-	-
C303.3	K4	3	-	2	-	3	-	-	-	-	-	-
C303.4	K4	3	-	2	-	3	-	-	-	-	-	-
C303.5	K4	3	-	2	-	3	-	-	-	-	-	-
C303.6	K4	3	-	2	3	3	-	-	-	-	-	-
C303.7	K3	3	-	3	3	3	-	-	-	-	-	-
C303.8	K4	3	-	2	3	3	-	-	-	-	-	-
C303		3	-	2	3	3	-	-	-	-	-	-

**MOUNT ZION COLLEGE OF ENGINEERING AND TECHNOLOGY**  
**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**  
**REGULATION 2017**  
**CO PO MAPPING**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
HS8151	COMMUNICATIVE ENGLISH	C101.1	Communicate and share a broad range of information	K3
		C101.2	Develop reading and speaking skills	K3
		C101.3	Understand the functions of essays and development of the vocabularies	K2
		C101.4	Write a personal letter, official letter, email and articles.	K2
		C101.5	Participate in the conversation in order to acquire oral & listening skills	K4

CO-PO Mapping

**MOUNT ZION COLLEGE OF ENGINEERING AND TECHNOLOGY**  
**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**  
**REGULATION 2017**  
**CO PO MAPPING**

<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcome (CO) Students will be able to</b>	<b>Knowledge Level</b>
PH8151	<b>ENGINEERING PHYSICS</b>	CO01: Interpret the fundamental knowledge of Physics and its applications in engineering and technology.	K2
		CO02: Apply the concept of depression/ elevation of the beam and get expertise through experimental evidence.	K3
		CO03: Analyze the properties of lasers for low and high energy application.	K4
		CO04: Apply the total internal reflection properties of light in the optical fiber to find out the physical parameters like variation in temperature, pressure and displacement using FOC.	K3
		CO05: Identify the mode of heat transfer in heat Exchangers.	K3
		CO06: Make use of the thermal properties of thermal insulating material in a wide range of applications.	K3
		CO07: Summarize the drawback of classical Physics and overcome these drawbacks by quantum theory concept.	K2
		CO08: Make use of quantum theory concept to study the working of Scanning Tunneling Microscope technique and its Benefits.	K3
		CO09: Infer the basics of crystals and its Structures..	K2
		CO10: Outline the different crystals growth techniques and its advantages and disadvantages.	K2

**MOUNT ZION COLLEGE OF ENGINEERING AND TECHNOLOGY**  
**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**  
**REGULATION 2017**  
**CO PO MAPPING**

**CO-PO MAPPING**

COs		PO s											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K 6	K4	K2	K3	K3	K2	K3	K3
CO1	K2	2	1	-	-	-	-	-	-	-	-	-	-
CO2	K3	3	2	1	1	-	-	-	-	-	-	-	-
CO3	K4	3	3	2	2	-	-	-	-	-	-	-	-
CO4	K3	3	2	1	1	3	-	-	-	-	-	-	-
CO5	K3	3	2	1	1	-	-	-	-	-	-	-	-
CO6	K3	3	2	1	1	-	-	-	-	-	-	-	-
CO7	K2	2	1	-	-	2	-	-	-	-	-	-	-
CO8	K3	3	2	1	1	-	-	-	-	-	-	-	-
CO9	K2	2	1	-	-	-	-	-	-	-	-	-	-
CO10	K2	2	1	-	-	2	-	-	-	-	-	-	-
Average		2.3	1.7	0.7	0.7	0.7							

**MOUNT ZION COLLEGE OF ENGINEERING AND TECHNOLOGY**

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**REGULATION 2017**

**CO PO MAPPING**

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
GE8151	Problem solving and Python Programming	CO1: Develop an algorithm and flowchart for the given problem	K3
		CO2: Describe the need of data, expressions and functions in python	K2
		CO3: Apply conditional flow and functions to provide solution for the given problem	K3
		CO4: Differentiate the concept of list, tuples and dictionaries to fetch the given data	K2
		CO5: Discuss the concept of Exception file handling in python	K2

**CO-PO MAPPING**

COs		POs											
		PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
		K3	K4	K5	K5	K3/K5/K6							
C403. 1	K3	3	2	2	2	-	-	-	-	-	-	-	-
C403. 2	K2	2	1	0	0	-	-	-	-	-	-	-	-
C403. 3	K3	3	2	1	1	-	-	-	-	-	-	-	-
C404. 4	K2	2	1	1	1	-	-	-	-	-	-	-	-
C404. 5	K2	2	1	0	0	-	-	-	-	-	-	-	-
Avg		2.4	1.4	2	2	-							

**MOUNT ZION COLLEGE OF ENGINEERING AND TECHNOLOGY**  
**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**  
**REGULATION 2017**  
**CO PO MAPPING**

Course Code	Course Name	Course Outcome (CO) Students will be able to	Knowledge Level
MA8151	<b>ENGINEERING MATHEMATICS I</b>	<b>CO1</b> Define the function and limit	K1
		<b>CO2</b> Solve the derivatives and maxima and minima.	K3
		<b>CO3</b> Apply the Taylor series expansion in function.	K3
		<b>CO4</b> Explain the concept of extreme values of then function.	K2
		<b>CO5</b> Define the definite, indefinite integrals.	K1
		<b>CO6</b> Explain the concept of substitution rule.	K2
		<b>CO7</b> Apply the concept of double integrals and triple integrals.	K3
		<b>CO8</b> Solve the double integrals using polar coordinates.	K3
		<b>CO9</b> Apply the concept of method of variation of parameters in problems.	K3
		<b>CO10</b> Define complementary function and particular integrals.	K1
		<b>CO11</b> Solve the simultaneous equations with constant coefficients.	K3

**MOUNT ZION COLLEGE OF ENGINEERING AND TECHNOLOGY**  
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**REGULATION 2017**  
**CO PO MAPPING**

**CO-PO MAPPING:**

Cos		Pos											
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO12
		K3	K4	K5	K5	K3/ K5/ K6	K4	K2	K3	K3	K2	K3	K3
C3O1.1	K 1	1	-	-	-	1	-	-	-	-	-	-	-
C3O1.2	K 3	3	2	1	1	1	-	-	-	-	-	-	-
C3O1.3	K 3	3	2	1	1	1	-	-	-	-	-	-	-
C3O1.4	K 2	2	1	-	-	-	-	-	-	-	-	-	-
C3O1.5	K 1	1	-	-	-	1	-	-	-	-	-	-	-
C3O1.6	K 2	2	1	-	-	-	-	-	-	-	-	-	-
C3O1.7	K 3	3	2	1	1	1	-	-	-	-	-	-	-
C3O1.8	K 3	3	2	1	1	1	-	-	-	-	-	-	-
C3O1.9	K 3	3	2	1	1	1	-	-	-	-	-	-	-
C3O1.10	K 1	1	-	-	-	1	-	-	-	-	-	-	-
C3O1.11	K 3	3	2	1	1	1	-	-	-	-	-	-	-
Average		2.2 7	1.75	0.1	0.1	0.1							

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**CO PO MAPPING**

Course Code	Course Name	Course Outcome (CO) Students will be able to	Knowledge Level
GE8152	ENGINEERING GRAPHICS	<b>CO1</b> Know freehand sketching of basic geometrical constructions. <b>(K1)</b>	K1
		<b>CO2</b> Draw orthographic projections of lines and plane surfaces. <b>(K3)</b>	K3
		<b>CO3</b> Develop 3D solid computer models. <b>(K3)</b>	K3
		<b>CO4</b> Develop the visualize and to project isometric and perspective sections of simple solids. <b>(K3)</b>	K2
		<b>CO5</b> Apply the knowledge of development of surface in manufacturing and Rapid Prototyping Methods. <b>(K3)</b>	K1
		<b>CO6</b> Make use of the fundamentals and standards of Engineering graphics. <b>(K3)</b>	K2
		<b>CO7</b> Draw isometric and perspective views of the simple solids. <b>(K3)</b>	K3
		<b>CO8</b> Apply Orthographic projections of real time parts in the engineering Field. <b>(K3)</b>	K3
		<b>CO9</b> Project the sectioned solids and true shape of the section. <b>(K4)</b>	K3

CO-PO MAPPING:



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**CY8151    ENGINEERING CHEMISTRY**

<b>Course Outcomes</b>	<b>Description</b>	<b>Knowledge Level</b>
<b>C104.1</b>	Summarize the water related problems in boilers and their treatment techniques.	K2
<b>C104.2</b>	Discuss the applications of adsorption in the field of water and air pollution abatement.	K2
<b>C104.3</b>	Discuss the types of catalysis and the mechanism of enzyme catalysis	K2
<b>C104.4</b>	Associate phase rule in the alloying and the behaviour of one component and two component systems using phase diagram	K2
<b>C104.5</b>	Explain various types of fuels, their manufacturing processes and calculation of calorific theoretically	K2
<b>C104.6</b>	Summarize the principles and generation of energy in batteries ,nuclear reactors, solar cells, wind mills and fuel cells	K2

Cos		POs											
		PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
		K3	K4	K5	K5	K3/K5/K 6							
C104. 1	K2	2	1	-	-	-	-	-	-	-	2	-	-
C104. 2	K2	2	1	-	-	-	-	-	-	-	2	-	-
C104. 3	K2	2	-	-	-	-	-	-	-	-	2	-	-
C104. 4	K2	2	1	-	-	-	-	-	-	-	2	-	-
C104. 5	K2	2	1	-	-	-	-	-	-	-	2	-	-
C104. 6		2	-	-	-	-	-	-	-	-	2		
Avg		2.4	1	-	-	-	-	-	-	-	2		

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**GE8161 PROBLEM SOLVING AND PYTHON PROGRAMMING  
LABORATORY**

Course Outcomes	Description	Knowledge Level
<b>C107.1</b>	Write, test, and debug simple Python programs.	K1
<b>C107.2</b>	Apply the concept of conditionals and loops in Python programs.	K3
<b>C107.3</b>	Develop the Python programs step-wise by defining functions and calling them.	K4
<b>C107.4</b>	Use Python lists, tuples, dictionaries for representing compound data.	K3
<b>C107.5</b>	Read and write data from/to files in Python.	K1
<b>C107.6</b>	Apply the concept of Pygame.	K3
<b>C107.7</b>	Exhibit ethical principles in engineering practices	A3
<b>C107.8</b>	Perform task as an individual and / or team member to manage the task in time	A3
<b>C107.9</b>	Express the Engineering activities with effective presentation and report.	A3
<b>C107.10</b>	Interpret the findings with appropriate technological / research citation.	A2

Cos		POs											
		PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO 0	PO1 1	PO1 2
		K3	K4	K5	K5	K3/K5/K6							
C107.1	K 1	1	1	1	1	-	-	-	-	-	-	-	-
C107.2	K 3	3	2	2	1	3	-	-	-	-	-	-	-
C107.3	K 4	3	3	3	2	3	-	-	-	-	-	-	-
C107.4	K 3	3	2	2	1	3	-	-	-	-	-	-	-
C107.5	K 1	1	1	1	1	1	-	-	-	-	-	-	-

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C107.6	K 3	3	2	2	1	3	-	-	-	-	-	-	-	-	-
C107.7	K 3	-	-	-	-	-	-	-	3	-	-	-	-	-	-
C107.8	K 3	-	-	-	-	-	-	-	-	3	-	3	-	-	-
C107.9	K 3	-	-	-	-	-	-	-	-	-	3	-	-	-	-
C107.10	K 2	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Avg		2	2	2	1	3	-	-	3	3	3	3	3	3	3

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**BS8161 PHYSICS AND CHEMISTRY LABORATORY**

Course Code	Course Name	Course Outcome (CO) Students will be able to	Knowledge Level
BS8161	<b>PHYSICS AND CHEMISTRY LABORATORY</b>	<b>CO1</b> Determine the Modulus of elasticity of materials and Coefficient of Viscosity of liquids	K2
		<b>CO2</b> Determine the Thermal Conductivity of bad conductor using Lee's disc method	K2
		<b>CO3</b> Calculate the Compressibility of liquids and velocity of ultrasonic waves in liquids	K2
		<b>CO4</b> Measure the wavelength of prominent spectral lines of Mercury Spectrum and particle size of powder using diffraction phenomenon and thickness of thin materials using interference phenomenon,	K2
		<b>CO5</b> Determine the band gap energy of a semiconductor	K2
		<b>CO6</b> Calculate water quality parameters such as hardness, alkalinity of the given water sample.	K2
		<b>CO7</b> Estimate the amount of the given acids using conductometric titrations.	K2
		<b>CO8</b> Estimate the amount of the given acids using pH titrations	K2
		<b>CO9</b> Determine the amount of iron content in the given substance using potentiometric titration	K2
		<b>CO10</b> Determine the amount of chloride content in the given water sample.	K2
		<b>CO11</b> Exhibit ethical principles in engineering practices	K3
		<b>CO12</b> Perform task as an individual and / or team member to manage the task in time	K3
		<b>CO13</b> Express the Engineering activities with effective presentation and report.	K3

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Cos			POs											
			PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
			K3	K4	K5	K5	K3/K5/K 6							
C108.1	K 2	2	1	-	-	-	-	-	-	-	-	-	-	-
C108.2	K 2	2	1	-	-	-	-	-	-	-	-	-	-	-
C108.3	K 2	2	1	-	-	-	-	-	-	-	-	-	-	-
C108.4	K 2	2	1	-	-	-	-	-	-	-	-	-	-	-
C108.5	K 2	2	1	-	-	-	-	-	-	-	-	-	-	-
C108.6	K 2	2	1	-	-	-	-	-	-	-	-	-	-	-
C108.7	K 2	2	1	-	-	-	-	-	-	-	-	-	-	-
C108.8	K 2	2	1	-	-	-	-	-	-	-	-	-	-	-
C108.9	K 2	2	1	-	-	-	-	-	-	-	-	-	-	-
C109.1 0	K 2	2	1	-	-	-	-	-	-	-	-	-	-	-
C109.1 1		-	-	-	-	-	-	-	-	3	-	-	-	-
C109.1 2		-	-	-	-	-	-	-	-	3	-	3	-	-
C109.1 3		-	-	-	-	-	-	-	-	-	3	-	-	-
Avg		2	1	-	-	-			3	3	3	3	3	3

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**COURSE OUTCOMES – REGULATION 2017**

<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcome</b>		<b>Knowledge Level</b>
		<b>Students will be able to</b>		
HS8251	<b>TECHNICAL ENGLISH</b>	<b>C209.</b> <b>1</b>	Communicate and discuss a broad range of technical information with colleagues and clients related to the Engineering industry.	K3
		<b>C209.</b> <b>2</b>	Explain and produce summaries that include correctly written introductory sentences and accurate paraphrases of the main ideas and key details, approximately one fourth in length of the original passages, without plagiarizing.	K2
		<b>C209.</b> <b>3</b>	Identify the common types of support in arguments, their relevance or irrelevance, common argument flaws, opposing points of views, and refutations.	K1
		<b>C209.</b> <b>4</b>	Understand the functions of essays and reports and demonstrate writing skills	K2
		<b>C209.</b> <b>5</b>	Execute the method of participation in the Group Discussion and acquire the oral skills and the body language used for effective Group Discussion.	K5

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CO-PO Mapping

CO		Program Outcomes											
		P O 1	P O 2	P O 3	P O 4	P O5	P O 6	P O 7	P O 8	P O 9	P O1 0	P O1 1	P O1 2
C209.1	K3	2	-	-	-	-	-	-	-	-	2	-	1
C209.2	K2	2	-	-	-	-	-	-	-	-	1	-	-
C209.3	K1	1	-	-	-	-	-	-	-	-	-	-	-
C209.4	K2	-	-	-	-	-	-	-	-	-	1	-	-
C209.5	K5	1	-	-	-	-	-	-	-	-	2	-	2
Average		1. 2	-	-	-	-	-	-	-	-	1.2	-	0.6

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**CO PO MAPPING**

Course Code	Course Name	Course Outcome (CO) Students will be able to	Knowledge Level
MA8251	<b>ENGINEERING MATHEMATICS II</b>	<b>CO1</b> Define the Eigen values and Eigen vectors of the matrix.	K1
		<b>CO2</b> Apply the concept of Cayley-Hamilton theorem in inverse and powers of the matrix.	K3
		<b>CO3</b> Explain the concept of canonical form of the quadratic form.	K2
		<b>CO4</b> Explain the concept of solenoidal and irrational vector.	K2
		<b>CO5</b> Apply the concept of Gauss divergence, Stoke's and Green 's theorem.	K3
		<b>CO6</b> Apply the concept of Cauchy-Riemann equations.	K3
		<b>CO7</b> Solve the bilinear transformation problems.	K3
		<b>CO8</b> Apply the concept of Cauchy's integral theorem and integral formula.	K3
		<b>CO9</b> Solve the Laurent expansion and contours problems.	K3
		<b>CO10</b> Define Laplace transform, unit step function and impulse function.	K1
		<b>CO11</b> Solve the inverse Laplace transform by using convolution theorem and solve simultaneous equations with constant coefficients.	K3

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**CO-PO MAPPING:**

COs		Po s											
		PO1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO1 0	PO 11	PO1 2
		K3	K4	K5	K5	K3/ K5/ K6	K4	K2	K3	K3	K2	K 3	K3
C3O1.1	K 1	1	-	-	-	1	-	-	-	-	-	-	-
C3O1.2	K 3	3	2	1	1	1	-	-	-	-	-	-	-
C3O1.3	K 2	3	2	1	1	1	-	-	-	-	-	-	-
C3O1.4	K 2	2	1	-	-	-	-	-	-	-	-	-	-
C3O1.5	K 3	3	2	1	1	1	-	-	-	-	-	-	-
C3O1.6	K 3	3	2	1	1	1	-	-	-	-	-	-	-
C3O1.7	K 3	3	2	1	1	1	-	-	-	-	-	-	-
C3O1.8	K 3	3	2	1	1	1	-	-	-	-	-	-	-
C3O1.9	K 3	3	2	1	1	1	-	-	-	-	-	-	-
C3O1.1 0	K 1	1	-	-	-	1	-	-	-	-	-	-	-
C3O1.1 1	K 3	3	2	1	1	1	-	-	-	-	-	-	-
Averag e		<b>2.45</b>	<b>1.7</b>	<b>1</b>	<b>1</b>	<b>1</b>							

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**CO PO MAPPING**

Course Code	Course Name	Course Outcome (CO) Students will be able to	Knowledge Level
GE8291	<b>ENVIRONMENTAL SCIENCE AND ENGINEERING</b>	C105.1 Ecological succession process.	K2
		C105.2 Threats to biodiversity.	K3
		C105.3 Solid waste management.	K1
		C105.4 Role of individual in prevention of pollution.	K3
		C105.5 Timber extraction and forest resource.	K2
		C105.6 Bioconversion of pollutants.	K1
		C105.7 Urban problems related to energy.	K3
		C105.8 Resettlement and rehabilitations of people.	K1
		C105.9 Environment pollution act.	K1
		C105.10 Population explosion..	K3
		C105.11 Women and child welfare	K1

**CO-PO MAPPING:**

Cos		P o s											
		PO 1	PO 2	PO 3	PO 4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	P O 1 2
		K3	K4	K5	K5	K3/ K5/ K6							
C3O1.1	K 2	2	1	-	-	2	-	-	-	-	-	-	-

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Course Code	Course Name	Course Outcome Students will be able to		Knowledge Level
BE8255	<b>Basic Electrical, Electronics and Measurement Engineering</b>	C204.1	Illustrate the essentials of electric circuits and analysis.	K2
		C204.2	Understand the basic operation of electric machines and transformers	K2
		C204.3	Classify the renewable sources and common domestic loads.	K2
		C204.4	Outline the fundamentals of electronic circuit constructions	K2
		C204.5	Explain and construct the measuring instruments	K3

## CO-PO Mapping

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**B.E CSE - COURSE OUTCOMES (CO)**

Course Code	Course Name	Course Outcome(CO) Students will be able to				Knowledge Level	
CS8251	Programming in C	<b>C206.1</b>	Develop simple applications in C using basic concept				K3
		<b>C206.2</b>	Implement basic applications using arrays and strings concepts in C				K3
		<b>C206.3</b>	Apply function concepts to design application				K3
		<b>C206.4</b>	Understand the concepts of pointers and its usage				K2
		<b>C206.5</b>	Design file processing using C for simple applications				K3

**CO-PO MAPPING**

COs		POs											
		PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
		K3	K4	K5	K5	K3/K5/K6							
<b>C206.1</b>	K3	3	2	1	1	-	-	-	-	-	-	-	-
<b>C206.2</b>	K3	3	2	1	1	1	-	-	-	-	-	-	-
<b>C206.3</b>	K3	3	2	1	1	-	-	-	-	-	-	-	-
<b>C206.4</b>	K2	2	1	-	-		-	-	-	-	-	-	-
<b>C206.5</b>	K3	3	2	1	1	-	-	-	-	-	-	-	-
<b>C206.6</b>	K3	3	2	1	1	1	-	-	-	-	-	-	-
<b>Avg</b>		1.7	1.1	0.5	0.5	0.2	-	-	-	-	-	-	-

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**GE8261    ENGINEERING PRACTICES LABORATORY**

Course Code	Course Name	Course Outcome (CO) Students will be able to		Knowledge Level
GE8261	<b>ENGINEERING PRACTICES LABORATORY</b>	CO1	Identify Tools and Techniques used for Sheet Metal Fabrication.	K1
		CO2	Use welding equipment to join the structures.	K3
		CO3	Demonstrate Plumbing requirements of domestic buildings.	K3
		CO4	Apply the skills of basic electrical engineering for house wiring practice	K3
		CO5	Measure various electrical quantities	K3
		CO6	Explain the working of electronic components and its utilization	K2
		CO7	Apply electronic principles to develop circuits for primitive application	K2
		CO8	Exhibit ethical principles in engineering practices	K3
		CO9	Perform task as an individual and / or team member to manage the task in time	K3
		CO10	Express the Engineering activities with effective presentation and report.	K3
		CO11	Interpret the findings with appropriate technological / research citation.	K2

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Cos		POs											
		PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
		K3	K4	K5	K5	K3/K5/K 6							
C108.1	K 1	1	-	1	-	1	-	-	-	-	-	-	-
C108.2	K 3	3	2	-	-	-	-	-	-	-	-	-	-
C108.3	K 3	3	2	-	-	-	-	-	-	-	-	-	-
C108.4	K 3	3	2	2	1	3	-	-	-	-	-	-	-
C108.5	K 3	3	2	2	1	3	-	-	-	-	-	-	-
C108.6	K 2	2	1	-	1	2	-	-	-	2	2	2	-
C108.7	K 2												
C108.8	K 3	3	2	2	1	3	-	-	-	3	3	3	-
C108.9	K 3												
C109.1	K 0	-	-	-	-	-	-	-	3	-	-	-	-
C109.1	K 1	-	-	-	-	-	-	-	-	3	-	3	-
Avg		-	-	-	-	-	-	-	-	-	3	-	-

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**CS8261 C PROGRAMMING LABORATORY**

Course Code	Course Name	Course Outcome (CO) Students will be able to		Knowledge Level
CS8261	<b>C PROGRAMMING LABORATORY</b>	<b>CO1</b>	Develop C programs for simple applications making use of basic constructs	K4
		<b>CO2</b>	Apply the concept of conditionals and loops in C programs.	K3
		<b>CO3</b>	Develop the C programs with arrays and strings.	K4
		<b>CO4</b>	Apply the concept of functions, recursion in C programs	K3
		<b>CO5</b>	Analyze the concept of pointers, and structures in C	K4
		<b>CO6</b>	Examine the use of sequential and random access file processing.	K3
		<b>CO7</b>	Exhibit ethical principles in engineering practices	K3
		<b>CO8</b>	Perform task as an individual and / or team member to manage the task in time	K3
		<b>CO9</b>	Express the Engineering activities with effective presentation and report.	K3
		<b>CO10</b>	Interpret the findings with appropriate technological / research citation.	K2

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Cos		POs											
		PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
	K4  K3	K3	K4	K5	K5	K3/K5/K 6							
C116.1		3	3	3	2	-	-	-	-	-	-	-	-
C116.2		3	2	2	1	3	-	-	-	-	-	-	-
C116.3	K4  K3	3	3	3	2	3	-	-	-	-	-	-	-
C116.4		3	2	2	1	3	-	-	-	-	-	-	-
C116.5	K4  K3	3	3	3	2	3	-	-	-	-	-	-	-
C116.6		3	2	2	1	3	-	-	-	-	-	-	-
C116.7	K3  K3	-	-	-	-	-	-	-	3	-	-	-	-
C116.8		-	-	-	-	-	-	-	-	3	-	3	-
C116.9	K3  K2	-	-	-	-	-	-	-	-	-	3	-	-
C116.10		-	-	-	-	-	-	-	-	-	-	-	3
Avg		3	3	3	2	3	-	-	3	3	3	3	3

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Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
CS8392	<b>OBJECT ORIENTED PROGRAMMING</b>	C304.1	Recall the object oriented principles in software design process.	K3
		C304.2	Use java constructs and libraries in Java programs.	K2
		C304.3	Discuss various object oriented features like inheritance, data abstraction, encapsulation and polymorphism to solve various computing problems using Java language.	K2
		C304.4	Implement Exception Handling in java	K3
		C304.5	Use graphical user interface and Event Handling in java.	K2

## CO-PO Mapping

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<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcome Students will be able to</b>				<b>Knowledge Level</b>	
CS8351	Digital Principles and System Design	C302.1	Solve Boolean functions using K-map and basic functions using logic gates				K2
		C302.2	Design and simulate various combinational circuits to perform simple arithmetic operations				K3
		C302.3	Interpret and simulate the design procedures of synchronous sequential logic circuits				K3
		C302.4	Compare the various hazards and timing problems occurring in combinational and sequential digital designs				K2
		C302.5	Understand the procedure to implement combinational logic circuits using semiconductor memories, CPLDs				K2

**CO-PO Mapping**

CO		Program Outcomes											
		P O 1	P O 2	P O 3	P O 4	P O 5	P O 6	P O 7	P O 8	P O 9	P O 10	P O 11	P O 12
C302.1	K2	2	1	-	-	-	-	-	-	-	-	-	-
C302.2	K3	3	2	1	1	-	-	-	-	-	-	-	-
C302.3	K3	3	2	1	1	1	-	-	-	-	-	-	-
C302.4	K2	2	1	-	-	-	-	-	-	-	-	-	-
C302.5	K2	2	1	-	-	-	-	-	-	-	-	-	-
C302		2. 4	1.4	1	1	1	-	-	-	-	-	-	-

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**CO PO MAPPING**

Course Code	Course Name		Course Outcome(CO) Students will be able to	Knowledge Level
CS8391	DATA STRUCTURES	CO1	Explain the different linked list implementation	K2
		CO2	Identify the conversion of infix to postfix expression.	K1
		CO3	Develop the applications of binary search tree ADT.	K3
		CO4	Apply the topological sort in real time applications.	K3
		CO5	Identify the different techniques of sorting.	K1

**CO-PO MAPPING**

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3	K4	K2	K3	K3	K2	K3	K3
CO1	K2	1	2	-	-	1	-	-	-	-	-	-	-
CO2	K1	2	2	-	-	2	-	-	-	-	-	-	-
CO3	K3	3	1	2	2	3	-	-	-	-	-	-	-
CO4	K3	3	1	2	2	3	-	-	-	-	-	-	-
CO5	K1	2	-	-	-	2	-	-	-	-	-	-	-

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**CO PO MAPPING**

Course Code	Course Name	Course Outcome			Knowledge Level		
		Students will be able to					
<b>EC8395</b>	<b>COMMUNICATION ENGINEERING</b>	C205.1	Describe the concepts of analog modulation systems.			K2	
		C205.2	Illustrate pulse communication techniques			K2	
		C205.3	Summarize the concepts of digital modulation systems.			K2	
		C205.4	Implement the source coding techniques.			K2	
		C205.5	Explain the basic principles in the generation of spread spectrum signals.			K2	
		C205.6	Explain the methods of multiple access in communication systems.			K2	

**CO-PO Mapping**

CO		Program Outcomes											
		PO 1 K3	PO 2 K4	PO3 K5	PO4 K5	PO5 K3/K5/K6	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C205.1	K2	2	1	1	-	-	-	-	-	-	1	-	-
C205.2	K2	2	1	1	-	-	-	-	-	-	1	-	-
C205.3	K2	2	-	-	-	-	-	-	-	-	1	-	-
C205.4	K2	2	2	2	-	-	-	-	-	-	1	-	-
C205.5	K2	2	1	1	-	-	-	-	-	-	-	-	-
C205.6	K2	2	1	1	-	-	-	-	-	-	-	-	-
Avg		2	1	1	-	-	-	-	-	-	1	-	-

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CO PO MAPPING**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
MA8351	<b>DISCRETE MATHEMATICS</b>	C201.1	Summarize the concept of elementary mathematical logical arguments.	K2
		C201.2	Apply basic counting techniques to solve combinatorial problems.	K2
		C201.3	Associate the applications of Graph theory models and data structures.	K3
		C201.4	Describe the concepts and properties of algebraic structures such as groups, rings and fields.	K3
		C201.5	Extend the concepts of Boolean algebra in the area of lattices.	K3
		C201.6	Apply the knowledge of argumental discrete mathematical problems.	K2

## CO-PO Mapping

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**CO PO MAPPING**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
<b>CS8381</b>	<b>DATA STRUCTURES LAB</b>	C206.1	Enumerate functions to implement linear and non-linear data structure operations	K2
		C206.2	Perform practical applications of data structures	K3
		C206.3	Design and develop appropriate linear / non-linear data structure operations for solving a given problem	K3
		C206.4	Design new solutions for programming problems or improve existing code using learned algorithms and data structures	K3
		C206.5	Apply the linear / non-linear data structure operations for a given problem based on the user needs	K3
		C206.6	Apply appropriate hash functions that result in a collision free scenario for data storage and retrieval	K3
		C206.7	Exhibit ethical principles in engineering practices	K3
		C206.8	Perform task as an individual and / or team member to manage the task in time	K3
		C206.9	Express the Engineering activities with effective presentation and report.	K3
		C206.10	Interpret the findings with appropriate technological / research citation.	K2

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**CO PO MAPPING**

**CO-PO Mapping**

CO		Program Outcomes											
		PO 1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6							
C206.1	K2	2	2	2	-	-	2	1	1	-	-	-	-
C206.2	K3	2	2	2	1	-	1	1	1	-	-	-	-
C206.3	K3	1	3	2	-	-	2	1	1	-	-	-	-
C206.4	K3	2	2	2	2	-	2	2	1	-	-	-	-
C206.5	K3	3	2	1	1	-	2	1	1	-	-	-	-
C206.6	K3	2	1	1	1	-	1	2	1	-	-	-	-
C206.7	K3	-	-	-	-	-	-	-	3	-	-	-	-
C206.8	K3	-	-	-	-	-	-	-	-	3	-	3	-
C206.9	K3	-	-	-	-	-	-	-	-		3	-	-
C206.10	K2												3
Avg		2	2	2	2	-	2	2	1	3	3	3	3

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**CO PO MAPPING**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
<b>CS8383</b>	<b>OBJECT ORIENTED PROGRAMMING LAB</b>	C207.1	Develop and implement Java programs for simple applications that make use of classes	K3
		C207.2	Develop and implement Java programs with arraylist	K3
		C207.3	Design applications using file processing	K3
		C207.4	Build software development skills using java programming for real-world applications	K3
		C207.5	Apply the concepts of classes, packages, interfaces, exception handling	K3
		C207.6	Develop applications using generic programming and event handling	K3
		C207.7	Exhibit ethical principles in engineering practices	K3
		C207.8	Perform task as an individual and / or team member to manage the task in time	K3
		C207.9	Express the Engineering activities with effective presentation and report.	K3
		C207.10	Interpret the findings with appropriate technological / research citation.	K2

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**CO-PO Mapping**

CO		Program Outcomes											
		PO 1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6							
C207.1	K3	3	2	2	1	-	-	-	-	-	-	-	-
C207.2	K3	3	2	2	1	-	-	-	-	-	-	-	-
C207.3	K3	3	2	2	1	-	-	-	-	-	-	-	-
C207.4	K3	3	2	2	1	-	-	-	-	-	-	-	-
C207.5	K3	3	2	2	1	-	-	-	-	-	-	-	-
C207.6	K3	3	2	2	1	-	-	-	-	-	-	-	-
C207.7	K3	-	-	-	-	-	-	-	3	-	-	-	-
C207.8	K3	-	-	-	-	-	-	-	-	3	-	3	-
C207.9	K3	-	-	-	-	-	-	-	-	-	3	-	-
C207.10	K2	-	-	-	-	-	-	-	-	-	-	-	3
Avg		3	2	2	1	-	-	-	3	3	3	3	3

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**CO PO MAPPING**

Course Code	Course Name	Course Outcome			Knowledge Level		
		Students will be able to					
<b>CS8382</b>	<b>DIGITAL SYSTEMS LAB</b>	C208.1	Interpret Combinational circuits Using Logic gates.			K3	
		C208.2	Illustrate Combinational circuits Using MSI Devices.			K3	
		C208.3	Practice various counters using Flip-flops.			K3	
		C208.4	Practice shift registers using Flip-flops			K3	
		C208.5	Solve verilog codes for the design of digital circuits.			K3	
		C208.6	Demonstrate simple digital system			K3	
		C208.7	Exhibit ethical principles in engineering practices			K3	
		C208.8	Perform task as an individual and / or team member to manage the task in time			K3	
		C208.9	Express the Engineering activities with effective presentation and report.			K3	
		C208.10	Interpret the findings with appropriate technological / research citation.			K2	

**CO-PO Mapping**

CO		Program Outcomes											
		PO 1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6							
C208.1	K3	3	2	2	-	-	-	-	-	-	-	-	-
C208.2	K3	3	2	2	-	-	-	-	-	-	-	-	-
C208.3	K3	3	2	2	-	-	-	-	-	-	-	-	-
C208.4	K3	3	2	2	-	-	-	-	-	-	-	-	-
C208.5	K3	3	2	2	-	-	-	-	-	-	-	-	-
C208.6	K3	3	2	2	-	-	-	-	-	-	-	-	-
C208.7	K3	-	-	-	-	-	-	-	3	-	-	-	-

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C208.8	K3	-	-	-	-	-	-	-	-	-	3	-	3	-
C208.9	K3	-	-	-	-	-	-	-	-	-	3	-	-	-
C208.10	K2	-	-	-	-	-	-	-	-	-	-	-	-	3
Avg		3	2	2	-	-	-	-	-	3	3	3	3	3

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**CO PO MAPPING**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
<b>HS8381</b>	<b>INTERPERSONAL SKILLS / LISTENING AND SPEAKING</b>	C209.1	Listen and react by giving verbal and non verbal feedback.	A2
		C209.2	To make effective contribution in Group Discussions.	K2, K3
		C209.3	Compare and Contrast the ideas from multiple choices and summarize.	K2
		C209.4	Respond confidently in both Formal and Informal conversations.	K2
		C209.5	To Greet and to respond to Greetings.	K2
		C209.6	Apply stress and intonation while speaking to make the presentation effective.	K3
		C209.7	Exhibit ethical principles in engineering practices	K3
		C209.8	Perform task as an individual and / or team member to manage the task in time	K3
		C209.9	Express the Engineering activities with effective presentation and report.	K3
		C209.10	Interpret the findings with appropriate technological / research citation.	K2

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**CO PO MAPPING**

CO		Program Outcomes											
		PO 1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C209.1	A2	-	-	-	-	-	-	-	-	2	3	-	3
C209.2	K2, K3	-	-	-	-	-	-	-	-	3	2	-	3
C209.3	K2	-	-	-	-	-	-	-	-	2	2	-	3
C209.4	K2	-	-	-	-	-	-	-	-	2	2	-	3
C209.5	K2	-	-	-	-	-	-	-	-	3	2	-	3
C209.6	K3	-	-	-	-	-	-	-	-	2	3	-	2
C209.7	K3	-	-	-	-	-	-	-	3	-	-	-	-
C209.8	K3	-	-	-	-	-	-	-	-	3	-	3	-
C209.9	K3	-	-	-	-	-	-	-	-	-	3	-	-
C209.10	K2	-	-	-	-	-	-	-	-	-	-	-	3
Avg		-	-	-	-	-	-	-	3	2	2	3	3

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**CO PO MAPPING**

Course Code	Course Name	Course Outcome (CO) Students will be able to					Knowledge Level	
MA8402	<b>PROBABILITY AND QUEUING THEORY</b>	<b>C2O1.1</b>	Identify the functions of discrete and continuous random variables, moments and moment generating function.					K1
		<b>C2O1.2</b>	Solve problems in marginal conditional distribution, using the concept of correlation, regression and transformation of two dimensional random variables.					K3
		<b>C2O1.3</b>	Determine the process is either SSS or WSS, find the TPM of Markov chain and its classification.					K3
		<b>C2O1.4</b>	Analyze the concepts of queuing models.					K4
		<b>C2O1.5</b>	Apply non Markovian queues to open and closed networks.					K3

### CO-PO MAPPING:

Cos		Pos											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K5</b>	<b>K3/ K5/ K6</b>	<b>K4</b>	<b>K2</b>	<b>K3</b>	<b>K3</b>	<b>K2</b>	<b>K3</b>	<b>K3</b>
C101.1	K1	1	-	-	-	-	-	-	-	-	-	-	-
C101.2	K2	3	2	1	1	-	-	-	-	-	-	-	-
C101.3	K3	3	2	1	1	-	-	-	-	-	-	-	-
C101.4	K2	3	2	2	2	-	-	-	-	-	-	-	-
C101.5	K3	3	2	1	1	-	-	-	-	-	-	-	-
Average		<b>2.6</b>	<b>1.8</b>	<b>1</b>	<b>1</b>	-							

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**REGULATION 2017**

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
CS8451	Design and Analysis of Algorithm	CO1: Explain the need of asymptotic notations with its properties	K2
		CO2: Explain the various technique of exhaustive search	K2
		CO3: Apply dynamic programming approach to analyze the efficiency of an sorting algorithm	K3
		CO4: Discuss the concept of iterative improvement with an example	K2
		CO5: Apply the concept branch and bound to solve travelling salesman problem	K3

**CO-PO MAPPING**

COs		POs											
		PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
		K3	K4	K5	K5	K3/K5/K6							
C351. 1	K 2	2	1	1	1	-	-	-	-	-	-	-	-
C351. 1	K 2	2	1	1	1	-	-	-	-	-	-	-	-
C351. 1	K 3	3	2	2	2	-	-	-	-	-	-	-	-
C351. 1	K 2	2	1	1	1	-	-	-	-	-	-	-	-
C351. 1	K 3	3	2	2	2	-	-	-	-	-	-	-	-
Avg		2.4	1.4	1.4	1.4	-							

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<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcome(CO) Students will be able to</b>	<b>Knowledge Level</b>
CS8491	Computer Architecture	Understand the basics structure of computers, operations and instructions.	K2
		Design arithmetic and logic unit.	K3
		Understand pipelined execution and design control unit.	K2
		Understand parallel processing architectures.	K2
		Understand the various memory systems and I/O communication.	K2

**CO-PO MAPPING**

COs		POs											
		PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
		K3	K4	K5	K5	K3/K5/K6							
C401.1	K2	2	2	1	1	2	-	-	-	-	-	-	-
C401.2	K3	3	2	1	1	3	-	-	-	-	-	-	-
C401.3	K2	2	2	1	1	2	-	-	-	-	-	-	-
C401.4	K2	2	2	1	1	2	-	-	-	-	-	-	-
C401.5	K2	2	2	1	1	2	-	-	-	-	-	-	-
Avg		2.2	2.0	1.0	1.0	2.2	-	-	-	-	-	-	-

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Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
CS8492	Database Management System	CO1: List out the data models in DBMS	K1
		CO2: Discuss the performance of ER-to-Relational Mapping	K2
		CO3: Develop the program to handle two-phase locking	K2
		CO4: Develop the program to perform query processing	K3
		CO5: Demonstrate the concept of XML schema and query	K3

**CO-PO MAPPING**

COs		POs											
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
		K2	K3	K2	K5	K3/K5/K6	K43	K2	K3	K3	K2	K6	K6
CO1	K1	2	1	2	-	-	2	3	2	2	3	-	-
CO2	K2	3	2	3	-	-	2	3	2	2	3	-	-
CO3	K2	3	2	3	-	-	2	3	2	2	3	-	-
CO4	K3	3	2	3	-	-	2	3	2	2	3	-	-
CO5	K3	3	2	3	-	-	2	3	2	2	3	-	-

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CO PO MAPPING**

YEAR/SEM : II/IV

<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcome</b>	<b>Description</b>	<b>Knowledge Level</b>
CS8493	Operating Systems	C405.1	Understand the basic concepts and functions of operating system.	K2
		C405.2	Compare the performance of various Scheduling Algorithms and solve problems on it	K3
		C405.3	Summarize various management schemes.	K2
		C405.4	Understand I/O management and file system	K2
		C405.5	Perform administrative tasks on Linux servers	K3

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**CO PO MAPPING**

<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcome(CO) Students will be able to</b>	<b>Knowledge Level</b>
CS8494	Software Engineering	CO1: Understand the Fundamental base of software development process in various criteria.	K2
		CO2: Design the requirements of software specification of function and non-functional basis.	K2
		CO3: Develop the architectural design of various components for the given data.	K3
		CO4: Apply the technique of testing fundamental of each developed coding section.	K3
		CO5: Analyzing the software project management and risk management techniques of Various levels of criteria for the given set of elements.	K4

**CO-PO MAPPING**

COs		POs						
		PO1	PO2	PO3	PO4	PO5	PO6	PO7
		K2	K3	K2	K5	K3/K5/K6	K3	K2
C411.1	K2	3	2	3	-	2	2	3
C411.2	K2	3	2	3	-	-	2	3
C411.3	K3	3	3	3	1	-	3	3
C411.4	K3	3	3	3	2	-	3	3
C411.5	K4	2	2	2	-	-	2	2

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CO PO MAPPING**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
CS8481	<b>DATABASE MANAGEMENT SYSTEMS LABORATORY</b>	C216.1	Use typical data definitions and manipulation commands.	K3
		C216.2	Design applications to test Nested and Join Queries	K3
		C216.3	Implement simple applications that use Views	K3
		C216.4	Make use of ER modeling and normalization to design and implement database	K3
		C216.5	Implement applications that require a Front-end Tool	K3
		C216.6	Critically analyze the use of Tables, Views, Functions and Procedures	K4
		C216.7	Exhibit ethical principles in engineering practices	K3
		C216.8	Perform task as an individual and / or team member to manage the task in time	K3
		C216.9	Express the Engineering activities with effective presentation and report.	K3
		C216.10	Interpret the findings with appropriate technological / research citation.	K2

CO-PO Mapping

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**CO PO MAPPING**

C216.6	K4	3	3	3	-	-	-	-	-	-	-	-	-	-
C216.7	K3	-	-	-	-	-	-	-	3		-	-	-	-
C216.8	K3	-	-	-	-	-	-	-	-	3	-	3	-	-
C216.9	K3	-	-	-	-	-	-	-	-	-	3	-	-	-
C216.10	K2	-	-	-	-	-	-	-	-	-	-	-	-	3
Avg		3	2	2	-	-	-	-	3	3	3	3	3	3

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**CO PO MAPPING**

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
<b>CS8461</b>	<b>OPERATING SYSTEMS LABORATORY</b>	C217.1	Illustrate the various CPU scheduling algorithms.	K3
		C217.2	Implement deadlock avoidance and detection algorithms.	K3
		C217.3	Implement semaphore concepts.	K3
		C217.4	Create processes and implement IPC.	K3
		C217.5	Analyze the performance of the various page replacement algorithms.	K3
		C217.6	Implement file organization and file allocation strategies.	K3
		C217.7	Exhibit ethical principles in engineering practices	K3
		C217.8	Perform task as an individual and / or team member to manage the task in time	K3
		C217.9	Express the Engineering activities with effective presentation and report.	K3
		C217.10	Interpret the findings with appropriate technological / research citation.	K2

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**CO PO MAPPING**

**CO-PO Mapping**

CO		Program Outcomes											
		PO 1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6							
C217.1	K3	3	2	2	-	-	-	-	-	-	-	-	-
C217.2	K3	3	2	2	-	-	-	-	-	-	-	-	-
C217.3	K3	3	2	2	-	-	-	-	-	-	-	-	-
C217.4	K3	3	2	2	-	-	-	-	-	-	-	-	-
C217.5	K3	3	2	2	-	-	-	-	-	-	-	-	-
C217.6	K3	3	2	2	-	-	-	-	-	-	-	-	-
C217.7	K3	-	-	-	-	-	-	-	3	-	-	-	-
C217.8	K3	-	-	-	-	-	-	-	-	3	3	-	-
C217.9	K2	-	-	-	-	-	-	-	-	-	3	-	-
C217.10	K3	-	-	-	-	-	-	-	-	-	-	-	3
Avg		3	2	2	-	-	-	-	3	3	3	3	3

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**CO PO MAPPING**

Course Code	Course Name	Course Outcome				Knowledge Level		
		Students will be able to						
<b>HS8461</b>	<b>ADVANCED READING AND WRITING</b>	C218.1	Illustrate the various CPU scheduling algorithms.				K1	
		C218.2	Implement deadlock avoidance and detection algorithms.				K2	
		C218.3	Implement semaphore concepts.				K2	
		C218.4	Create processes and implement IPC.				K3	
		C218.5	Analyze the performance of the various page replacement algorithms.				K2	
		C218.6	Implement file organization and file allocation strategies.				K3	
		C218.7	Exhibit ethical principles in engineering practices				K3	
		C218.8	Perform task as an individual and / or team member to manage the task in time				K3	
		C218.9	Express the Engineering activities with effective presentation and report.				K3	
		C218.10	Interpret the findings with appropriate technological / research citation.				K2	

**CO-PO Mapping**

CO		Program Outcomes											
		PO 1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6							
C218.1	K1	-	-	-	-	-	-	-	-	2	3	-	3
C218.2	K2	-	-	-	-	-	-	-	-	2	2	-	2
C218.3	K2	-	-	-	-	-	-	-	-	2	3	-	3
C218.4	K3	-	-	-	-	-	-	-	-	2	2	-	3
C218.5	K2	-	-	-	-	-	-	-	-	3	2	-	3
C218.6	K3	-	-	-	-	-	-	-	-	2	2	-	2
C218.7	K3	-	-	-	-	-	-	-	3	-	-	-	-
C218.8	K3	-	-	-	-	-	-	-	-	3	-	3	-

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**CO PO MAPPING**

C218.9	K3	-	-	-	-	-	-	-	-	-	-	3	-	-
C218.10	K2	-	-	-	-	-	-	-	-	-	-	-	-	3
Avg		-	-	-	-	-	-	-	3	2	2	3	3	

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**REGULATION 2017**

**CO PO MAPPING**

**III YEAR**

**V/VI SEMESTER**

<b>Course Code</b>	<b>Course Name</b>		<b>Course Outcome(CO) Students will be able to</b>	<b>Knowledge Level</b>
CS8591	Theory of Computation	CO1	Discuss the deterministic finite automata and non-deterministic finite automata	K2
		CO2	Illustrate the FA and Regular Expressions	K2
		CO3	Develop the Ambiguity in Grammars and Languages in PDA	K3
		CO4	Apply closure properties in context free grammar.	K3
		CO5	Illustrate the undecidable problem with RE and Turing machine	K2

**CO-PO MAPPING**

<b>Cos</b>		<b>POs</b>											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3	K4	K2	K3	K3	K2	K3	K3
CO1	K2	1	2	-	-	1	-	-	-	-	-	-	-
CO2	K2	1	2	-	-	1	-	-	-	-	-	-	-
CO3	K3	3	1	2	2	3	-	-	-	-	-	-	-
CO4	K3	3	1	2	2	3	-	-	-	-	-	-	-
CO5	K2	1	2	-	-	1	-	-	-	-	-	-	-

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**REGULATION 2017**  
**CO PO MAPPING**  
**COURSE OUTCOME**

Course Code	Course Name	Course Outcome	Description	Knowledge Level
CS8592	OBJECT ORIENTED ANALYSIS AND DESIGN	C505.1	Able to list the requirements of the software specifications	K1
		C505.2	Able to convert the SRS to UML	K2
		C505.3	Able to map the design to coding	K3
		C505.4	Able to test the software manually	K3

**CO PO MAPPING**

CO	PO											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C505.1	3	3	3	2	2	1	0	0	0	0	0	1
C505.2	2	3	3	3	2	0	1	1	0	0	0	0
C505.3	3	3	3	3	2	0	0	0	0	0	0	0
C505.4	1	1	2	1	0	2	1	0	0	0	0	0
C505	2.25	2.5	2.75	2.25	2	1.5	1	1				1

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**REGULATION 2017**  
**CO PO MAPPING**  
**Course Outcome**

Course Code	Course Name	Course Outcome	Description	Knowledge Level
CS8591	Computer Networks	C210.1	Explain the components requirement of networks and link layer service	K1
		C210.2	Classify the Media Access Control Protocols and different Internetworking	K2
		C210.3	Demonstrate various types of routing techniques	K3
		C210.4	Outline the mechanisms involved in transport layer	K3
		C210.5	Experiment with different application layer protocols	K2

**Co Po Mapping**

CO	PO											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C210.1	3	2	2	1	-	-	-	-	-	-	-	-
C210.2	2	2	2	2	1	-	-	-	-	-	-	-
C210.3	3	3	2	2	1	-	-	-	-	-	-	-
C210.4	3	3	3	1	-	-	-	-	-	-	-	-
C210.5	3	3	2	3	2	2	1	2	-	-	-	-
C210	3	3	2	1	1	2	1	2				

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**CO PO MAPPING**

**Course Outcome**

Course Code	Course Name	Course Outcome	Description	Knowledge Level
EC8691	Microprocessor and Microcontroller	C213.1	Explain about the architecture of microprocessor and microcontroller	K1
		C213.2	Demonstrate the programs on 8086 microprocessor	K2
		C213.3	Illustrate the Bus structure and communication of microprocessor	K3
		C213.4	Illustrate the design aspects of I/O and memory interfacing circuits	K3
		C213.5	Develop a simple microcontroller based systems	K2

**CO PO Mapping**

CO	PO											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C213.1	3	1	1	-	-	-	-	-	-	-	-	-
C213.2	3	3	2	2	1	1	1	-	-	-	-	-
C213.3	3	2	1	-	-	-	-	-	-	-	-	-
C213.4	3	2	1	1	-	-	-	-	-	-	-	-
C213.5	3	3	3	3	2	2	2	1	2	1	1	1
C213	3	2	1	2	1	2	1	1	2	1	1	1

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**REGULATION 2017**  
**CO PO MAPPING**  
51      **ALGEBRA AND NUMBER THEORY**

Course Outcomes	Description	Knowledge Level
C301.1	Summarize the notations and properties of algebraic structures such as groups, rings and fields.	K2
C301.2	Explain the concepts of finite fields and polynomials to solve problems in advanced algebra.	K2
C301.3	Associate the applications of divisibility theory and canonical decompositions.	K2
C301.4	Describe the concept of Diophantine equations and congruences and exhibit the efficient use of advanced algebraic techniques in number theory.	K2
C301.5	Extend the concepts of multiplicative functions and classical theorems.	K2

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**CO PO MAPPING**

**Course Outcome**

Course Code	Course Name	Course Outcome(CO) Students will be able to		Knowledge Level
OEC552	SOFT COMPUTING	CO1	Discuss the supervised learning network with an real time example.	K2
		CO2	Illustrate the fuzzy measures and fuzzy integrals.	K2
		CO3	Develop the optimized genetic programming.	K3
		CO4	Apply the neuro-fuzzy hybrid systems and its applications.	K3
		CO5	Illustrate the various soft computing frame works.	K2

**CO-PO MAPPING**

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3	K4	K2	K3	K3	K2	K3	K3
CO1	K2	1	2	-	-	1	-	-	-	-	-	-	-
CO2	K2	1	2	-	-	1	-	-	-	-	-	-	-
CO3	K3	3	1	2	2	3	-	-	-	-	-	-	-
CO4	K3	3	1	2	2	3	-	-	-	-	-	-	-
CO5	K2	1	2	-	-	1	-	-	-	-	-	-	-

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**CO PO MAPPING**

**EC8681      MICROPROCESSORS AND MICROCONTROLLERS  
LABORATORY**

<b>Course Outcomes</b>	<b>Description</b>	<b>Knowledge Level</b>
<b>C307.1</b>	Interpret the architecture and operation of microprocessor (8086).	K2
<b>C307.2</b>	Implement simple assembly language programs using instruction sets of microprocessor and microcontroller.	K3
<b>C307.3</b>	Compare instruction sets of 8086 microprocessor and 8051 microcontroller.	K3
<b>C307.4</b>	Implement assembly language programs using instruction sets of microcontroller.	K3
<b>C307.5</b>	Develop applications using instructions of microprocessors and microcontroller.	K3
<b>C307.6</b>	Interpret the architecture and operation of microcontroller(8051)	K2
<b>C307.7</b>	Exhibit ethical principles in engineering practices	A3
<b>C307.8</b>	Perform task as an individual and / or team member to manage the task in time	A3
<b>C307.9</b>	Express the Engineering activities with effective presentation and report.	A3
<b>C307.10</b>	Interpret the findings with appropriate technological / research citation.	A2

<b>Subject Code&amp; Subject Name</b>	<b>Course Outcomes</b>	<b>Programme Outcome (POs)</b>												<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>
		<b>K 3</b>	<b>K 4</b>	<b>K4</b>	<b>K5</b>	<b>K3,K 4, K5</b>	<b>A3</b>	<b>A2</b>	<b>A3</b>	<b>A3</b>	<b>A3</b>	<b>A2</b>				
		<b>P O 1</b>	<b>P O 2</b>	<b>P O3</b>	<b>PO4</b>	<b>PO 5</b>	<b>PO 6</b>	<b>PO 7</b>	<b>PO 8</b>	<b>PO 9</b>	<b>PO1 0</b>	<b>PO1 1</b>	<b>PO1 2</b>			
<b>EC8681</b>  <b>MICRO PROCESSORS AND MICRO CONTROLLERS LABORATORY</b>	<b>CO1</b>	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-
	<b>CO2</b>	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-
	<b>CO3</b>	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-
	<b>CO4</b>	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-
	<b>CO5</b>	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-
	<b>CO6</b>	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-
	<b>CO7</b>	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-
	<b>CO8</b>	-	-	-	-	-	-	-	-	3	-	3	-	-	-	-
	<b>CO9</b>	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
	<b>CO10</b>	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-
		2	1	1	-	-	-	-	3	3	3	3	3	2	2	-

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**CO PO MAPPING**

**CS8581      NETWORKS LABORATORY**

<b>Course Outcomes</b>	<b>Description</b>	<b>Knowledge Level</b>
<b>C309.1</b>	Implement various protocols using TCP and UDP	K3
<b>C309.2</b>	Compare the performance of different transport layer protocols	K3
<b>C309.3</b>	Use simulation tools to analyze the performance of various network protocols	K3
<b>C309.4</b>	Analyze various routing algorithms	K3
<b>C309.5</b>	Implement error correction codes	K3
<b>C309.6</b>	Explain Network simulator (NS) and Simulate Congestion Control Algorithms using NS	K3
<b>C309.7</b>	Exhibit ethical principles in engineering practices	A3
<b>C309.8</b>	Perform task as an individual and / or team member to manage the task in time	A3
<b>C309.9</b>	Express the Engineering activities with effective presentation and report.	A3
<b>C309.10</b>	Interpret the findings with appropriate technological / research citation.	A2

Subject Code& Subject Name	Course Outcomes	Programme Outcome (POs)											PSO1	PSO2	PSO
		K3	K4	K4	K5	K3,K4, K5	A3	A2	A3	A3	A3	A2			
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11			
<b>CS85 81</b>  <b>NETWORKS LABORATO RY</b>	<b>CO1</b>	3	2	2	-	2	-	-	-	-	-	-	2	1	1
	<b>CO2</b>	2	1	1	-	1	-	-	-	-	-	-	2	1	1
	<b>CO3</b>	3	2	2	-	3	-	-	-	-	-	-	2	1	1
	<b>CO4</b>	3	2	2	-	2	-	-	-	-	-	-	2	1	1
	<b>CO5</b>	3	2	2	-	1	-	-	-	-	-	-	2	1	1
	<b>CO6</b>	3	2	2	-	3	-	-	-	-	-	-	2	1	1
	<b>CO7</b>	-	-	-	-	-	-	-	3	-	-	-	-	-	-
	<b>CO8</b>	-	-	-	-	-	-	-	-	3	-	3	-	-	-
	<b>CO9</b>	-	-	-	-	-	-	-	-	-	3	-	-	-	-
	<b>CO10</b>	-	-	-	-	-	-	-	-	-	-	3	-	-	-
		3	2	2	-	2	3		3	3	3	3	2	1	1

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**CS8592      OBJECT ORIENTED ANALYSIS AND DESIGN**

Course Outcomes	Description	Knowledge Level
C305.1	Express the software design concepts with UML diagram.	K2
C305.2	Construct the domain model and design model to various use case scenarios.	K3
C305.3	Design software applications using object oriented concepts.	K3
C305.4	Identify various scenarios based on software requirements.	K2
C305.5	Transform UML based software design into pattern based design using design patterns.	K3
C305.6	Explain the various testing methodologies for object oriented software.	K2

Subject Code & Subject Name	Course Outcomes	Programme Outcome (POs)											PSO 1	PSO 2	PSO 3
		K3	K4	K4	K5	K3, K4, K5	A3	A2	A3	A3	A3	A3			
		P O 1	P O 2	P O 3	P O 4	P O 5	P O 6	P O 7	P O 8	P O 9	P O 1 0	P O 1 1			
CS8592  OBJECT ORIENTED ANALYSIS ANDDESIGN	CO1	2	1	1	-	-	-	-	-	-	-	-	1	1	-
	CO2	3	2	2	-	-	-	-	-	-	-	-	1	1	-
	CO3	3	2	2	-	-	-	-	-	-	-	-	3	3	-
	CO4	2	1	1	-	-	-	-	-	-	-	-	2	2	-
	CO5	3	2	2	-	-	-	-	-	-	-	-	2	2	-
	CO6	2	1	1	-	-	-	-	-	-	-	-	3	3	-
		3	2	2	-	-	-	-	-	-	-	-	2	2	-

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**CO PO MAPPING**

**Course Outcome**

Course Code	Course Name		Course Outcome(CO) Students will be able to	Knowledge Level
CS8602	COMPILER DESIGN	CO1	Discuss the different phases of compiler	K2
		CO2	Illustrate the formal grammars for specifying the syntax and semantics of programming languages	K2
		CO3	Develop the symbol table and intermediate code for a given program	K3
		CO4	Apply code optimization techniques to improve the performance of a program	K3
		CO5	Illustrate the tools to construct the machine independent code	K2

**CO-PO MAPPING**

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3	K4	K2	K3	K3	K2	K3	K3
CO1	K2	1	2	-	-	1	-	-	-	-	-	-	-
CO2	K2	1	2	-	-	1	-	-	-	-	-	-	-
CO3	K3	3	1	2	2	3	-	-	-	-	-	-	-
CO4	K3	3	1	2	2	3	-	-	-	-	-	-	-
CO5	K2	1	2	-	-	1	-	-	-	-	-	-	-

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**Course Outcome**

<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcome(CO) Students will be able to</b>	<b>Knowledge Level</b>
CS8651	Internet Programming	CO1: Develop a static website with hyperlinks, tables, images using HTML	K3
		CO2: Describe the Rich Internet Application Technologies for front end presentation of web page	K2
		CO3: Design E-Com application with help of session tracking	K3
		CO4: Design of dynamic web pages sing control structure & built-in functions in PHP	K3
		CO5:Explain function and benefits of web service	K2

CO-PO MAPPING

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**CO PO MAPPING**

**Course Outcome**

Course Code	Course Name	Course Outcome (CO) Students will be able to				Knowledge Level	
CS8601	MOBILE COMPUTING	CO1	Describe generations of mobile communication technologies.				K2
		CO2	Demonstrate the mobility management security.				K2
		CO3	Learn the vehicular Ad Hoc networks.				K2
		CO4	Relate the mobile TCP.				K2
		CO5	Design of concept in windows phone.				K3

**CO-PO MAPPING:**

Cos		Pos											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/ K5/ K6	K4	K2	K3	K3	K2	K3	K3
CO1	K2	2	2	1	1	-	-	-	-	-	-	-	-
CO2	K2	2	2	1	1	1	-	-	-	-	-	-	-
CO3	K2	2	2	1	1	1	-	-	-	-	-	-	-
CO4	K2	2	2	1	1	1	-	-	-	-	-	-	-
CO5	K3	3	3	2	1	-	-	-	-	-	-	-	-
Average		1.1	1.1	0.6	0.5	0.3							

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**CO PO MAPPING**  
**Course Outcome**

Course Code	Course Name	Course Outcome (CO) Students will be able to		Knowledge Level
CS8691	Artificial Intelligence	C311.1	List the characteristics and types of intelligent agents	K2
		C311.2	Interpret search algorithms for any AI problem	K2
		C311.3	Use the appropriate agent strategy to solve a given problem	K3
		C311.4	Illustrate the complications of planning and intelligent agents acting in the Real world	K4
		C311.5	Design applications for NLP that use Artificial Intelligence	K5

## CO-PO MAPPING:



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**Course Outcome**

Course Code	Course Name	Course Outcome	Description	Knowledge Level
CS8603	Distributed System	C615.1	Explain the distributed systems architecture.	K1
		C615.2	Outline the inter process communication in distributed systems	K2
		C615.3	Explain the file accessing model and various services in distributed system	K3
		C615.4	Demonstrate concurrency control and properties of transaction in Distributed systems	K3
		C615.5	Discuss resource and process management in distributed system	K2

**CO PO Mapping Matrix**

CO	PO											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C615.1	3	2	1	-	-	1	-	-	-	-	-	-
C615.2	3	2	2	1	-	-	-	-	-	-	-	-
C615.3	3	2	2	1	-	-	-	-	-	-	-	-
C615.4	3	3	3	2	-	1	1	-	2	1	-	2
C615.5	3	2	2	-	2	1	1	-	-	-	-	1
C615	3	2	2	1	2	1	1	-	2	1	-	1

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Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
<b>CS8661</b>	<b>INTERNET PROGRAMMING LAB</b>	C316.1	Construct web pages using HTML/XML and style sheets.	K3
			Build dynamic web pages with validation using javascript objects and apply different event handling mechanisms.	
		C316.2	Develop dynamic web pages using server side scripting.	K3
		C316.3	Use PHP programming to develop web applications.	K3
		C316.4	Construct web applications using AJAX and web services.	K3
		C316.5	Develop interactive web applications for real world problems.	K3
		C316.6	Exhibit ethical principles in engineering practices	K3
		C316.7	Perform task as an individual and / or team member to manage the task in time	K3
		C316.8	Express the Engineering activities with effective presentation and report.	K3
		C316.9	Interpret the findings with appropriate technological / research citation.	K2

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**CO-PO Mapping**

CO		Program Outcomes											
		PO 1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C316.1	K3	3	2	2	1	-	-	-	-	-	-	-	-
C316.2	K3	3	2	2	1	-	-	-	-	-	-	-	-
C316.3	K3	3	2	2	1	-	-	-	-	-	-	-	-
C316.4	K3	3	2	2	1	-	-	-	-	-	-	-	-
C316.5	K3	3	2	2	1	-	-	-	-	-	-	-	-
C316.6	K3	3	2	2	1	-	-	-	-	-	-	-	-
C316.7	K3	-	-	-	-	-	-	-	3	-	-	-	-
C316.8	K3	-	-	-	-	-	-	-	-	3	-	3	-
C316.9	K3	-	-	-	-	-	-	-	-	-	3	-	-
C316.10	K2	-	-	-	-	-	-	-	-	-	-	-	3
Avg		3	2	2	1	-	-	-	3	3	3	3	3

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Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
<b>CS8662</b>	<b>MOBILE APPLICATION DEVELOPMENT LAB</b>	C317.1	Illustrate mobile applications using GUI and Layouts.	K3
		C317.2	Demonstrate mobile applications using Event Listener.	K3
		C317.3	Experiment with mobile applications using Databases.	K3
		C317.4	Make use of mobile applications using RSS Feed, Internal/External Storage, SMS, Multithreading and GPS.	K3
		C317.5	Build own mobile app for simple needs.	K3
		C317.6	Model various mobile applications using different application development frameworks.	K3
		C317.7	Exhibit ethical principles in engineering practices	K3
		C317.8	Perform task as an individual and / or team member to manage the task in time	K3
		C317.9	Express the Engineering activities with effective presentation and report.	K3
		C317.10	Interpret the findings with appropriate technological / research citation.	K2

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**CO-PO Mapping**

CO		Program Outcomes											
		PO 1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6							
C317.1	K3	3	2	-	-	-	-	-	-	-	-	-	-
C317.2	K3	3	2	-	-	-	-	-	-	-	-	-	-
C317.3	K3	3	2	-	-	-	-	-	-	-	-	-	-
C317.4	K3	3	2	-	-	-	-	-	-	-	-	-	-
C317.5	K3	3	2	-	-	-	-	-	-	-	-	-	-
C317.6	K3	3	2	-	-	-	-	-	-	-	-	-	-
C317.7	K3	-	-	-	-	-	-	-	3	-	-	-	-
C317.8	K3	-	-	-	-	-	-	-	-	3	-	3	-
C317.9	K3	-	-	-	-	-	-	-	-	-	3	-	-
C317.10	K2	-	-	-	-	-	-	-	-	-	-	-	3
Avg		3	2	-	-	-	-	-	3	3	3	3	3

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Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
<b>HS8581</b>	<b>PROFESSIONAL COMMUNICATION</b>	C319.1	To classify the content material and make effective presentations	K3
		C319.2	Employ adequate soft skills to successfully execute the job on hand.	K3
		C319.3	To respond favorably to the values of others opinion and manage difficult situations in group discussions wisely.	K3
		C319.4	To execute various skills in grooming for any profession.	K3
		C319.5	To display the body language in a very pleasant manner and react to even tough situations with ease.	K3
		C319.6	To perform intelligently during job interviews and be successful.	K3
		C319.7	Exhibit ethical principles in engineering practices	K3
		C319.8	Perform task as an individual and / or team member to manage the task in time	K3
		C319.9	Express the Engineering activities with effective presentation and report.	K3
		C319.10	Interpret the findings with appropriate technological / research citation.	K2

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**CO-PO Mapping**

CO		Program Outcomes											
		PO 1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6							
C319.1	K3	-	-	-	-	-	-	-	-	2	2	-	2
C319.2	K3	-	-	-	-	-	-	-	-	3	2	-	3
C319.3	K3	-	-	-	-	-	-	-	-	2	3	-	3
C319.4	K3	-	-	-	-	-	-	-	-	3	2	-	3
C319.5	K3	-	-	-	-	-	-	-	-	2	2	-	3
C319.6	K3	-	-	-	-	-	-	-	-	2	3	-	2
C319.7	K3	-	-	-	-	-	-	-	3	-	-	-	-
C319.8	K3	-	-	-	-	-	-	-	-	3	-	3	-
C319.9	K3	-	-	-	-	-	-	-	-	-	3	-	-
C319.10	K2	-	-	-	-	-	-	-	-	-	-	-	3
Avg		-	-	-	-	-	-	-	3	2	2	3	3

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**IV YEAR – VII / VIII SEMESTER**

<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcome(CO) Students will be able to</b>	<b>Knowledge Level</b>
CS6703	<b>GRID AND CLOUD COMPUTING</b>	CO403.1: Describe the grid architecture.	K2
		CO403.1: List out the methods of grid computing.	K1
		CO403.1: Illustrate the services of open grid service architecture.	K2
		CO403.1: Identify the functional requirements of OGSA.	K1
		CO403.1: Summarize the categories of cloud computing.	K2
		CO403.1: Apply the concept of virtualization using VMware	K3
		CO403.1: Explain the GT4 architecture	K2
		CO403.1: Apply the usage of Globus in cloud environment.	K3
		CO403.1: Solve word count problem by map reduce technique.	K3
		CO403.1: Illustrate the design of HDFS file system and its architecture	K2
		CO403.1: Summarize the trust model to ensure security in grid environment.	K2
		CO403.1: Compare the cloud infrastructure level to enforce security	K2

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**CO-PO MAPPING**

COs		POs											
		PO 1	PO 2	PO3	PO4	PO5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
		K3	K4	K5	K5	K3/K5/ K6	-	-	-	-	-	-	-
C403.1	K 2	2	1	-	-	2	-	-	-	-	-	-	-
C403.2	K 1	-	-	-	-	-	-	-	-	-	-	-	-
C403.3	K 2	2	1	-	-	2	-	-	-	-	-	-	-
C403.4	K 1	-	-	-	-	-	-	-	-	-	-	-	-
C403.5	K 2	2	1	-	-	2	-	-	-	-	-	-	-
C403.6	K 3	3	3	1	1	3	-	-	-	-	-	-	-
C403.7	K 2	2	1	-	-	2	-	-	-	-	-	-	-
C403.9	K 3	3	3	1	1	3	-	-	-	-	-	-	-
C403.8	K 3	3	3	1	1	3	-	-	-	-	-	-	-
C403.1 0	K 2	2	1	-	-	2	-	-	-	-	-	-	-
C403.1 1	K 2	2	1	-	-	2	-	-	-	-	-	-	-
C403.1 2	K 2	2	1	-	-	2	-	-	-	-	-	-	-
		1.9	1.3	0.25	0.25	1.92							

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Course Code	Course Name	Course Outcome					Knowledge Level		
		Students will be able to							
CS6702	<b>Graph Theory and Applications</b>	C402.1	Define basic concepts & terminologies of Graph, Isomorphism, Trees and its properties					K1	
		C402.2	Differentiate whether the given graph is isomorphic or not Hamiltonian circuit or path					K2	
		C402.3	Analyze solution for Konigsberg bridge problem using Eulers graph					K3	
		C402.4	Explain about Trees Connectivity & Planarity					K2	
		C402.5	Analyze a solution for the maximum flow in network using Network Flow Graph theory					K3	
		C402.6	Analyze a solution for Traffic Problem using coloring Fuzzy Graph					K3	
		C402.7	Understand the Principles of Inclusion and Exclusion, Binomial Theorem etc..					K2	
		C402.8	Apply Permutation and Combination and solve seating arrangement problem					K3	
		C402.9	Generate a function for any given series like $2 + 2x + 5x^2 \dots$					k3	

**CO-PO Mapping**

CO		Program Outcomes											
		P O 1	PO 2	PO 3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
		K 3	K4	K5	K5	K3/K5/K 6							
C402.1	K1	1	*	*	*	1	*	*	*	*	*	*	*
C402.2	K2	2	1	*	*	2	*	*	*	*	*	*	*
C402.3	K3	3	2	1	1	3	*	*	*	*	*	*	*
C402.4	K2	2	1	*	*	2	*	*	*	*	*	*	*
C402.5	K3	3	2	1	1	3	*	*	*	*	*	*	*
C402.6	K3	3	2	1	1	3	*	*	*	*	*	*	*
C402.7	K2	3	2	1	1	3	*	*	*	*	*	*	*
C402.8	K3	2	1	*	*	*	*	*	*	*	*	*	*
C402.9	K3	3	2	1	1	3	*	*	*	*	*	*	*
CO402		2. 44	1.63	1.00	1.00	2.50	*	*	*	*	*	*	*

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**CS6701 - CRYPTOGRAPHY AND NETWORK SECURITY**

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
CS8792	<b>CRYPTOGRAPHY AND NETWORK SECURITY</b>	CO1: Understand fundamental of the OSI security architecture.	K2
		CO2: Discuss the performance issues in public key cryptography.	K2
		CO3: Develop the program to perform encryption and decryption using Diffie Hellman Key exchange.	K3
		CO4: Develop the program to detect message change during transmission using secure hash algorithm.	K3
		CO5: Demonstrate the concept of Web security and IP security implementations and comparison.	K3

**CO-PO MAPPING**

COs		POs											
		PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
		K2	K3	K2	K5	K3/K5/K 6	K3	K2	K3	K3	K2	K6	K6
C811. 1	K 2	3	2	3	-	2	2	3	2	2	3	-	-
C811. 2	K 2	3	2	3	-	-	2	3	2	2	3	-	-
C811. 3	K 3	3	3	3	1	-	3	3	3	3	3	-	-
C811. 4	K 3	3	3	3	1	-	3	3	3	3	3	-	-
C811. 5	K 3	3	3	3	1	-	3	3	3	3	3	-	-

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Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
CS6007	<b>INFORMATION RETRIEVAL</b>	CO1 :Describe the components and functionalities of search engine	K1
		CO3: Apply how Probabilistic approaches to Information Retrieval are done	K3
		CO2: Discuss the Search Engine Optimization/SPAM	K2
		CO3: Illustrate the working of abstract search engine	K3
		CO2: Explain the challenges and applications of text mining	K2

**CO-PO MAPPING**

Cos		POs											
		PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
		K3	K4	K5	K5	K3/K5/K6							
C403. 1	K 1	1	0	0	0	1	-	-	-	-	-	-	-
C403. 2	K 3	3	2	2	2	2	-	-	-	-	-	-	-
C403. 3	K 2	2	1	1	1	2	-	-	-	-	-	-	-
C404. 4	K 3	1	2	2	2	3	-	-	-	-	-	-	-
C404. 5	K 2	2	2	1	1	2	-	-	-	-	-	-	-
Avg		1.8	1.4	1.2	1.2	2							

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Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
CS6704	<b>Resource Management Techniques</b>	C404.1 Make use of simplex method to solve optimization problems	K1
		C404.2 Demonstrate the concept of duality to solve Shortest route problem	K3
		C404.3 Explain integer programming method.	K2
		C404.4 Demonstrate the types of constraints and optimization methods	K3
		C404.5 Utilize PERT and CPM in project management.	K2

**CO-PO MAPPING**

COs		POs											
		PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
		K3	K4	K5	K5	K3/K5/K6							
C403.1	K1	1	0	0	0	1	-	-	-	-	-	-	-
C403.2	K3	3	2	2	2	2	-	-	-	-	-	-	-
C403.3	K2	2	1	1	1	2	-	-	-	-	-	-	-
C404.4	K3	1	2	2	2	3	-	-	-	-	-	-	-
C404.5	K2	2	2	1	1	2	-	-	-	-	-	-	-
Avg		1.8	1.4	1.2	1.2	2							

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**B.E CSE - COURSE OUTCOMES (CO)**

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
CS6003	<b>Ad hoc and Sensor Networks</b>	CS603.1 Explain the basic concepts of WIRELESS networks and challenges of adhoc and sensor networks	K2
		CS603.2 Classify the design issues and different categories of MAC protocols	K3
		CS603.3 Explain the various adhoc routing protocols and transport layer mechanisms	K2
		CS603.4 Discuss the sensor characteristics and wsn layer protocols	K2
		CS603.5 Illustrate the issues of routing in wsn and QoS related performance measurements	K3

**CO-PO MAPPING**

COs	POs											
	PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
	K3	K4	K5	K5	K3/K5/K6							
C603.1	K2	3	2			-	-	-	-	-	-	-
C603.2	K3	3	3	2	1		-	-	-	-	-	-
C603.3	K2	3		3	2	1		-	-	-	-	-
C604.4	K2	3		2			-	-	-	-	-	-
C604.5	K3	3		3	1	1	3	1	-	-	-	-
Avg		3	3	2	1	1	3	1				

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**B.E CSE - COURSE OUTCOMES (CO)**

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
CS6711	Security Laboratory	C671.1 Apply the cryptographic algorithms for data communication	K2
		C671.2 Compare the performance of various security algorithms	K3
		C671.3 Apply the Digital signature for secure data transmission	K2
		C671.4 Utilize the different open source tools for network security and analysis	K2
		C671.5 Demonstrate intrusion detection system using network security tool.	K3

**CO-PO MAPPING**

Cos		POs												
		PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	
		K3	K4	K5	K5	K3/K5/K6								
C671.1	K2	3	3	3	2		3	2	-	-	-	-	-	
C671.2	K3	3	3	3	2		3	2	-	-	-	-	-	
C671.3	K2	3	3	3	2		2	2	-	-	-	-	-	
C671.4	K2	3	3	3	3		2	3	-	-	-	-	-	
C671.5	K3	3	3	2	3	1	3	2	-	-	-	-	-	
Avg		3	3	3	2	1	3	2						

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**B.E CSE - COURSE OUTCOMES (CO)**

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
CS6712	<b>Grid and Cloud Computing Laboratory</b>	C408.1 Make use of the Grid Toolkit.	K3
		C408.2 Design and Implement new Grid applications Grid.	K3
		C408.3 Make use of the Cloud Toolkit.	K3
		C408.4 Build cloud applications on Cloud.	K2
		C408.5 Construct the applications according to the services.	K3

**CO-PO MAPPING**

COs		POs											
		PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
		K3	K4	K5	K5	K3/K5/K6							
C672. 1	K 3	3	3	3	3	2	3	2	-	-	-	-	-
C672. 2	K 3	3	3	3	3	2	3	2	-	-	-	-	-
C672. 3	K 3	3	3	3	3	2	2	2	-	-	-	-	-
C672. 4	K 2	3	3	3	3	2	2	3	-	-	-	-	-
C672. 5	K 3	3	3	3	3	3	3	2	-	-	-	-	-
Avg		3	3	3	3	2	3	2					

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Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
IT8075	SOFTWARE PROJECT MANAGEMENT	CO2: Discuss the different ways of categorizing software project in detail	K2
		CO3: Illustrate the major components of function point analysis	K3
		CO4: Analyze the factors involved in risk planning	K4
		CO4: Illustrate the use of Gantt and timeline charts in visualizing the project progress	K3
		CO2: Express the importance of working together as a team and the various aspects of team development	K2

**CO-PO MAPPING**

COs		POs											
		PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
		K3	K4	K5	K5	K3/K5/K6							
C475. 1	K 2	1	2	1	2	1	-	-	-	-	-	-	-
C475. 2	K 3	3	1	2	2	-	-	-	-	-	-	-	-
C475. 3	K 4	-	3	1	1	1	-	-	-	-	-	-	-
C475. 4	K 3	3	1	2	2	1	-	-	-	-	-	-	-
C475. 5	K 2	1	2	2	3	1	-	-	-	-	-	-	-
Avg		2	1.8	2	2.5	1							

**MOUNT ZION COLLEGE OF ENGINEERING AND TECHNOLOGY**  
**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**  
**REGULATION 2013**

**CS6801 - MULTI-CORE ARCHITECTURES AND PROGRAMMING**

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
CS6801	MULTI-CORE ARCHITECTURES AND PROGRAMMING	CO1: List out the fundamental of single core and multicore architecture.	K1
		CO2: Discuss the performance issues in Parallel program design.	K2
		CO3: Discuss the program to handling data and functional parallelism using OpenMP.	K2
		CO4: Define the program to perform point-to-point and collective communication using MPI.	K2
		CO5: Explain the concept of OpenMP and MPI implementations and comparison.	K2

**CO-PO MAPPING**

COs		POs											
		PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
		K2	K3	K2	K5	K3/K5/K6	K3	K2	K3	K3	K2	K6	K6
C811. 1	K 1	2	1	2	-	-	2	3	2	2	3	-	-
C811. 2	K 2	3	2	3	-	-	2	3	2	2	3	-	-
C811. 3	K 2	3	2	3	-	-	2	3	2	2	3	-	-
C811. 4	K 2	3	2	3	-	-	2	3	2	2	3	-	-
C811. 5	K 2	3	2	3	-	-	2	3	2	2	3	-	-

**MOUNT ZION COLLEGE OF ENGINEERING AND TECHNOLOGY**  
**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**  
**REGULATION 2013**

Course Code	Course Name	Course Outcome (CO) Students will be able to					Knowledge Level	
IT6011	KNOWLEDGE MANAGEMNET	<b>CO1</b>	Understand the basic purpose of knowledge techniques with management aspects.					K2
		<b>CO2</b>	Design and culture of leaning idea in an organization with help of knowledge sharing tools.					K2
		<b>CO3</b>	Develop the enterprise application with tools and technology based data.					K3
		<b>CO4</b>	Apply the knowledge management application in different strategy of various set of data.					K3
		<b>CO5</b>	Demonstrate the various strategy of knowledge based ideas with an suitable aliaction.					K3

### CO-PO MAPPING:

COs		P o s											
		P O 1	P O 2	P O 3	P O 4	P O 5	P O 6	P O 7	P O 8	P O 9	P O 1 0	P O 1 1	P O 1 2
		K 3	K4	K5	K5	K3/ <b>K5/ K6</b>	K4	K2	K3	K3	K2	K3	K3
C101.1	K2	3	2	3	-	2	2	3	2	2	3	-	-
C101.2	K2	3	2	3	-	-	2	3	2	2	3	-	-
C101.3	K3	3	3	3	1	-	3	3	3	3	3	-	-
C101.4	K2	3	3	3	1	-	3	3	3	3	3	-	-
C101.5	K3	3	3	3	1	-	3	3	3	3	3	-	-
<b>Avera ge</b>		<b>3. 0</b>	<b>2.6</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>2.6</b>	<b>3</b>	<b>2.6</b>	<b>2.6</b>	<b>3</b>	-	-

**MOUNT ZION COLLEGE OF ENGINEERING AND TECHNOLOGY**  
**DEPARTMENT OF ECE**  
**REGULATION 2017**  
**B.E ECE- COURSE OUTCOMES (CO)**

SEMESTER I

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
HS8151	HS8151 COMMUNICATIVE ENGLISH	C101.1	Communicate and share a broad range of information.[K3]	K3
		C101.2	Develop reading and speaking skills.[K3]	K3
		C101.3	Understand the functions of essays and development of the vocabularies.[K2]	K2
		C101.4	Write personal letter, official letter, email and articles.[K2]	K2
		C101.5	Participate in the conversation in order to acquire oral & listening skills.[K4]	K4

CO-PO Mapping

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
MA8151	Engineering Mathematics - I	CO01: Interpret the fundamental knowledge of Physics and its applications in engineering and technology.	K2
		CO02: Apply the concept of depression/ elevation of the beam and get expertise through experimental evidence.	K3
		CO03: Analyze the properties of lasers for low and high energy application.	K3
		CO04: Apply the total internal reflection properties of light in the optical fiber to find out the physical parameters like variation in temperature, pressure and displacement using FOC.	K3
		CO05: Identify the mode of heat transfer in heat Exchangers.	K3
		CO06: Make use of the thermal properties of thermal insulating material in a wide range of applications.	K3
		CO07: Summarize the drawback of Classical Physics and overcome these drawbacks by quantum theory concept.	K2
		CO08: Make use of quantum theory concept to study the working of Scanning Tunneling Microscope technique and its Benefits.	K3
		CO09: Infer the basics of crystals and its structures.	K2
		CO10: Outline the different crystals growth techniques, and its advantages and disadvantages.	K2

CO-PO MAPPING



Course Code	Course Name	Course Outcome (CO) Students will be able to	Knowledge Level
PH8151	ENGINEERING PHYSICS	CO01: Interpret the fundamental knowledge of Physics and its applications in engineering and technology.	K2
		CO02: Apply the concept of depression/ elevation of the beam and get expertise through experimental evidence.	K3
		CO03: Analyze the properties of lasers for low and high energy application.	K3
		CO04: Apply the total internal reflection properties of light in the optical fiber to find out the physical parameters like variation in temperature, pressure and displacement using FOC.	K3
		CO05: Identify the mode of heat transfer in heat Exchangers.	K3
		CO06: Make use of the thermal properties of thermal insulating material in a wide range of applications.	K3
		CO07: Summarize the drawback of Classical Physics and overcome these drawbacks by quantum theory concept.	K2
		CO08: Make use of quantum theory concept to study the working of Scanning Tunneling Microscope technique and its Benefits.	K3
		CO09: Infer the basics of crystals and its structures.	K2
		CO10: Outline the different crystals growth techniques, and its advantages and disadvantages.	K2

## CO-PO MAPPING

<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcome(CO) Students will be able to</b>	<b>Knowledge Level</b>
GE8151	Problem Solving and Python Programming	CO1: Develop an algorithm and flowchart for the given problem	K3
		CO2: Describe the need of data, expressions and functions in python	K2
		CO3: Apply conditional flow and functions to provide solution for the given problem	K3
		CO4: Differentiate the concept of list, tuples and dictionaries to fetch the given data	K2
		CO5: Discuss the concept of Exception file handling in python	K2

### **CO-PO MAPPING**

COs		POs											
		PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
		K3	K4	K5	K5	K3/K5/K6							
C103.1	K3	3	2	2	2	-	-	-	-	-	-	-	-
C103.2	K2	2	1	0	0	-	-	-	-	-	-	-	-
C103.3	K3	3	2	1	1	-	-	-	-	-	-	-	-
C104.4	K2	2	1	1	1	-	-	-	-	-	-	-	-
C104.5	K2	2	1	0	0	-	-	-	-	-	-	-	-
Avg		2.4	1.4	2	2	-							

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
GE8161	Problem Solving and Python Programming Laboratory	CO107 1: Write, test, and debug simple Python programs.	K1
		CO107 2: Apply the concept of conditionals and loops in Python programs.	K3
		CO107 3: Develop the Python programs step -wise by defining functions and calling them.	K4
		CO107 4: Develop the programs in basic C constructs.	K3
		CO107 5:Read and write data from/ to files in Python.	K1
		CO107 6: Apply the concept of Pygame.	K3

### CO-PO MAPPING

COs		POs											
		PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
		K3	K4	K5	K5	K3/K5/K6							
CO107 1	K1	1	1	1	1	-	-	-	-	-	-	-	-
CO107 2	K3	3	2	2	1	1	-	-	-	-	-	-	-
CO107 3	K4	2	3	3	2	2	-	-	-	-	-	-	-
CO107 4	K3	3	2	2	1	1	-	-	-	-	-	-	-
CO107 5	K1	1	1	1	1	1	-	-	-	-	-	-	-
CO107 6	K3	3	2	2	1	1	-	-	-	-	-	-	-
Avg		2	2	2	1	1	-	-	-	-	-	-	-

Course Code	Course Name	Course Outcome (CO) Students will be able to	Knowledge Level
BS8161	PHYSICS AND CHEMISTRY LABORATORY (PHYSICS)	CO01: Determine the rigidity modulus of Torsion pendulum	K5
		CO02: Evaluate the Young's modulus by non-uniform bending method	K5
		CO03: Interpret the thermal conductivity of a bad conductor using Lee's Disc method.	K5
		CO04: Examine the band gap of a semiconductor	K5
		CO05: Measure the thickness of a thin wire by using Air wedge method	K5

#### CO-PO MAPPING

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
CO1	K5	3	3	-	3	3	-	-	-	3	-	-	-
CO2	K5	3	3	-	3	3	-	-	-	3	-	-	-
CO3	K5	3	3	-	3	3	-	-	-	3	-	-	-
CO4	K5	3	3	-	3	3	-	-	-	3	-	-	-
CO5	K5	3	3	-	3	3	-	-	-	3	-	-	-
AVERAGE:		3	3		3	3	-	-	-	3	-	-	-

## SEMESTER II

Course Code	Course Name	Course Outcome				Knowledge Level	
		Students will be able to					
HS8251	HS8251 TECHNICAL ENGLISH	C101.1	Communicate and discuss a broad range of technical information with colleagues and clients related to the Engineering industry.(K3)		K3		
		C101.2	Explain and produce summaries that include correctly written introductory sentences and accurate paraphrases of the main ideas and key details, approximately one fourth in length of the original passages, without plagiarizing. (K2)		K2		
		C101.3	Identify the common types of support in arguments, their relevance or irrelevance, common argument flaws, opposing points of views, and refutations. (K1)		K1		
		C101.4	Understand the functions of essays and reports and demonstrate writing skills (K2)		K2		
		C101.5	Execute the method of participation in the Group Discussion and acquire the oral skills and the body language used for effective Group Discussion.(K5)		K5		

### CO-PO Mapping

CO		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5 /K6							
C101.1	K3	2	-	-	-	-	-	-	-	-	2		1
C101.2	K2	1	-	-	-	-	-	-	-	-	1		-
C101.3	K1	-	-	-	-	-	-	-	-	-	-		-
C101.4	K2	1	-	-	-	-	-	-	-	-	1		-
C101.5	K5	2	-	-	-	-	-	-	-	-	2		2
C101		1.2	-	-	-	-	-	-	-	-	1.2		0.6

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
MA8251	ENGINEERING MATHEMATICS-II	CO1: Define the Eigen values and Eigen vectors of the matrix.	K1
		CO2: Apply the concept of Cayley-Hamilton theorem in inverse and powers of the matrix.	K3
		CO3: Explain the concept of canonical form of the given quadratic form.	K2
		CO4: Explain the concept of solenoidal and irrotational vector.	K2
		CO5: Apply the concept of Gauss divergence, Stoke's and Green's theorem.	K3
		CO6: Apply the concept of Cauchy –Riemann equations	K3
		CO7: Solve the bilinear transformation problems.	K3
		CO8: Apply the concept of Cauchy's integral theorem and integral formula.	K3
		CO9: Solve the Laurent expansions and contours problems.	K3
		CO10: Define Laplace transform, unit step function and impulse functions.	K1
		CO11: Solve the inverse Laplace transform by using convolution theorem and solve simultaneous equations with constant coefficients.	K3

CO-PO MAPPING

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C3O1.5	K3	3	2	1	1	1	-	-	-	-	-	-	-
C3O1.6	K3	3	2	1	1	1	-	-	-	-	-	-	-
C3O1.7	K3	3	2	1	1	1	-	-	-	-	-	-	-
C3O1.8	K3	3	2	1	1	1	-	-	-	-	-	-	-
C3O1.9	K3	3	2	1	1	1	-	-	-	-	-	-	-
C3O1.10	K1	1	-	-	-	1	-	-	-	-	-	-	-
C3O1.11	K3	3	2	1	1	1	-	-	-	-	-	-	-

<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcome (CO) Students will be able to</b>	<b>Knowledge Level</b>
PH8253	PHYSICS FOR ELECTRONICS ENGINEERING	CO01: Classify the materials into metals, semiconductors and insulators on the basis of band theory of solids.	K2
		CO02: Identify the properties of intrinsic and extrinsic semiconductors.	K3
		CO03: Compare the magnetic and dielectric properties of materials.	K2
		CO04: Apply the concept of optoelectronics and get expertise in photodiode, LED, solar cells etc.	K3
		CO05: Make use of quantum theory concepts to study the density of states in various dimensions.	K2

## CO-PO MAPPING

<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcome(CO) Students will be able to</b>	<b>Knowledge Level</b>
EC8251	Circuit Analysis	CO1: Understand the concepts of basic circuit analysis and network topology	K2
		CO2: Apply basic network theorems in DC and AC circuits	K3
		CO3: Design the resonance and coupled circuits	K3
		CO4: Understand the concepts of transient and steady state response of the circuits	K2
		CO5: Analyze the various parameters of two port networks	K4

### CO-PO MAPPING

COs	POs											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
CO1	K3	3	2	1	1	-	-	-	-	-	1	-
CO2	K3	3	2	1	1	-	-	-	-	-	-	-
CO3	K3	3	2	1	1	-	-	-	-	-	-	-
CO4	K3	3	2	1	1	-	-	-	3	-	1	-
CO5	K4	3	3	2	2	-	-	-	3	-	1	-
<b>Average</b>	2.75	2	1	1	0.88	-	-	-	0.75	-	0.38	-

<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcome(CO) Students will be able to</b>	<b>Knowledge Level</b>
EC8252	Electronics Devices	CO1: Learn the basic concepts of Semiconductor theory.	K1
		CO2: Learn the various types of transistors, their models and their characteristics	K2
		CO3: Understand the concepts of Field Effect Transistors	K1
		CO4: Learn the operations of Special Semiconductor Devices	K1
		CO5: Learn the applications of Semiconductor Devices	K2

### **CO-PO MAPPING**

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K2	K4	K3	K3	K3	K2	K3
CO1	K1	3	1	-	-	2	-	-	-	-	-	-	-
CO2	K2	2	2	-	-	1	-	-	-	-	-	-	-
CO3	K1	3	2	-	-	2	-	-	-	-	-	-	-
CO4	K1	3	1	-	-	2	-	-	-	-	-	-	-
CO5	K2	2	-2	-	-	2	-	-	-	-	-	-	-
<b>Average</b>		<b>2.6</b>	<b>1.6</b>	-	-	<b>1.8</b>	-	-	-	-	-	-	-

### SEMESTER III

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
MA8352	Linear algebra and partial differential equations	CO1:Explain the fundamental concepts of advanced algebra.	K2
		CO2:Compare the linear independence and linear dependence.	K2
		CO3:Describe matrix representation of a linear transformation.	K2
		CO4:Solve the eigen values and eigen vectors.	K3
		CO5:Explain the inner product spaces, norms and gram schmidtorthogonalization process .	K2
		CO6: Solve theadjoint of linear operations and least square approximation.	K3
		CO7: Solve the lagranges linear equations.	K3
		CO8: Solve the various types of partial differential equations.	K3
		CO9:Explain the method of separation of variables.	K2
		CO10:Solve engineering problems using fourier series.	K3

### CO-PO MAPPING

COs		Pos											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
CO1	K2	2	1	-	-	2	-	-	-	-	-	-	-
CO2	K2	2	1	-	-	2	-	-	-	-	-	-	-
CO3	K2	2	1	-	-	2	-	-	-	-	-	-	-
CO4	K3	3	2	1	1	3	-	-	-	-	-	-	-
CO5	K2	2	1	-	-	2	-	-	-	-	-	-	-
CO6	K3	3	2	1	1	3	-	-	-	-	-	-	-
CO7	K3	3	2	1	1	3	-	-	-	-	-	-	-
CO8	K3	3	2	1	1	3	-	-	-	-	-	-	-
CO9	K2	2	1	-	-	2	-	-	-	-	-	-	-
CO10	K3	3	2	1	1	3							

Course Code	Course Name	Course Outcome		Knowledge Level
		Students will be able to		
EC8393	FUNDAMENTALS OF DATA STRUCTURES IN C	C202.1	Understand the features of C.	K2
		C202.2	Understand the basic concepts of functions, structures of C.	K2
		C202.3	Implement linear and non-linear data structure operations using C	K3
		C202.4	Suggest appropriate linear / non-linear data structure for any given data set	K4
		C202.5	Apply hashing concept and sorting algorithm for a given problem.	K3

## CO-PO Mapping

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
EC8351	<b>ELECTRONICS CIRCUITS</b>	<b>CO1:</b> Recall a structure of BJT	K1
		<b>CO2:</b> Describe the need for biasing	K2
		<b>CO3:</b> Develop selection of operating point of transistor	K3
		<b>CO4:</b> Design various biasing circuits for BJT, FET and MOSFET	K3
		<b>CO5:</b> Apply bias compensation techniques	K3
		<b>CO6:</b> Analyze low frequency and high frequency model	K3
		<b>CO7:</b> Describe CE, CC and CB amplifiers	K2
		<b>CO8:</b> Describe power supplies	K3
		<b>CO9:</b> Describe electronic device testing	K3

## CO-PO Mappimg

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
EC8392	Digital Electronics	CO1: Understand the number system representations, base conversions, Boolean algebra, Canonical forms	K2
		CO2: Apply theminimization techniquefor digital systems in many applications	K3
		CO3:Design of combinational circuits using logic functions	K3
		CO4: Analyze and implement combinational using logic functions	K4
		CO5:Describe the sequential elements used in sequential system	K2
		CO6: Design, optimize and implement sequential circuitsusing logic functions	K3
		CO7: Explain the fundamentals of hazard free circuits used in digital system	K2
		CO8: Designasynchronous sequential circuits used in digital system	K3
		CO9: Discuss the characteristics of memory and implement digital functions using PLDs	K2
		CO10: Explain the logic families and their characteristics used in integrated circuits	K2

CO-PO MAPPING

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
EC8391	Control Systems	CO1: Describe the concepts and techniques involved in designing control schemes for dynamic systems.	K2
		CO2: Analyze closed loop control systems for stability and study state performance.	K4
		CO3: Design Pd, Pi and Pid controllers for giving control system model using matlab.	K6
		CO4: Design lead, lag, lead-lag systems in control systems.	K2
		CO5: Compute stability of linear systems using the routh array test and use this to generate control design constraints.	K2
		CO6: Compute gain and phase margins from bode diagrams and Nyquist plots in terms of stability.	K2
		CO7: Illustrate the state space model of a physical system and discuss the concepts of sampled data control system.	K2
		CO8: Design various transfer functions of digital control system using state variable models.	K3

#### CO-PO MAPPING

COs		Pos											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
CO1	K2	2	1	-	-	2	-	-	-	-	-	-	-
CO2	K4	3	3	2	2	-	-	-	-	-	-	-	-
CO3	K6	3	3	3	3	-	-	-	-	-	-	-	-
CO4	K2	2	1	-	-	2	-	-	-	-	-	-	-
CO5	K2	2	1	-	-	2	-	-	-	-	-	-	-
CO6	K2	2	1	-	-	2	-	-	-	-	-	-	-
CO7	K2	2	1	-	-	2	-	-	-	-	-	-	-
CO8	K3	3	2	2	-	3	-	-	-	-	-	-	-
Average		2.375	1.625	0.75	0.625	1.625	-	-	-	-	-	-	-

Course	Course Name	Course Outcome	Knowledge
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Code		Students will be able to				Level
EC8381	Fundamentals of Data Structures in C Laboratory	C01	Develop C programs for simple applications making use of basic construct			K3
		C02	Implement the appropriate linear and non linear data structures in problem solving			K3
		C03	Solve the problems using trees and Binary Search trees			K3
		C04	Choose appropriate searching and sorting algorithm for an application and implement it in a modularized way			K3

### CO-PO Mapping

CO		Program Outcomes												PS01	PS02
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12		
		K3	K4	K5	K5	K3/K5 /K6									
C01	K3	3	3	3	1	1	-	-	1	1	2	-	-	3	2
C02	K3	3	3	3	1	1	-	-	1	1	2	-	-	3	2
C03	K3	3	3	3	1	1	-	-	1	1	2	-	-	3	2
C04	K3	3	3	3	1	1	-	-	1	1	2	-	-	3	2

SEMESTER IV

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
MA8451	Probability and random processes	CO1:Explain the fundamental concept of Probability and random processes	K2
		CO2:Compare one dimentional and two dimentional random variables.	K2
		CO3:Solve engineering problem using one dimentional and two dimentional random variables.	K3
		CO4:Explain the correlation and linear regression.	K2
		CO5:Explain the markov process and random variables .	K2
		CO6: Compare random telegraph process.	K3
		CO7: Explain correlation and spectral densities.	K2
		CO8: Compare power spectral and cross spectral densities.	K2
		CO9:Solve linear system and random input.	K3
		CO10:Compare the linear time invariant system.	K3

CO-PO MAPPING

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
EC8452	ELECTRONIC CIRCUITS II	CO1: Recall the effects of negative feedback on amplifier circuits	K1
		CO2: Analyze different types of feedback amplifiers	K3
		CO3: Design different types oscillators	K3
		CO4: Understand the analyze of tuned amplifier	K1
		CO5: Understand the analyze and design of RC integrators and differentiators	K1
		CO6: Analyze and design the concept of diode clippers and clampers	K3
		CO7: Understand the analyze and design of multivibrators	K1
		CO8: Understand the analyze and design of power amplifiers	K1
		CO9: Understand the analyze and design of DC convertors	K1

CO-PO MAPPING

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
EC8491	Communication Theory	CO1: Design amplitude modulated communication systems	K3
		CO2: Design frequency modulated communication systems	K3
		CO3: Design phase modulated communication systems	K3
		CO4: Apply the concepts of Random Process to the design of Communication systems	K3
		CO5: Analyze the noise performance of AM systems	K4
		CO6: Analyze the noise performance of FM systems	K4
		CO7: Gain knowledge in sampling of analog signal	K2
		CO8: Gain knowledge in quantization	K2

### CO-PO MAPPING

COs	POs											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
CO1	K3	3	2	1	1	-	-	-	-	-	1	-
CO2	K3	3	2	1	1	1	-	-	-	-	-	-
CO3	K3	3	2	1	1	1	-	-	-	-	-	-
CO4	K3	3	2	1	1	1	-	-	-	3	-	1
CO5	K4	3	3	2	2	2	-	-	-	3	-	1
CO6	K4	3	3	2	2	2	-	-	-	-	-	-
CO7	K2	2	1	-	-	-	-	-	-	-	-	-
CO8	K2	2	1	-	-	-	-	-	-	-	-	-
Average	2.75	2	1	1	0.88	-	-	-	0.75	-	0.38	-

Course Code	Course Name	Course Outcome			Knowledge Level
		Students will be able to			
Ec8451	Electromagnetic Fields	C404.1	Understand the fundamental electromagnetic laws and concepts		K2
		C404.2	Compute the electromagnetic force exerted on charged particles, current elements		K3
		C404.3	Estimate electric and magnetic field quantities		K3
		C404.4	Understand the coupling between electric and magnetic fields through faraday's law		K2
		C404.5	Compare Electromagnetic Wave Propagation in Lossy and in Lossless Media		K2

CO-PO Mapping

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
EC8453	Linear Integrated Circuits	CO1: Design different linear, non-linear and mathematical application circuits using operational amplifier.	K2
		CO2: Design differential amplifier and current sources.	K2
		CO3: Analyze AC and DC characteristics of operational amplifier.	K4
		CO4: Understand the frequency response and design the filters using operational amplifiers.	K2
		CO5: Design and Introduce the operation and applications of analog multiplier	K3
		CO6: Demonstrate the use of Phase Locked Loop and frequency synthesis applications.	K3
		CO7: Discuss the concept and applications of ADC and DAC	K2
		CO8: Demonstrate and Analyze the special function IC's and its application	K4
		CO9: Demonstrate the use of IC regulators, converters and Low dropout regulators for voltage regulation applications.	K3

### CO-PO MAPPING

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
CO1	K2	2	1	-	-	-	-	-	2	-	-	-	-
CO2	K2	2	1	-	-	-	-	-	-	-	-	-	-
CO3	K4	3	3	2	2	-	-	-	-	-	-	-	-
CO4	K2	2	1	-	-	-	-	-	-	-	-	-	-
CO5	K3	3	2	1	1	-	-	-	-	-	-	-	-
CO6	K3	3	2	1	1	-	-	-	-	-	-	-	-
CO7	K2	2	1	-	-	-	-	-	-	-	2	-	-
CO8	K4	3	3	2	2	-	-	-	-	-	-	-	-
CO9	K3	3	2	1	1	1	-	1	-	-	-	-	-
Average		2.6	1.8	0.8	0.8	0.1	-	0.1	-	-	0.2	-	-

\*3-High correlation; 2-Medium correlation; 1-Low correlation;

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
GE8291	ENVIRONMENTAL SCIENCE AND ENGINEERING	CO1:Describe about the structure and functions of an ecosystem, endangered and endemic species of India conservation of bio diversity	K2
		CO2:Discuss about causes and effects of air, noise and water pollution, the role of an individual in prevention of pollution	K2
		CO3: Explain the various resources such as forest, mineral water and case studies of land and energy resources	K2
		CO4: Discuss about resettlement and rehabilitation of people and environmental ethics and issues	K2
		CO5: Describethem population explosion and family welfare programme and the value of education and human rights	K2

### CO-PO MAPPING

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6							
CO1	K2	2	1	-	-	-	-	-	-	-	-	-	-
CO2	K2	2	1	-	-	-	-	-	-	-	-	-	-
CO3	K2	2	1	-	-	-	-	-	-	-	-	-	-
CO4	K3	2	1	-	-	-	-	-	-	-	-	-	-
CO5	K2	2	1	-	-	-	-	-	-	-	-	-	-
Average		<b>2.0</b>	<b>1.0</b>	-	-	-	-	-	-	-	-	-	-

\*3-High correlation; 2- Medium correlation; 1-Low correlation

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
EC8462	Linear Integrated Circuits Lab	CO1: Analyze the basic of liner integrated circuits and available ICs	K3
		CO2:Design the oscillators,amplifiers and filters using operational amplifiers and filters using operational amplifiers	K3
		CO3: Analyze and implement the frequency multiplier using PLL and describe its application as a frequency multiplier	K3
		CO4:Design dc power supply using ICs.	K6
		CO5: Acquire the basic knowledge of special function IC	K2
		CO6: Analyze the performance of filters, multivibrator,A/D converter and analog multiplier using spice	K2

#### CO-PO MAPPING

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
CO1	K3	3	2	1	1	-	-	-	-	-	-	-	-
CO2	K3	3	2	1	1	-	-	-	-	-	-	-	-
CO3	K3	3	2	1	1	-	-	-	-	-	-	-	-
CO4	K6	3	3	3	3	-	-	-	-	-	-	-	-
CO5	K2	2	1	-	-	-	-	-	-	-	-	-	-
CO6	K2	2	1	-	-	-	-	-	-	-	-	-	-
Average		2.7	1.8	1	1	-	-	-	-	-	-	-	-

\*3-High correlation; 2-Mediumcorrelation; 1-Low correlation;

**SEMESTER V**

<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcome(CO) Students will be able to</b>	<b>Knowledge Level</b>
EC8501	DIGITAL COMMUNICATION	CO1: Describe the fundamentals of channel coding.	K2
		CO2:Design channel coding schemes using Shannon, Fano and Huffman codes.	K3
		CO3: Inferring the principles of sampling and Quantization	K2
		CO4: Describe the various waveform coding schemes and their performance	K2
		CO5: Explain the line coding and techniques for eliminating ISI in digital communication system.	K2
		CO6: Design and implement baseband transmission schemes and their noise performance.	K3
		CO7:Analyze the spectral characteristics of band passsignaling schemes and their noise performance	K4
		CO8: Design and implement band pass signaling schemes	K3
		CO9: Design error control coding schemes and performance.	K3
		CO10:Detect and correct the errors introduced in the channel using error control coding schemes	K5

**CO-PO MAPPING**

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
CO1	K2	2	1	-	-	-	-	-	2	-	-	-	-
CO2	K3	3	2	1	1	-	-	-	-	-	-	-	-
CO3	K2	2	1	-	-	-	-	-	-	-	-	-	-
CO4	K2	2	1	-	-	-	-	-	-	-	-	-	-
CO5	K2	2	1	-	-	-	-	-	-	-	-	-	-
CO6	K3	3	2	1	1	-	-	-	-	-	-	-	-
CO7	K4	3	3	2	2	1	-	-	-	2	-	1	-
CO8	K3	3	2	1	1	-	-	-	-	-	-	-	-
CO9	K3	3	2	1	1	-	-	-	-	-	-	-	-
CO10	K5	3	3	3	3	2	-	-	-	3	-	2	-
Average		2.6	1.8	0.9	0.9	0.3	-	-	-	0.5	-	0.3	-

\*3-High correlation; 2-Medium correlation ; 1-Low correlation;

<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcome(CO) Students will be able to</b>	<b>Knowledge Level</b>
EC8553	Discrete Time Signal Processing	CO1: Apply DFT for the analysis of digital signals and systems	K3
		CO2: Compare DFT and Fast Fourier Transform(FFT)	K2
		CO3: Describe the use of FFT in linear filtering	K2
		CO4: Design an analog and digital Infinite Impulse Response (IIR) filters for filtering undesired signals	K3
		CO5: Design of digital Finite Impulse Response (FIR) filters using the windowing technique and frequency sampling method for filtering undesired signals	K3
		CO6: Characterize the effects of finite precision representation on digital filters	K3
		CO7: Obtain the realization structures of IIR and FIR filters	K3
		CO8: Design multi rate filters	K3
		CO9: Illustrate the finite word length effects on filters	K2
		CO10: Describe about fixed and floating point architecture principles	K2

#### **CO-PO MAPPING**

<b>COs</b>		<b>POs</b>											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
CO1	K3	3	2	1	1	-	-	-	-	-	-	1	-
CO2	K2	2	1	-	-	1	-	-	-	-	-	-	-
CO3	K2	2	1	-	-	1	-	-	-	-	-	-	-
CO4	K3	3	2	1	1	-	-	-	-	3	-	1	-
CO5	K3	3	2	1	1	-	-	-	-	3	-	1	-
CO6	K3	3	2	1	1	-	-	-	-	-	-	-	-
CO7	K3	3	2	1	1	-	-	-	-	-	-	-	-
CO8	K3	3	2	1	1	-	-	-	-	-	-	-	-
CO9	K2	2	1	-	-	1	-	-	-	-	-	-	-
CO10	K2	2	1	-	-	1	-	-	-	-	-	1	-
<b>Average</b>		2.6	1.6	0.6	0.6	0.4	-	-	-	0.6	-	0.4	-

## SEMESTER VI

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
EC8691	<b>MICROPROCESSOR AND MICROCONTROLLER</b>	<b>CO1:</b> Understand the architecture and different modes of operations of a typical microprocessor.	K2
		<b>CO2:</b> Understand different addressing modes and instructions of 8086, design and develop assembly language programs using software interrupts, subroutines, macros.	K2
		<b>CO3:</b> Understand the interface memory, I/O devices and interrupt controller with 8086 microprocessors.	K2
		<b>CO4:</b> Construction of a maintainable assembly language program for an algorithm.	K6
		<b>CO5:</b> Analyze and compare the features of Microprocessors and microcontrollers.	K4
		<b>CO6:</b> Understand the system bus structure and configurations of processors.	K2
		<b>CO7:</b> Apply and analyze the architecture, instruction sets of Microcontroller for developing assembly language programs.	K4
		<b>CO8:</b> Analyze the applications and interfacing of microcontroller	K4

### CO-PO MAPPING

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
CO1	K2	2	1	-	-	-	-	-	2	2	-	2	2
CO2	K2	2	1	-	-	-	-	-	2	2	-	2	2
CO3	K2	2	1	-	-	-	-	-	2	2	-	2	2
CO4	K6	3	3	3	3	3	-	-	3	3	-	3	3
CO5	K4	3	3	2	2	-	-	-	3	3	-	3	3
CO6	K2	2	1	-	-	-	-	-	2	2	-	2	2
CO7	K4	3	3	2	2	-	-	-	3	3	-	3	3
CO8	K4	3	3	2	2	-	-	-	3	3	-	3	3
<b>Average</b>		<b>2.5</b>	<b>2.0</b>	<b>1.125</b>	<b>1.125</b>	<b>0.38</b>	-	-	<b>2.5</b>	<b>2.5</b>	-	<b>2.5</b>	<b>2.5</b>

\*3-High correlation; 2-Medium correlation; 1-Low correlation;

Course Code	Course Name	Course Outcome (CO) Students will be able to	Knowledge Level
EC8095	VLSI Design	CO1: Know the characteristic of CMOS circuits	K2
		CO2: Learn the design and realization of combinational & sequential digital circuits	K2
		CO3: Understand the various CMOS technology	K2
		CO4 : Compare the different arithmetic building blocks and subsystems	K2
		CO5: Implement the different FPGA architectures and testability of VLSI circuits.	K2

### CO-PO MAPPING

Cos		Pos											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K2	K4	K3	K3	K3	K2	K3
CO1	K2	2	1	-	-	2	-	-	-	-	-	-	-
CO2	K2	3	2	-	-	1	-	-	-	-	-	-	-
CO3	K3	3	2	-	-	2	-	-	-	-	-	-	-
CO4	K3	3	1	-	-	2	-	-	-	-	-	-	-
CO5	K3	2	2	-	-	2	-	-	-	-	-	-	-
Average		2.6	1.6	-	-	1.8	-	-	-	-	-	-	-

\*3-High correlation; 2-Medium correlation; 1-Low correlation;

Course Code	Course Name	Course Outcome (CO) Students will be able to	Knowledge Level
EC8652	Wireless Communication	CO1: Know the characteristics of wireless channel	K2
		CO2: Learn the various cellular architectures	K2
		CO3: Understand the concepts behind various digital signaling schemes for fading channels	K2
		CO4 : Compare multipath mitigation techniques and analyze their performance	K2
		CO5: Design and implement systems with transmit/receive diversity and MIMO systems and analyze their performance	K2

### CO-PO MAPPING

Cos		Pos											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
CO1	K2	2	1	-	-	2	-	-	-	-	-	-	-
CO2	K2	3	1	-	-	1	-	-	-	-	-	-	-
CO3	K2	3	2	-	-	2	-	-	-	-	-	-	-
CO4	K2	3	1	-	-	2	-	-	-	3	-	-	-
CO5	K2	2	2	-	-	2	-	-	-	-	-	-	-
Average		<b>2.6</b>	<b>1.6</b>	-	-	<b>1.8</b>	-	-	-	-	-	-	-

\*3-High correlation; 2-Medium correlation; 1-Low correlation;

Course Code	Course Name	Course Outcome (CO) Students will be able to	Knowledge Level
MG8591	<b>Principles of Management</b>	CO1: Learn the various types of business organizations.	K2
		CO2: Explain the concept of strategic planning and tactical planning.	K2
		CO3: Compare Line and Staff Authority.	K2
		CO4: Understand the concept of different motivation theories.	K2
		CO5: Classify the various MNCs in the current global trends.	K2

### CO-PO MAPPING

Cos		Pos											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
CO1	K2	2	1	-	-	-	-	-	-	-	-	-	-
CO2	K2	2	1	-	-	-	-	-	-	-	-	-	-
CO3	K2	2	1	-	-	-	-	-	-	-	-	-	-
CO4	K2	2	1	-	-	-	-	-	-	-	-	-	-
CO5	K2	2	1	-	-	-	-	-	-	-	-	-	-
<b>Average</b>		2.0	1	-	-	-	-	-	-	-	-	-	-

\*3-High correlation; 2-Medium correlation; 1-Low correlation;

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
EC8651	<b>TRANSMISSION LINES AND RF SYSTEMS</b>	CO1:Describe about the general theory of transmission lines, the infinite line, the distortionless line, loading and different methods of loading.	K2
		CO2:Discuss about the transmission line equations at radio frequencies, standing wave Ratio, measurement of VSWR and wavelength.	K2
		CO3:Explain about the impedance matching, impedance matching by stubs.	K2
		CO4: Discuss about the general wave behavior along uniform guiding structures , transverse electromagnetic Waves.	K2
		CO5: Describe the active RF components, Semiconductor basics in RF.	K2

### CO-PO MAPPING

COs		Pos											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6							
CO1	K2	2	1	-	-	-	-	-	-	-	-	-	-
CO2	K2	2	1	-	-	-	-	-	-	-	-	-	-
CO3	K2	2	1	-	-	-	-	-	-	-	-	-	-
CO4	K2	2	1	-	-	-	-	-	-	-	-	-	-
CO5	K2	2	1	-	-	-	-	-	-	-	-	-	-
Average		<b>2.0</b>	<b>1.0</b>	-	-	-	-	-	-	-	-	-	-

\*3-High correlation; 2- Medium correlation; 1-Low correlation

Course Code	Course Name	Course Outcome(CO) Students will be able to	Knowledge Level
EC8791	Embedded and Real time systems	CO1: Describe the embedded system process with design example. Justify the programming of ARM Processor.	K2
		CO2: Justify the program level performance analysis with program validation and testing.	K4
		CO3: Illustrate the multiple task and multirate systems. Justify the interprocess communication.	K2
		CO4: Monitor the real time operating systems and the methods of evaluating operating system performance.	K3
		CO5: Carry out Program Validation and testing.	K3
		CO6: Infer the Requirement analysis and System analysis of Distributed embedded systems.	K2
		CO7: Discuss the MPSoCs and Shared memory multiprocessors.	K4
		CO8: Attribute the modern real time embedded system concepts	K4
		CO9 : Infer the case studies as telephone answering machine, engine control unit and video accelerator.	K2

### CO-PO MAPPING

COs		Pos											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
CO1	K2	2	1	-	-	2	-	-	-	-	-	-	-
CO2	K4	3	3	2	2	3	-	-	-	-	-	-	-
CO3	K2	2	1	-	-	2	-	-	-	-	-	-	-
CO4	K3	3	2	1	1	3	-	-	-	-	-	-	-
CO5	K2	2	1	-	-	2	-	-	-	-	-	-	-
CO6	K2	2	1	-	-	2	-	-	-	-	-	-	-
CO7	K4	3	3	2	2	3	-	-	-	-	-	-	-
CO8	K2	2	1	-	-	2	-	-	-	-	-	-	-
CO9	K2	2	1	-	-	2	-	-	-	-	-	-	-

Course Code	Course Name	Course Outcome (CO) Students will be able to	Knowledge Level
EC8702	AD HOC AND WIRELESS SENSOR NETWORKS	CO1: Know the basics of Ad hoc networks and Wireless Sensor Networks	K2
		CO2: Apply this knowledge to identify the suitable routing algorithm based on the network and user requirement	K4
		CO3: Apply the knowledge to identify appropriate physical and MAC layer protocols	K4
		CO4: Understand the transport layer and security issues possible in Ad hoc and sensor networks.	K2
		CO5: Be familiar with the OS used in Wireless Sensor Networks and build basic modules	K3

### CO-PO MAPPING

Cos		Pos											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
CO1	K2	2	1	-	-	-	-	-	-	-	-	-	-
CO2	K4	3	2	1	-	-	-	-	-	-	-	-	-
CO3	K4	1	1	1	1	-	-	-	-	-	-	-	-
CO4	K2	2	-	-	-	-	-	-	-	-	-	-	-
CO5	K3	1	1	-	-	-	-	-	-	-	-	-	-
Average		1.8	1	-	-	-	-	-	-	-	-	-	-

\*3-High correlation; 2-Medium correlation; 1-Low correlation;

Course Code	Course Name	Course Outcome (CO) Students will be able to	Knowledge Level
EC8094	SATELLITE COMMUNICATION	CO1: Analyze the satellite orbits	K4
		CO2: Analyze the earth segment	K4
		CO3: Analyze the space segment	K4
		CO4: Analyze the satellite Link design	K4
		CO5: Design various satellite applications	K3

### CO-PO MAPPING

Cos		Pos											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
CO1	K4	-	2	-	-	-	-	-	-	-	-	-	-
CO2	K4	-	2	1	-	-	-	-	-	-	-	-	-
CO3	K4	1	1	1	-	-	-	-	-	-	-	-	-
CO4	K4	1	2	1	-	-	-	-	-	-	-	-	-
CO5	K3	1	-	2	-	-	-	-	-	-	-	-	-
Average		0.6	1.4	1	-	-	-	-	-	-	-	-	-

\*3-High correlation; 2-Medium correlation; 1-Low correlation;

**REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS ENGINEERING  
I TO VIII SEMESTERS CURRICULUM**

S.No	Sem	Course Code	Course Title	S.No	Sem	Course Code	Course Title
1.	I	HS8151	Communicative English	34.	II	HS8251	Technical English
2.		MA8151	Engineering Mathematics - I	35.		MA8251	Engineering Mathematics - II
3.		PH8151	Engineering Physics	36.		PH8253	Physics for Electronics Engineering
4.		CY8151	Engineering Chemistry	37.		BE8252	Basic Civil and Mechanical Engineering
5.		GE8151	Problem Solving and Python Programming	38.		EE8251	Circuit Theory
6.		GE8152	Engineering Graphics	39.		GE8291	Environmental Science and Engineering
7.		GE8161	Problem Solving and Python Programming Laboratory	40.		GE8261	Engineering Practices Laboratory
8.		BS8161	Physics and Chemistry Laboratory	41.		EE8261	Electric Circuits Laboratory
9.	III	MA8353	Transforms and Partial Differential Equations	42.	IV	MA8491	Numerical Methods
10.		EE8351	Digital Logic Circuits	43.		EE8401	Electrical Machines - II
11.		EE8391	Electromagnetic Theory	44.		EE8402	Transmission and Distribution
12.		EE8301	Electrical Machines - I	45.		EE8403	Measurements and Instrumentation
13.		EC8353	Electron Devices and Circuits	46.		EE8451	Linear Integrated Circuits and Applications
14.		ME8792	Power Plant Engineering	47.		IC8451	Control Systems
15.		EC8311	Electronics Laboratory	48.		EE8411	Electrical Machines Laboratory - II
16.		EE8311	Electrical Machines Laboratory - I	49.		EE8461	Linear and Digital Integrated Circuits Laboratory
17.	V	EE8501	Power System Analysis	50.		EE8412	Technical Seminar
18.		EE8551	Microprocessors and Microcontrollers	51.	VI	EE8601	Solid State Drives
19.		EE8552	Power Electronics	52.		EE8602	Protection and Switchgear
20.		EE8591	Digital Signal Processing	53.		EE8691	Embedded Systems
21.		CS8392	Object Oriented Programming	54.		GE8075	Intellectual Property Rights
22.		OMD551	Basics of Biomedical Instrumentation	55.		EE8005	Special Electrical Machines
23.		EE8511	Control and Instrumentation Laboratory	56.		EE8661	Power Electronics and Drives Laboratory
24.		HS8581	Professional Communication	57.		EE8681	Microprocessors and Microcontrollers Laboratory
25.		CS8383	Object Oriented Programming Laboratory	58.		EE8611	Mini Project
26.	VII	EE8701	High Voltage Engineering	59.	VIII	EI8073	Biomedical Instrumentation
27.		EE8702	Power System Operation and Control	60.		MG8591	Principles of Management
28.		EE8703	Renewable Energy Systems	61.		EE8811	Project Work
29.		GE8077	Total Quality Management				
30.		EI8075	Fiber Optics and Laser Instrumentation				
31.		OBT751	Analytical Methods and Instruments				
32.		EE8711	Power System Simulation Laboratory				
33.		EE8712	Renewable Energy Systems Laboratory				

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**B.E. ELECTRICAL AND ELECTRONICS  
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CO PO MAPPING**

## **Course Name: Communicative English**

**Course Code: HS8151**

Course Code	Course Name	Course Outcome			Knowledge Level
		Students will be able to			
HS8151	HS8151 Communicative English	C101.1	Communicate and share a broad range of information.[K3]		K3
		C101.2	Develop reading and speaking skills.[K3]		K3
		C101.3	Understand the functions of essays and development of the vocabularies.[K2]		K2
		C101.4	Write personal letter, official letter, email and articles.[K2]		K2
		C101.5	Participate in the conversation in order to acquire oral & listening skills.[K4]		K4

## CO-PO Mapping

**REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERING I TO VIII SEMESTERS  
CO PO MAPPING**

**Course Name: MA8151- Engineering Mathematics 1**

**Course Code: MA8151**

Course Code	Course Name	Course Outcome(CO) Students will be able to		Knowledge Level
MA8151	Engineering Mathematics-I	C102.1	Define the function and limit.	K1
		C102.2	Solve the derivatives and maxima, minima.	K3
		C102.3	Apply the Taylor series expansion in function.	K3
		C102.4	Explain the concept of extreme values of the function.	K2
		C102.5	Define the definite, indefinite integrals.	K1
		C102.6	Explain the concept of substitution rule.	K2
		C102.7	Apply the concept of double integrals and triple integrals in problems.	K3
		C102.8	Solve the double integrals using polar coordinates.	K3
		C102.9	Apply the concept of method of variation of parameters in problems.	K3
		C102.10	Define complementary function and particular integral.	K1
		C102.11	Solve the simultaneous equations with constant coefficients.	K3

**CO-PO Mapping**

COs		Pos											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
C102.1	K1	1	-	-	-	1	-	-	-	-	-	-	-
C102.2	K3	3	2	1	1	1	-	-	-	-	-	-	-
C102.3	K3	3	2	1	1	1	-	-	-	-	-	-	-
C102.4	K2	2	1	-	-	-	-	-	-	-	-	-	-
C102.5	K1	1	-	-	-	1	-	-	-	-	-	-	-
C102.6	K2	2	1	-	-	-	-	-	-	-	-	-	-
C102.7	K3	3	2	1	1	1	-	-	-	-	-	-	-
C102.8	K3	3	2	1	1	1	-	-	-	-	-	-	-
C102.9	K3	3	2	1	1	1	-	-	-	-	-	-	-
C102.10	K1	1	-	-	-	1	-	-	-	-	-	-	-
C102.11	K3	3	2	1	1	1	-	-	-	-	-	-	-
C102		2.2	1.3	0.5	0.5	0.8	-	-	-	-	-	-	-

## **REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERING I TO VIII SEMESTERS  
CO PO MAPPING**

# **Course Name: PH8151- Engineering Physics**

Course Code: PH8151

Course Code	Course Name	Course Outcome (CO) Students will be able to		Knowledge Level
PH815 1	Engineering Physics	C103.1	Interpret the fundamental knowledge of Physics and its applications in engineering and technology.	K2
		C103.2	Apply the concept of depression/ elevation of the beamand get expertise through experimental evidence.	K3
		C103.3	Analyze the properties of lasers for low and high energy application.	K3
		C103.4	Apply the total internal reflection properties of light inthe optical fiber to find out the physical parameters like variation in temperature, pressure and displacement using FOC.	K3
		C103.5	Identify the mode of heat transfer in heat Exchangers.	K3
		C103.6	Make use of the thermal properties of thermal insulatingmaterial in a wide range of applications.	K3
		C103.7	Summarize the drawback of Classical Physics and overcome these drawbacks by quantum theory concept.	K2
		C103.8	Make use of quantum theory concept to study the working of Scanning Tunneling Microscope technique and its Benefits.	K3
		C103.9	Infer the basics of crystals and its structures.	K2
		C103.10	Outline the different crystals growth techniques, and its advantages and disadvantages.	K2

CO-PO Mapping

REGULATIONS – 2017

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERING I TO VIII SEMESTERS  
CO PO MAPPING**

## **Course Name: Engineering Chemistry**

Course Code: CY8151

Course code	Course Name	Course Outcome (CO)		Knowledge level
Students will be able to				
CY8151	Engineering Chemistry	C104.1	Develop innovative methods to produce soft water for industrial use and potable water at cheaper cost	K3
		C104.2	Identify and apply suitable water treatment techniques	K3
		C104.3	Understand the types of adsorption and catalysis which is used in industries	K2
		C104.4	Define and analyze engineering related problems and metal finishing in achieving a practical solution	K3
		C104.5	Demonstrate the knowledge of phase rule applied in various industries	K2

## CO-PO Mapping

**B.E. ELECTRICAL AND ELECTRONICS  
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CO PO MAPPING**

**Course Name:** Problem Solving and Python Programming

**Course Code:** GE8151

<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcome(CO) Students will be able to</b>				<b>Knowledge Level</b>	
GE8151	Problem Solving and Python Programming	C105.1	Develop an algorithm and flowchart for the given problem				K3
		C105.2	Describe the need of data, expressions and functions in python				K2
		C105.3	Apply conditional flow and functions to provide solution for the given problem				K3
		C105.4	Differentiate the concept of list, dictionaries to fetch the given data				K2
		C105.5	Discuss the concept of Exception file handling in python				K2

**CO - PO Mapping**

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/ K6	K4	K2	K3	K3	K2	K3	K3
C105.1	K3	3	2	2	2	-	-	-	-	-	-	-	-
C105.2	K2	2	1	0	0	-	-	-	-	-	-	-	-
C105.3	K3	3	2	1	1	-	-	-	-	-	-	-	-
C105.4	K2	2	1	1	1	-	-	-	-	-	-	-	-
C105.5	K2	2	1	0	0	-	-	-	-	-	-	-	-
C105		2.4	1.4	2	2	-							

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

**Course Name:** Engineering Graphics

**Course Code:** GE8152

<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcome(CO) Students will be able to</b>		<b>Knowledge Level</b>
GE8152	Engineering Graphics	C106.1	Know freehand sketching of basic geometrical constructions.	K1
		C106.2	Draw orthographic projections of lines and plane surfaces.	K3
		C106.3	Develop 3D solid computer models.	K3
		C106.4	Develop the visualize and to project isometric and perspective sections of simple solids.	K3
		C106.5	Apply the knowledge of development of surface in manufacturing and Rapid Prototyping Methods.	K3
		C106.6	Make use of the fundamentals and standards of Engineering graphics.	K3
		C106.7	Draw isometric and perspective views of the simple solids.	K3
		C106.8	Apply Orthographic projections of real time parts in the engineering Field.	K3
		C106.9	Project the sectioned solids and true shape of the section.	K4

**CO-PO Mapping**

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
C106.1	K1	1	-	-	-	-	-	-	-	-	-	-	-
C106.2	K3	3	2	1	1	-	-	-	-	-	-	-	-
C106.3	K3	3	2	1	1	-	-	-	-	-	-	-	-
C106.4	K3	3	2	1	1	-	-	-	-	-	1	-	-
C106.5	K3	3	2	1	1	-	-	-	-	-	-	-	-
C106.6	K3	3	2	1	1	-	-	-	-	-	1	-	-
C106.7	K3	3	2	1	1	3	-	-	-	-	-	-	-
C106.8	K3	3	2	1	1	3	-	-	-	-	-	-	-
C106.9	K4	3	2	1	1	3	-	-	-	-	1	-	-
C106		2.7	2	1	1	3	-	-	-	-	-	-	-

**REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

**Course Name:** Problem Solving and Python Programming Laboratory

**Course Code:** GE8161

<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcome(CO) Students will be able to</b>				<b>Knowledge Level</b>	
GE8161	Problem Solving and Python Programming Laboratory	C109.1	Develop solutions to simple computational problems using Python programs.				K3
		C109.2	Solve problems using conditionals and loops in Python.				K3
		C109.3	Develop Python programs by defining functions and calling them.				K3
		C109.4	Use Python lists, tuples & dictionaries for representing compound data.				K2
		C109.5	Develop Python programs using files.				K3

**CO-PO Mapping**

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
C109.1	K1	3	2	1	-	2	1	-	-	2	-	-	1
C109.2	K3	3	3	2	-	2	1	-	-	2	-	-	1
C109.3	K3	3	2	1	-	2	1	-	-	2	-	-	1
C109.4	K3	3	2	1	-	2	1	-	-	2	-	-	1
C109.5	K3	3	2	1	1	2	1	-	-	2	-	-	1
C109		3	2.2	1.2	0.2	2	1			2	-	-	1

## **REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERING I TO VIII SEMESTERS  
CO PO MAPPING**

## **Course Name:** Physics and Chemistry Laboratory

**Course Code: BS8161**

Course Code	Course Name	Course Outcome(CO) Students will be able to		Knowledge Level
BS8161	Chemistry Laboratory	C110.1	Determine and estimate the types of alkalinity & hardness of a given water sample.	K3
		C110.2	Estimate the amount of copper content present in a given sample.	K2
		C110.3	Determine the strength of an acid by using pH meter.	K3
		C110.4	Determine the strength of a pure acid and mixture of acids by using conductivity meter.	K3
		C110.5	Estimate the amount of iron content present in a given solution by means of potentiometric titration.	K2
BS8161	Physics Laboratory	C110.6	Evaluate moment of inertia of disc and rigidity modulus for thin wire using Torsion pendulum.	K5
		C110.7	Appraise Young's modulus of the beam by Non-Uniform bending method.	K3
		C110.8	Measure the wavelength of LASER, Particle size and basic parameter of optical fiber using Semiconductor diode LASER.	K4
		C110.9	Examine the thermal conductivity of bad conductors using Lee's disc apparatus.	K3
		C110.10	Determine the wavelength of the prominent spectral lines.	K3

# **CO-PO Mapping**

## **Chemistry Laboratory**

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
C110.1	K1	2	-	-	-	-	1	1	1	-	-	-	1
C110.2	K3	2	2	-	-	1	1	-	1	-	-	-	1
C110.3	K3	2	-	-	-	1	1	-	1	-	-	-	1
C110.4	K3	2	-	-	-	1	1	-	1	-	-	-	1
C110.5	K3	2	-	-	-	1	1	-	1	-	-	-	1
C110		2	0.4	-	-	0.8	1	0.2	1	-	-	-	1

## Physics Laboratory

**REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS  
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CO PO MAPPING**

**Course Name:** Technical English

**Course Code:** HS8251

Course Code	Course Name	Course Outcome				Knowledge Level		
		Students will be able to						
HS8251	HS8251 Technical English	C201.1	Communicate and discuss a broad range of technical information with colleagues and clients related to the Engineering industry.				K3	
		C201.2	Explain and produce summaries that include correctly written introductory sentences and accurate paraphrases of the main ideas and key details, approximately one fourth in length of the original passages, without plagiarizing.				K2	
		C201.3	Identify the common types of support in arguments, their relevance or irrelevance, common argument flaws, opposing points of views, and refutations.				K1	
		C201.4	Understand the functions of essays and reports and demonstrate writing skills				K2	
		C201.5	Execute the method of participation in the Group Discussion and acquire the oral skills and the body language used for effective Group Discussion.				K5	

**CO-PO Mapping**

CO		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C201.1	K3	2	-	-	-	-	-	-	-	-	2	-	1
C201.2	K2	1	-	-	-	-	-	-	-	-	1	-	-
C201.3	K1	-	-	-	-	-	-	-	-	-	-	-	-
C201.4	K2	1	-	-	-	-	-	-	-	-	1	-	-
C201.5	K5	2	-	-	-	-	-	-	-	-	2	-	2
C201	1.2	-	-	-	-	-	-	-	-	-	1.2	-	0.6

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERING I TO VIII SEMESTERS  
CO PO MAPPING**

**Course Name:** Engineering Mathematics II

**Course Code:** MA8251

Course Code	Course Name	Course Outcome(CO)		Knowledge Level
		Students will be able to		
MA8251	Engineering Mathematics - II	C202.1	Define the characteristic equation	K1
		C202.2	Understand the Eigen values and Eigen vectors	K2
		C202.3	Define Vector identities	K1
		C202.4	Explain the theorems of Gauss divergence, Green's and Stoke's	K2
		C202.5	Explain the Cauchy-Riemann equations	K2
		C202.6	Evaluate the problems based on Conformal mapping	K3
		C202.7	Define Cauchy's integral formula	K1
		C202.8	Evaluate the problems based on contour integration	K3
		C202.9	Understand the Laplace transforms of Elementary functions	K2
		C202.10	Evaluate the linear second order differential equations with constant coefficients	K3

### CO-PO Mapping

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
C202.1	K1	1	-	-	-	-	-	-	-	-	-	-	-
C202.2	K2	2	1	1	-	-	-	-	-	-	-	-	-
C202.3	K1	1	-	1	-	-	-	-	-	-	-	-	-
C202.4	K2	2	1	-	-	-	-	-	-	-	-	-	-
C202.5	K2	2	1	-	-	-	-	-	-	-	-	-	-
C202.6	K3	3	2	1	1	1	-	-	-	-	-	-	-
C202.7	K1	1	-	-	-	-	-	-	-	-	-	-	-
C202.8	K3	3	2	-	1	1	-	-	-	-	-	-	-
C202.9	K2	2	1	1	-	-	-	-	-	-	-	-	-
C202.10	K3	3	2		1	1							
C202		2	1	0.4	0.3	0.3	-	-	-	-	-	-	-

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**B.E. ELECTRICAL AND ELECTRONICS  
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CO PO MAPPING**

## **Course Name:** Physics for ElectronicsEngineering

Course Code: PH8253

Course Code	Course Name		Course Outcome (CO) Students will be able to	Knowledge Level
PH8253	Physics For Electronics Engineering	C203.1	Classify the materials into metals, semiconductors and insulators on the basis of band theory of solids.	K2
		C203.2	Identify the properties of intrinsic and extrinsic semiconductors.	K3
		C203.3	Compare the magnetic and dielectric properties of materials.	K2
		C203.4	Apply the concept of optoelectronics and get expertise in photodiode, LED, solar cells etc.	K3
		C203.5	Make use of quantum theory concepts to study the density of states in various dimensions.	K2

## CO-PO Mapping

## **REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

**Course Name:** Basic Civil and Mechanical Engineering

Course Code: BE8252

<b>Course Code</b>	<b>Course Name</b>		<b>Course Outcome(CO) Students will be able to</b>	<b>Knowledge Level</b>
BE8252	Basic Civil and Mechanical Engineering	C204.1	Appraise the Civil and Mechanical Engineering components of Projects.	K5
		C204.2	Explain the usage of construction materials.	K2
		C204.3	List the civil and mechanical engineers contributions to the society.	K1
		C204.4	Explain the proper selection of construction materials.	K2
		C204.5	Measure distances and area by surveying.	K5
		C204.6	Illustrate the various production methods in industries.	K3
		C204.7	Identify the components used in power plant cycle.	K2
		C204.8	Discuss the working principles of petrol and diesel engine.	K2
		C204.9	Compare the strokes in the engines.	K4
		C204.10	Examine the components of refrigeration.	K1
		C204.11	Identify the necessary properties needed for the refrigerants.	K3
		C204.12	Examine the components of Air conditioning cycle.	K1

## CO-PO Mapping

**REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS  
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CO PO MAPPING**

C204.12	K1	2	2	1	2	-	-	-	-	-	-	-	-
C204		2.5	1.6	0.75	0.83	-	-	-	-	-	-	-	-

**Course Name:** Circuit Theory

**Course Code:** EE8251

Course code	Course Name	Course Outcome (CO)					Knowledge level		
		Students will be able to							
EE8251	Circuit Theory	C205.1	CO1: Identify the number systems and binary codes					K1	
		C205.2	CO2: Explain the operation and characteristics of digital logic families					K2	
		C205.3	CO3: Interpret the combinational logic using K-map minimization technique					K2	
		C205.4	CO4: Implement the combinational logic for different applications					K3	
		C205.5	CO5: Find the types and application of flip flops					K4	

**CO-PO Mapping**

COs	POs											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
C205.1	K1	1	-	-	-	-	-	-	-	-	-	-
C205.2	K2	2	1	-	-	-	-	-	-	-	-	-
C205.3	K2	2	1	-	-	-	-	-	-	-	-	-
C205.4	K3	3	2	1	1	-	-	-	-	-	-	-
C205.5	K4	3	3	2	2	-	-	-	-	-	-	-
C205		2.2	1.4	0.6	0.6	-	-	-	-	-	-	-

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**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

**Course Name:** Environmental Science and Engineering

**Course Code:** GE8291

Course code	Course Name	Course Outcome (CO)					Knowledge level		
		Students will be able to							
GE8291	Environmental science and engineering	C206.1	Ecological succession process					K2	
		C206.2	Threats to biodiversity					K3	
		C206.3	Solid waste management					K1	
		C206.4	Role of individual in prevention of pollution					K3	
		C206.5	Timber extraction and forest resources					K2	

**CO-PO Mapping**

Cos		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
C206.1	K2	2	1	-	-	2	-	-	-	-	-	-	-
C206.2	K3	3	2	1	1	3	-	-	-	-	-	-	-
C206.3	K1	1	-	-	-	1	-	-	-	-	-	-	-
C206.4	K3	3	2	1	1	3	-	-	-	-	-	-	-
C206.5	K2	2	1	-	-	2	-	-	-	-	-	-	-
C206		2.2	1.2	0.4	0.4	2.2	-	-	-	-	-	-	-

**REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERING I TO VIII SEMESTERS  
CO PO MAPPING**

**Course Name:** Engineering Practices Laboratory

**Course Code:** GE8261

<b>Course code</b>	<b>Course Name</b>	<b>Course Outcome (CO)</b>					<b>Knowledge level</b>		
		<b>Students will be able to</b>							
GE8261	Engineering Practices Laboratory	C207.1	Demonstrate wiring for a simple residential house; identify the ratings of various appliances like fluorescent tube					K5	
		C207.2	Calculate the different electrical quantities					K4	
		C207.3	Measure the resistance to earth of electrical equipment					K5	
		C207.4	Verify the truth tables of logic gates AND					K4	
		C207.5	Develop soldering in a PCB					K3	

**CO-PO Mapping**

Cos		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
C207.1	K5	3	3	3	3	-	-	-	-	-	-	-	-
C207.2	K4	3	3	2	1	1	-	-	-	-	-	-	-
C207.3	K5	3	3	3	3	3	-	-	-	-	-	-	-
C207.4	K4	3	3	2	1	1	-	-	-	-	-	-	-
C207.5	K3	3	2	1	1	-	-	-	-	-	-	-	-
C207		3	2.8	2.2	1.8	1	-	-	-	-	-	-	-

REGULATIONS – 2017

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

## **Course Name:** Electric Circuits Laboratory

Course Code: E8261

Course code	Course Name	Course Outcome (CO)		Knowledge level
Students will be able to				
E8261	Electric Circuits Laboratory	C208.1	Apply Kirchhoff's voltage and current laws to solve simple and complex circuits.	K3
		C208.2	Apply network theorems to solve simple and complex circuits.	K3
		C208.3	Demonstrate the working of Analog and digital storage oscilloscopes.	K5
		C208.4	Determine frequency response of RLC circuits and Use MATLAB to simulate series, parallel resonant circuit.	K3
		C209.5	Apply MATLAB tool to simulate three phase balanced and unbalanced star, delta network circuit	K3

CO-PO Mapping

**REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

**Course Name:** Transforms and Partial Differential Equations

**Course Code:** MA8353

<b>Course code</b>	<b>Course Name</b>		<b>Course Outcome (CO)</b> <b>Students will be able to</b>	<b>Knowledge level</b>
MA8353	Transforms and Partial Differential Equations	C301.1	Solve First, Second order homogeneous and non homogeneous partial differential equations	K6
		C301.2	Find the Fourier series of a given function satisfying Dirichlet's condition	K1
		C301.3	Apply Fourier series to solve one dimensional wave, one and two dimensional heat equations	K3
		C301.4	Determine Fourier transform for a given function and use them to evaluate certain definite Integrals	K4
		C301.5	Determine z transforms of standard functions and use them to solve difference equations	K4

**CO-PO Mapping**

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
C301.1	K6	3	3	3	3	3	-	-	-	-	-	-	-
C301.2	K1	1	-	-	-	-	-	-	-	-	-	-	-
C301.3	K3	1	-	-	-	-	-	-	-	-	-	-	-
C301.4	K4	3	3	2	2	-	-	-	-	-	-	-	-
C301.5	K4	3	3	2	2	-	-	-	-	-	-	-	-
C301		2.2	1.8	1.4	1.4	0.6	-	-	-	-	-	-	-

REGULATIONS – 2017

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

## **Course Name:** Digital Logic Circuits

**Course Code:** EE8351

Course code	Course Name	Course Outcome (CO)		Knowledge level
EE8351	Digital logic Circuits	Students will be able to		
		C302.1	CO1: Identify the number systems and binary codes	
		C302.2	CO2: Explain the operation and characteristics of digital logic families	
		C302.3	CO3: Interpret the combinational logic using K-map minimization technique	
		C302.4	CO4: Implement the combinational logic for different applications	
		C302.5	CO5: Find the types and application of flip flops	
		C302.6	CO6: Design the synchronous sequential circuits	
		C302.7	CO7: Design the synchronous sequential circuits	
		C302.8	CO8: Classify the programmable logic devices	
		C302.9	CO9: Realize the combinational logic circuits using VHDL	
		C302.10	CO10: Implement the sequential logic circuits using VHDL	

## CO-PO Mapping

## **REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

## **Course Name:** Electromagnetic Theory

## **Course Code:** EE8391

Course code	Course Name		Course Outcome (CO) Students will be able to	Knowledge level
EE8391	Electromagnetic theory	C303.1	CO1: Explain the basic mathematical concepts related to electromagnetic vector fields	K2
		C303.2	CO2: Explain the basic concepts about electrostatic fields, electrical potential, energy density and their applications	K2
		C303.3	CO3: Acquire the knowledge in magneto static fields, magnetic flux density, vector potential and its applications	K2
		C303.4	CO4: Find the different methods of emf generation and Maxwell's equations	K4
		C303.5	CO5: Explain the basic concepts electromagnetic waves and characterizing parameters	K2
		C303.6	CO6: Compute electromagnetic fields and apply them for analysis of electrical equipment and systems	K3
		C303.7	CO7: Apply the concept of electro dynamic fields and electromagnetic waves in determining wave parameters in different mediums	K3
		C303.8	CO8: Explain the relation between field theory and circuit theory system	K2
		C303.9	CO9: Solve the electrostatic problems using Coulombs law and Gauss's law	K3

## CO-PO Mapping

## **REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

## **Course Name:** Electrical Machines - I

**Course Code:** EE8301

Course code	Course Name	Course Outcome (CO)		Knowledge level
Students will be able to				
EE8301	Electrical Machines - I	C304.1	Apply KCL, KVL and Faradays law to magnetic circuits to calculate B, H, S, Self and mutually induced emf.	K3
		C304.2	Analyze the electrical power transfer in transformer for different loading condition and formulate equivalent circuit of transformer	K4
		C304.3	Analyze field energy, co-energy, force and torque in single and multiple excited systems	K4
		C304.4	Analyze the DC shunt, series, compound generators' terminal voltages for different load conditions and to analyze the emf equation and armature reaction.	K4
		C304.5	Apply KCL, KVL and faradays law to calculate Back emf and Torque in D.C motor and Analyze its speed-torque characters for different connections	K3

## CO-PO Mapping

REGULATIONS – 2017

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

## **Course Name:** Electron Devices and Circuits

Course Code: EC8353

Course code	Course Name	Course Outcome (CO)		Knowledge level
Students will be able to				
EC8353	Electron devices and Circuits	C305.1	Explain the structure and working operation of PN junction devices	K2
		C305.2	Identify and differentiate both active and passive elements	K2
		C305.3	Use the different electronic devices and circuits include transistors and thyristors	K3
		C305.4	Interpret the amplifier circuit with the analysis of gain and frequency response	K3
		C305.5	Illustrate the concept of feedback amplifiers and oscillators	K2

## CO-PO Mapping

**REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

**Course Name:** Power Plant Engineering

**Course Code:** ME8792

<b>Course code</b>	<b>Course Name</b>	<b>Course Outcome (CO)</b> <b>Students will be able to</b>				<b>Knowledge level</b>	
ME8792	Power plant Engineering	C306.1	Classify the energy sources				K2
		C306.2	Calculate the performance of steam power plants				K3
		C306.3	Describe the working of diesel and gas turbine power plants				K2
		C306.4	Compute the performance of diesel engine power plants				K5

**CO-PO Mapping**

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
C306.1	K2	2	1	-	-	-	-	-	-	-	-	-	-
C306.2	K3	3	2	1	-	-	-	-	-	-	-	-	-
C306.3	K2	2	1	-	-	-	-	-	-	-	-	-	-
C306.4	K5	3	3	3	3	3	-	-	-	-	-	-	-
C306		2.44	1.77	1	0.66	0.33	0.22	-	-	-	-	-	-

## **REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

**Course Name:** Electronics Laboratory

Course Code: EC8311

Course code	Course Name		Course Outcome (CO) Students will be able to	Knowledge level
EC8311	Electronics laboratory	C307.1	CO1: Interpret the basic procedure for all the semiconductor devices and circuits	K2
		C307.2	CO2: Check the characteristics of photo diode, photo transistor, study of light activated relay circuit	K5
		C307.3	CO3: Demonstrate the half wave and full wave rectifiers with inductive and capacitive filters	K4
		C307.4	CO4: Implement the NPN transistors configurations, ET, JET, UJT with suitable waveforms	K3
		C307.5	CO5: Find the phase and frequency measurements using CRO	K5
		C307.6	CO6: Analyze the different types of diodes and transistors used in semiconductor devices	K3
		C307.7	CO7: Experiment the differential amplifiers using FET	K5
		C307.8	CO8: Test the RC phase shift and LC oscillators	K5
		C307.9	CO9: Implement the design of passive filters	K3

## CO-PO Mapping

## **REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

**Course Name:** Electrical Machines Laboratory - I

Course Code: EE8311

Course code	Course Name	Course Outcome (CO)		Knowledge level
		Students will be able to		
EE8311	Electrical Machines Laboratory - I	C308.1	Investigate the voltage drop due to armature reaction effect in DC shunt and DC compound generators and Design Ampere turns for Inter poles and compensating winding. Examine critical resistance and critical speed.	K4
		C308.2	Analyze load characteristics DC shunt, series and compound motor. Examine its maximum output and maximum efficiency	K4
		C308.3	Investigate the constant losses of the DC shunt motor predict the efficiency in different methods at different load condition	K4
		C308.4	Analyze load characteristics of single and three phase transformer. Examine the different losses and efficiency	K4
		C308.5	Investigate the the equivalent circuit parameters of single phase transformer to predetermine its voltage regulation and efficiency.	K4

## CO-PO Mapping

## **REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

## **Course Name:** Numerical Methods

**Course Code:** MA8491

Course code	Course Name	Course Outcome (CO)		Knowledge level
		Students will be able to		
MA8491	Numerical Methods	C401.1	Determine the solution of algebraic and transcendental system of linear equations	K3
		C401.2	To interpolate the values of unknown functions using Newton's Formula C209	K4
		C401.3	Estimate the numerical values of the derivatives and integrals of unknown function.	K4
		C401.4	Solve first and second order initial value problem	K6
		C401.5	Solve first and second order initial value problem	K6
		C401.5	Solve Numerically boundary value problem	K6

## CO-PO Mapping

**REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERING I TO VIII SEMESTERS  
CO PO MAPPING**

C401.5	K6	3	3	3	3	-	-	-	-	-	-	-	-	-	-
C401		3	2.8	2.3	2.3	-	-	-	-	-	-	-	-	-	-

**Course Name:** Electrical Machines - II

**Course Code:** EE8401

Course Code	Course Name	Course Outcome(CO)				Knowledge Level	
EE8401	Electrical Machines II	C402.1	Students will be able to Explain the construction and working principle of Synchronous motor & generator, single phase & three phase induction motor.				K2
		C402.2	Apply the condition of synchronizing for parallel operation of alternators				K3
		C402.3	Analyze EMF , MMF , ZPF and ASA methods				K4
		C402.4	Explain the starting methods of synchronous motor.				K2
		C402.5	Design equivalent circuit of three-phase induction motor by using no load and blocked rotor test				K3

**CO-PO Mapping**

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3

**REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

C402.1	K2	2	1	-	-	-	-	-	-	-	-	-	-	-	-
C402.2	K3	3	2	1	1	-	-	-	-	-	-	-	-	-	-
C402.3	K4	3	3	2	2	-	-	-	-	-	-	-	-	-	-
C402.4	K2	2	1	-	-	-	-	-	-	-	-	-	-	-	-
C402.5	K3	3	2	1	1	-	-	-	-	-	-	-	-	-	-
C402		2.6	1.8	0.8	0.8	-	-	-	-	-	-	-	-	-	-

**Course Name:** Transmission and Distribution

**Course Code:** EE8402

Course Code	Course Name	Course Outcome(CO)									Knowledge Level
		Students will be able to									
EE8402	Transmission and Distribution	C403.1	CO1-Understand and explain parameters of transmission line and skin effect in transmission line								K2
		C403.2	CO2: Remember the concept of GMD and GMR								K1
		C403.3	CO3:Analyze the performance of transmission lines								K4
		C403.4	CO4: Evaluate voltage regulation and efficiency of transmission line								K5
		C403.5	CO5: Understand various types of insulator								K2
		C403.6	CO6: Design overhead transmission line and tower								K6
		C403.7	CO7:Remember knowledge about underground cabiliyts and grading cabiliyts								K1
		C403.8	CO8: Evaluate different values of potential gradient and capacitance of transmission line								K5
		C403.9	CO9: Understand the importance of distribution system and substation								K2
		C403.10	CO10: Compare different voltage control techniques								K4

**CO-PO Mapping**

COs		Pos											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3

**REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

C403.1	K2	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
C403.2	K1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C403.3	K4	3	3	2	2	-	-	-	-	-	-	-	-	-	-	-
C403.4	K5	3	3	3	3	-	-	-	-	-	-	-	-	-	-	-
C403.5	K2	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
C403.6	K6	3	3	3	3	-	-	-	-	-	-	-	-	-	-	-
C403.7	K1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C403.8	K5	3	3	3	3	-	-	-	-	-	-	-	-	-	-	-
C403.9	K2	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
C403.10	K4	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-
C403		2.3	1.8	1.1	1.1	-	-	-	-	-	-	-	-	-	-	-

**Course Name:** Measurements and Instrumentation

**Course Code:** EE8403

Course code	Course Name	Course Outcome (CO)					Knowledge level		
		Students will be able to							
EE8403	Measurements and Instrumentation	C404.1	To interpret the basic functional elements of instrumentation system for industrial applications					K1	
		C404.2	To organize the working operation of different electrical and electronic instruments to make models					K2	
		C404.3	To apply the various methods of measuring techniques					K3	
		C404.4	Will be able to discover the relevance of digital instruments, perform experiments and design projects in multidisciplinary fields					K4	
		C404.5	To influence the working operation of various storage and display devices					K4	

**CO-PO Mapping**

COs	POs											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
C404.1	K1	1	-	-	-	1	-	-	-	-	-	-

REGULATIONS – 2017

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

**Course Name:** Linear Integrated Circuits and Applications

Course Code: EE8451

Course Code	Course Name	Course Outcome(CO) Students will be able to		Knowledge Level
EE8451	Linear Integrated Circuits and Applications	C405.1	Explain the fabrication process for all the circuits components	K2
		C405.2	Identify and differentiate the working of OP-Amp and its characteristics	K2
		C405.3	Use the different AMP -IC in recent circuits includes summer, differentiator and integrator.	K3
		C405.4	Interpret the amplifier circuit with the analysis of gain and frequency response.	K3
		C405.5	Illustrate the concept of instrumentation amplifiers and its waveform generators.	K2
		C405.6	Explain the principles, characteristics and applications of timers and oscillators.	K2
		C405.7	Implement the design of different voltage regulators.	K3
		C405.8	Classify the types of feedback regulators.	K2

CO-PO Mapping

**REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

C405.2	K2	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
C405.3	K3	3	2	1	1	-	-	-	-	-	-	-	-	-	-	-
C405.4	K3	3	2	1	1	-	-	-	-	-	-	-	-	-	-	-
C405.5	K2	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
C405.6	K2	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
C405.7	K3	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-
C405.8	K2	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
C405		2.3	1.3	0.3	0.2	-	-	-	-	-	-	-	-	-	-	-

**Course Name:** Control Systems

**Course Code:** IC8451

Course Code	Course Name	Course Outcome(CO) Students will be able to		Knowledge Level
IC8451	Control Systems	C406.1	Compare the open loop and closed loop systems.	K2
		C406.2	Explain the electrical analogy of mechanical and thermal systems.	K2
		C406.3	Explain I and II order systems response.	K2
		C406.4	Apply root-locus technique to analyze control systems.	K4
		C406.5	CO5: Analyze the Correlation between frequency domain and time domain specifications.	K4
		C406.6	CO6: Analyze the effects of lag, lead and lag-lead compensation on frequency response.	K4
		C406.7	CO7: Explain the concepts of Controllability and Observability	K2
		C406.8	CO8: Design lag-lead compensator using bode plots.	K6
		C406.9	CO9: Analyze the effect of P, PI & PID controllers of feedback control.	K4
		C406.10	CO10: Analyze stability of the system using Nyquist stability criterion	K4

**REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS  
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CO PO MAPPING  
CO-PO Mapping**

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
C406.1	K2	2	1	-	-	-	-	-	-	-	-	-	-
C406.2	K2	2	1	-	-	-	-	-	-	-	-	-	-
C406.3	K2	2	1	-	-	-	-	-	-	-	-	-	-
C406.4	K4	3	3	2	2	-	-	-	-	-	-	-	-
C406.5	K4	3	3	2	2	-	-	-	-	-	-	-	-
C406.6	K4	3	3	2	2	-	-	-	-	-	-	-	-
C406.7	K2	2	1	-	-	-	-	-	-	-	-	-	-
C406.8	K6	3	3	3	3	-	-	-	-	-	-	-	-
C406.9	K4	3	3	2	2	-	-	-	-	-	-	-	-
C406.10	K4	3	3	2	2	-	-	-	-	-	-	-	-
C406		2.6	2.2	1.3	1.3	-	-	-	-	-	-	-	-

**Course Name:** Electrical MachinesLaboratory - II

**Course Code:** EE8411

Course code	Course Name	Course Outcome (CO) Students will be able to		Knowledge level
EE8512	Electrical machines II laboratory	C407.1	CO1: Analyze the performance of three phase alternator by EMF and MMF methods	K4
		C407.2	CO2: Analyze the performance of three phase alternator by ZPF and ASA methods	K4
		C407.3	CO3: Calculate regulation of three phase alternator by slip test	K3
		C407.4	CO4: Calculate impedance of three phase alternator	K3
		C407.5	CO5: Analyze the relation between field current, armature current and power factor of three phase alternator	K4
		C407.6	CO6: Analyze the load performance of three phase induction machine with various loads	K4
		C407.7	CO7: Determine equivalent circuit parameters of single phase and three phase induction motor	K3
		C407.8	CO8: Calculate various losses of three phase induction machine	K3
		C407.9	CO9: Analyze the load performance of single phase induction with various loads	K4

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERING I TO VIII SEMESTERS  
CO PO MAPPING**

		C407.10	CO10: Determine equivalent circuit parameters of single phase and three phase induction motor								K3
		C407.11	CO11: Differentiate induction motor starters								K2

**CO-PO Mapping**

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
C407.1	K4	3	3	2	2	-	-	-	-	-	-	-	-
C407.2	K4	3	3	2	2	-	-	-	-	-	-	-	-
C407.3	K3	3	2	1	1	-	-	-	-	-	-	-	-
C407.4	K3	3	2	1	1	-	-	-	-	-	-	-	-
C407.5	K4	3	3	2	2	-	-	-	-	-	-	-	-
C407.6	K4	3	3	2	2	-	-	-	-	-	-	-	-
C407.7	K3	3	2	1	1	-	-	-	-	-	-	-	-
C407.8	K3	3	2	1	1	-	-	-	-	-	-	-	-
C407.9	K4	3	3	2	2	-	-	-	-	-	-	-	-
C407.10	K3	3	2	1	1	-	-	-	-	-	-	-	-
C407.11	K2	2	1	-	-	-	-	-	-	-	-	-	-
C407		2.9	2.3	1.3	1.3	-	-	-	-	-	-	-	-

**Course Name:** Linear and Digital Integrated Circuits Laboratory

**Course Code:** EE8461

Course Code	Course Name		Course Outcome(CO) Students will be able to	Knowledge Level
EE8461	Linear and Digital Integrated Circuits Laboratory	C408.1	CO1: Analyze the basic of liner integrated circuits and available digital ICs	K4
		C408.2	CO2: Apply Boolean functions to implement adder, subtractor circuits and convert Excess 3 to BCD, Binary to Gray code and vice versa	K3
		C408.3	CO3: Test Parity generator and checker and Design encoder decoder circuits	K3
		C408.4	CO4: Demonstrate 4 bit synchronous, asynchronous counter and Shift registers.	K5
		C408.5	CO5: Illustrate multiplexer demultiplexer circuit and apply 555 timer in Monostable and Astable operation.	K4

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		C408.6	CO6: Apply OP-AMP to construct Adder, comparator, differentiator, Integrator and describe VCO, PLL characteristics										K3
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**CO-PO Mapping**

COs		Pos											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
C408.1	K4	3	2	1	1	-	-	-	-	-	-	-	-
C408.2	K3	3	2	1	1	-	-	-	-	-	-	-	-
C408.3	K3	3	2	1	1	-	-	-	-	-	-	-	-
C408.4	K5	2	1	-	-	-	-	-	-	-	-	-	-
C408.5	K4	3	2	1	1	-	-	-	-	-	-	-	-
C408.6	K3	3	2	1	1	-	-	-	-	-	-	-	-
C408		2.8	1.8	0.8	0.8	-	-	-	-	-	-	-	-

**Course Name:** Technical Seminar

**Course Code:** EE8412

Course Code	Course Name	Course Outcome(CO) Students will be able to			Knowledge Level
EE8412	Technical Seminar	C409.1	Function effectively as an individual and Make effective presentation on Engineering/technology		K5
		C409.2	Review, prepare and present technological developments in the field of electrical and electronics engineering.		K5
		C409.3	Design documentation and write effective reports on seminar topics		K6

**CO-PO Mapping**

COs	Pos
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		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
C409.1	K5	3	3	3	3	-	-	-	-	-	-	-	-
C409.2	K5	3	3	3	3	-	-	-	-	-	-	-	-
C409.3	K6	3	3	3	3	-	-	-	-	-	-	-	-
C409		1	1	1	1	-	-	-	-	-	-	-	-

**Course Name:** Power System Analysis

**Course Code:** EE8501

Course Code	Course Name	Course Outcome(CO)			Knowledge Level		
		Students will be able to					
EE8501	Power system analysis	C501.1	Develop and describe A Mathematical Model Of A Power System Under Steady State Operating Condition by Single Line Diagram And Per Unit Notations			K1	
		C501.2	Describe about the restructuring of power industry and market models.			K2	
		C501.3	Apply direct inspection and singular transformation methods to determine y-bus matrix Of the given system.			K3	
		C501.4	Describe the concept of load flow problem formulation, classification of buses and the various numerical methods of solution.			K2	
		C501.5	Solve power flow problems using various numerical methods of solution			K3	
		C501.6	Find voltage , real and reactive power at various buses			K1	
		C501.7	Calculate the fault current for various types of faults both symmetrical and Unsymmetrical on the given power system using z-bus &			K3	

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		thevenin's theorem.	
	C501.8	Calculate the fault current using sequential network for the unbalanced fault Conditions	K3
	C501.9	Explain the role of stability, swing equation and equal area criterion	K2
	C501.10	Solve swing equation by modified euler method and runge-kutta method.	K3

**CO-PO Mapping**

COs		Pos											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
C501.1	K2	2	1	-	-	-	-	-	-	-	-	-	-
C501.2	K2	2	1	-	-	-	-	-	-	-	-	-	-
C501.3	K3	3	2	1	1	-	-	-	-	-	-	-	-
C501.4	K2	2	1	-	-	-	-	-	-	-	-	-	-
C501.5	K3	3	2	1	1	-	-	-	-	-	-	-	-
C501.6	K2	2	1	-	-	-	-	-	-	-	-	-	-
C501.7	K3	3	2	1	1	-	-	-	-	-	-	-	-
C501.8	K3	3	2	1	1	-	-	-	-	-	-	-	-
C501.9	K2	2	1	-	-	-	-	-	-	-	-	-	-
C501.10	K3	3	2	1	1	-	-	-	-	-	-	-	-
C501		2.5	1.5	0.5	0.5	-	-	-	-	-	-	-	-

**Course Name:** Microprocessors and Microcontrollers

**Course Code:** EE8551

Course code	Course Name	Course Outcome (CO)										Knowledge level		
		Students will be able to												
EE8551	Microprocessors and Microcontrollers	C502.1	Describe the function of 8085 processors										K1	
		C502.2	Illustrate the I/O ports and interrupt in a microprocessor										K2	
		C502.3	Illustrate the instructions set present in a processor for logical and arithmetic operations										K2	
		C502.4	Demonstrate programming proficiency using the various addressing modes and data transfer instructions of the 8085 microprocessors										K3	
		C502.5	Explain the 8085 architecture and memory organization of the processor										K2	

**CO-PO Mapping**

COs	POs											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

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		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
C502.1	K1	1	-	-	-	-	-	-	-	-	-	-	-
C502.2	K2	2	1	-	-	-	-	-	-	-	-	-	-
C502.3	K2	2	1	-	-	-	-	-	-	-	-	-	-
C502.4	K3	3	2	1	1	-	-	-	-	-	-	-	-
C502.5	K2	2	1	-	-	-	-	-	-	-	-	-	-
C502		2	1	0.2	0.2	-	-	-	-	-	-	-	-

**Course Name:** Power Electronics

**Course Code:** EE8552

Course code	Course Name	Course Outcome (CO)			Knowledge level
		Students will be able to			
EE8552	Power electronics	C503.1	Having knowledge about power semiconductor devices		K4
		C503.2	Ability to choose the converters for real time applications		K3
		C503.3	CO3: Ability to analyze DC-DC converters		K4
		C503.4	Ability to analyze DC-AC converters		K2
		C503.5	Ability to analyze AC-AC converters		K4

**CO-PO Mapping**

COs	POs											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

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		K3	K4	K5	K5	K3/K4/K5	K3	K2	K3	K4	K2	K6	K2
C503.1	K4/K3	3	2	1	1	1	-	-	-	-	-	-	-
C503.2	K4	3	3	2	2	3	-	-	-	-	-	-	-
C503.3	K2	2	1	-	-	-	-	-	-	-	-	-	-
C503.4	K4/K2	2	1	-	-	-	-	-	-	-	-	-	-
C503.5	K2	2	1	-	-	-	-	-	-	-	-	-	-
C503		2.4	1.6	0.12	0.12	0.8	-	-	-	-	-	-	-

**Course Name:** Digital Signal Processing

**Course Code:** EE8591

Course code	Course Name	Course Outcome (CO)			Knowledge level
Students will be able to					
EE8591	Digital signal processing	C504.1	classify signals and systems and their mathematical representation		
		C504.2	apply the sampling and quantization of discrete time systems		
		C504.3	analyze the discrete time systems by using Z-transform		
		C504.4	analyze the discrete time systems by using Fourier transform		
		C504.5	understand various transformation techniques and their computation		
		C504.6	find DFT by using Radix-2 FT algorithm		
		C504.7	Design FIR and IIR filter		
		C504.8	understand the concept of impulse invariant and bilinear transformation		

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		C504.9	describe about digital signal processors								K2
		C504.10	apply functional modes of DS processor								K3

**CO-PO Mapping**

COs		POs												
		PO1	PO2	PO3	PO4	PO5		PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3	K3
C504.1	K4	3	3	2	2	2	-	-	-	-	-	1	-	
C504.2	K3	3	2	1	1	1	-	-	-	-	-	-	-	
C504.3	K4	2	1	-	-	2	-	-	-	-	-	-	-	
C504.4	K4	3	2	1	1	1	-	-	-	3	-	1	-	
C504.5	K2	2	1	-	-	-	-	-	-	3	-	1	-	
C504.6	K3	3	2	1	1	-	-	-	-	-	-	-	-	
C504.7	K3	3	2	1	1	-	-	-	-	-	-	-	-	
C504.8	K2	2	1	-	-	-	-	-	-	-	-	-	-	
C504.9	K2	2	1	-	-	1	-	-	-	-	-	-	-	
C504.10	K3	3	2	1	1	1	-	-	-	-	-	1	-	
C504		2.6	1.7	0.7	0.7	0.8	-	-	-	0.6	-	0.4	-	

**Course Name:** Object Oriented Programming

**Course Code:** CS8392

Course Code	Course Name	Course Outcome			Knowledge Level
		Students will be able to			
CS8392	OBJECT ORIENTED PROGRAMMING	C505.1	Recall the object oriented principles in software design process.		K3
		C505.2	Use java constructs and libraries in Java programs.		K2
		C505.3	Discuss various object oriented features like inheritance, data abstraction, encapsulation and polymorphism to solve various computing problems using Java language.		K2
		C505.4	Implement Exception Handling in java		K3
		C505.5	Use graphical user interface and Event Handling in java.		K2

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**CO-PO Mapping**

CO		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5 /K6							
C505.1	K3	-	-	-	-	-	2	-	-	2	-	-	-
C505.2	K2	2	1	-	-	2	1	3	2	2	3	2	2
C505.3	K2	3	2	1	1	3	2	3	3	3	3	3	3
C505.4	K3	3	2	1	1	3	2	3	3	3	3	3	3
C505.5	K2	2	1	-	-	2	1	3	2	2	3	2	2
C505		2	1.2	0.4	0.4	2	1.2	2.8	2	2	2.8	2	2

**Course Name:** Basics of Biomedical Instrumentation

**Course Code:** OMD551

Course Code	Course Name	Course Outcome(CO) Students will be able to			Knowledge Level
OMD551	Basics of Biomedical Instrumentation	C506.1	Understand the different bio potential and its propagation.		K2
		C506.2	Infer the different electrode placement for various physiological recording		K2
		C506.3	Students will be able to sketch the bio amplifier for various physiological recording		K3

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		C506.4	Students will understand the various technique of non electrical physiological measurements	K2
		C506.5	Understand the different biochemical measurements	K2

**CO-PO Mapping**

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6							
C506.1	K2	2	1	-	-	-	-	-	-	-	-	-	-
C506.2	K2	2	1	-	-	-	-	-	-	-	-	-	-
C506.3	K3	3	2	1	-	-	-	-	-	-	-	-	-
C506.4	K2	2	1	-	-	-	-	-	-	-	-	-	-
C506.5	K2	2	1	-	-	-	-	-	-	-	-	-	-
C506		2.2	1.2	0.5	-	-	-	-	-	-	-	-	-

**Course Name:** Control and Instrumentation Laboratory

**Course Code:** EE8511

Course code	Course Name		Course Outcome (CO) Students will be able to	Knowle dge level
EE8511	Control and instrumentation laboratory	C507.1	Test the P, PI and PID controllers	K5
		C507.2	Experiment the design of Lag, Lead and Lag-Lead compensators	K5
		C507.3	Analyze the simulation of control systems by mathematical development tools	K4
		C507.4	Monitor the Synchro - Transmitter – Receiver and characteristics	K5
		C507.5	Test the characteristics of RTD and thermister	K5
		C507.6	Analyze the characteristics of strain gauge and optical sensor	K4
		C507.7	Design, setup and test the analog to digital converter using DAC	K5
		C507.8	Design of instrumentation amplifier	K6

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		C507.9	Test the time response of first and second order type – 0 and type-1 systems								K5
		C507.10	Test the calibration of single phase energy meter								K5
		C507.11	Detect of transfer function of separately excited dc generator								K5

**CO-PO Mapping**

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	-	-	-	-	-	-	-
C507.1	K5	3	3	3	3	3	-	-	-	-	-	-	-
C507.2	K5	3	3	3	3	3	-	-	-	-	-	-	-
C507.3	K4	3	3	2	2	2	-	-	-	-	-	1	-
C507.4	K5	3	3	3	3	3	-	-	-	-	-	-	-
C507.5	K5	3	3	3	3	3	-	-	-	-	-	-	-
C507.6	K4	3	3	2	2	2	-	-	-	-	-	1	-
C507.7	K5	3	3	3	3	3	-	-	-	-	-	-	-
C507.8	K6	3	3	3	3	3	-	-	-	-	-	-	-
C507.9	K5	3	3	3	3	3	-	-	-	-	-	-	-
C507.10	K5	3	3	3	3	3	-	-	-	-	-	-	-
C507.11	K5	3	3	3	3	3	-	-	-	-	-	-	-
C507		3	3	2.8	2.8	2.8	-	-	-	-	-	0.18	-

**Course Name:** Professional Communication

**Course Code:** HS8581

Course code	Course Name	Course Outcome (CO) Students will be able to			Knowledge level
HS85811	Professional Communication	C508.1	Summarize various skills such as Soft Skills, Hard skills, employability and career Skills and demonstrate values such as Time Management and general awareness of current affairs.		K4
		C508.2	Demonstrate oneself before the audience by making effective presentations on introducing oneself, answering questions and visual presenting.		K5
		C508.3	Demonstrate oneself by participating in group discussions, brainstorming sessions and question sessions. Develop activities to improve GD Skills.		K5

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		C508.4	Develop interview skills so as to be successful in them. C308.5 Develop adequate Soft Skills required for the workplace and long-term career.	K6
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**CO-PO Mapping**

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	-	-	-	-	-	-	-
C508.1	K4	3	3	2	2	2	-	-	-	-	-	1	-
C508.2	K5	3	3	3	3	3	-	-	-	-	-	-	-
C508.3	K5	3	3	3	3	3	-	-	-	-	-	-	-
C508.4	K6	3	3	3	3	-	-	-	-	-	-	-	-
C508		3	3	2.7	2.7	2	-	-	-	-	-	0.25	-

**Course Name:** Object Oriented Programming Laboratory

**Course Code:** CS8383

Course Code	Course Name	Course Outcome			Knowledge Level
		Students will be able to			
CS8383	Object Oriented Programming Laboratory	C509.1	Develop and implement Java programs for simple applications that make use of classes		K3
		C509.2	Develop and implement Java programs with array list		K3
		C509.3	Design applications using file processing		K3

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		C509.4	Build software development skills using java programming for real-world applications	K3
		C509.5	Apply the concepts of classes, packages, interfaces , exception handling	K3
		C509.6	Develop applications using generic programming and event handling	K3

**CO-PO Mapping**

CO		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5 /K6	-	-	-	-	-	-	-
C509.1	K3	3	2	2	1	-	-	-	-	-	-	-	-
C509.2	K3	3	2	2	1	-	-	-	-	-	-	-	-
C509.3	K3	3	2	2	1	-	-	-	-	-	-	-	-
C509.4	K3	3	2	2	1	-	-	-	-	-	-	-	-
C509.5	K3	3	2	2	1	-	-	-	-	-	-	-	-
C509.6	K3	3	2	2	1	-	-	-	-	-	-	-	-
C509		3	2	2	1	-	-	-	-	-	-	-	-

**Course Name:** Solid State Drives

**Course Code:** EE8601

Course Code	Course Name	Course Outcome			Knowledge Level
		Students will be able to			
EE8601	Solid State Drives	C601.1	Analyze the Classification of the various types of drives and load torque characteristics and Apply the multi quadrant dynamics in hoist load system.		K4
		C601.2	Analyze the operation of steady state analysis of single phase and three phase fully controlled converter and		K4

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			Chopper fed separately excited dc motor drives and discuss the various control strategies of converter.	
		C601.3	Analyze the operation and characteristics of various methods of solid state speed control of induction motor.	K4
		C601.4	Analyze the operation of various modes of V/f control of synchronous motor drives and different types of permanent magnet synchronous motor drives.	K4
		C601.5	Analyze and design a current and speed controller and develop the transfer function for DC motor, load and converter, closed loop control with current and speed feedback.	K4

**CO-PO Mapping**

CO		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5 /K6	-	-	-	-	-	-	-
C601.1	K4	3	3	2	2	2	-	-	-	-	-	1	-
C601.2	K4	3	3	2	2	2	-	-	-	-	-	1	-
C601.3	K4	3	3	2	2	2	-	-	-	-	-	1	-
C601.4	K4	3	3	2	2	2	-	-	-	-	-	1	-
C601.5	K4	3	3	2	2	2	-	-	-	-	-	1	-
C601		3	3	2	2	2	-	-	-	-	-	1	-

**Course Name:** Protection and Switchgear

**Course Code:** EE8602

Course Code	Course Name	Course Outcome			Knowledge Level
		Students will be able to			
EE8602	Protection and Switchgear	C602.1	Identify the causes and effects of faults and ungrounded system		
		C602.2	Analyze the characteristics and functions of Electromagnetic type protective relays		
		C602.3	Analyze the various abnormal conditions in power system		K4

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			apparatus and to select a suitable protection scheme	
	C602.4		Synthesize the static relays using comparators and numerical relays.	K2
	C602.5		Analyze arc interruption and to select a suitable circuit breaker	K4

**CO-PO Mapping**

CO		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5 /K6	-	-	-	-	-	-	-
C602.1	K4	3	3	3	3	3	-	-	-	-	-	-	-
C602.2	K4	3	3	3	3	3	-	-	-	-	-	-	-
C602.3	K4	3	3	3	3	3	-	-	-	-	-	-	-
C602.4	K2	2	1	-	-	-	-	-	-	-	-	-	-
C602.5	K4	3	3	3	3	3	-	-	-	-	-	-	-
C602		2.8	2.6	2.4	2.4	2.4	-	-	-	-	-	-	-

**Course Name:** Embedded Systems

**Course Code:** EE8691

Course Code	Course Name		Course Outcome Students will be able to	Knowledge Level
EE8691	Embedded Systems	C603.1	Analyze the basic build process of embedded systems, structural units in embedded processor and selection of processor and memory devices depending upon the applications.	K4

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CO PO MAPPING**

		C603.2	Analyze the different types of I/O device ports, buses and different interfaces for data transfer in embedded networking.	K4
		C603.3	Apply the different techniques like state machine model, sequential program model and concurrent model in Embedded Product Development Life Cycle (EDLC).	K3
		C603.4	Analyze the basic concept of Real Time Operating Systems and scheduling of different task and compare the features of different types of Real Time Operating Systems	K4
		C603.5	Apply the knowledge of programming concepts of Embedded Systems for various applications like Washing Machine automotive and Smart Card System applications.	K3

**CO-PO Mapping**

CO		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5 /K6	-	-	-	-	-	-	-
C603.1	K4	3	3	3	3	3	-	-	-	-	-	-	-
C603.2	K4	3	3	3	3	3	-	-	-	-	-	-	-
C603.3	K3	3	2	2	1	-	-	-	-	-	-	-	-
C603.4	K4	2	1	-	-	-	-	-	-	-	-	-	-
C603.5	K3	3	2	2	1	-	-	-	-	-	-	-	-
C603		2.8	2.2	2	1.6	1.2	-	-	-	-	-	-	-

**Course Name:** Intellectual Property Rights

**Course Code:** GE8075

Course Code	Course Name	Course Outcome Students will be able to		Knowledge Level
		C604.1	To know the importance of Intellectual Property Rights, Which plays a vital role in advanced Technical and scientific disciplines.	K2

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

GE8075	Intellectual Property Rights	C604.2	Understand the imparting IPR protections and regulations for further advancement and latest developments.	K2
		C604.3	Analyze the disseminate knowledge on patents, patent regime in India and abroad and registration aspects.	K4
		C604.4	Explain the protect innovation in the form of intellectual property rights.	K2
		C604.5	Predict the research scholarship, and a spirit of inquiry, thereby generating new knowledge.	K2
		C604.6	Provide and identify an overview of the statutory, procedural and case law underlining these processes and their interplay with litigation.	K4

**CO-PO Mapping**

COs		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5 /K6	K4	K2	K3	K3	K2	K3	K3
C604.1	K2	2	1	-	-	-	-	-	-	-	-	-	-
C604.2	K2	2	1	-	-	-	-	-	-	-	-	-	-
C604.3	K4	3	3	2	2	-	-	-	-	-	-	-	-
C604.4	K2	2	1	-	-	-	-	-	-	-	-	-	-
C604.5	K2	2	1	-	-	-	-	-	-	-	-	-	-
C604.6	K4	3	3	2	2	-	-	-	-	-	-	-	-
C604		2.3	1.67	0.6	0.6	-	-	-	-	-	-	-	-

**Course Name:** Special Electrical Machines

**Course Code:** EE8005

Course Code	Course Name	CO No	COURSE OUTCOMES	Knowledge level
		C605.1	To explain Construction, principle of operation of special electrical machines.	K1
		C605.2	To differentiate axial and radial flux motors.	K2
		C605.3	To compute the voltage and torque equations of Synchronous Reluctance motors, Stepper motors,	K3

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERING I TO VIII SEMESTERS  
CO PO MAPPING**

EE8005	Special Electrical Machines		Permanent Magnet Brushless d.c. motor and PMSM.	
		C605.4	To analyse the performance characteristics of Synchronous Reluctance motors, Stepper motors, Permanent Magnet Brushless d.c. motor,SRM and PMSM.	K4
		C605.5	To design a Microprocessor control of stepper motors in Closed loop control and apply the speed control, angle control techniques using Proteus simulation.	K4
		C605.6	To analyze the Steady state performance by Analytical method.	K4
		C605.7	To design Power Converters and their controllers Switched Reluctance Motors (SRM).	K4
		C605.8	To analyze and draw the phasor diagram of Synchronous Reluctance Motors, Permanent Magnet Synchronous Motors (PMSM).	K4
		C605.9	To model and analyze electrical apparatus and their application to power system	K3,K4
		C605.10	To understand the Sensor less operation of Switched Reluctance Motors (SRM).	K1
		C605.11	To explain the real world applications of special electrical machines.	K1
		C605.12	To interpret the modes excitation of coils in stepper motor.	K2

**CO PO Mapping**

COsPOs		PO 1	PO 2	PO 3	PO 4	PO 5	PO	PO	PO	PO	PO	PO
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3
C605.1	K1	1	-	-	-	1	-	-	-	-	-	-
C605.2	K2	2	1	-	-	1	-	-	-	-	-	-
C605.3	K3	3	2	1	1	3	-	-	-	-	-	-
C605.4	K4	3	3	2	2	3	-	-	-	-	-	-
C605.5	K4	2	2	1	1	3	-	-	-	-	-	-
C605.6	K4	3	3	2	2	3	-	-	-	-	-	-
C605.7	K4	3	3	2	2	3	-	-	-	-	-	-
C605.8	K4	3	3	2	2	3	-	-	-	-	-	-
C605.9	K3,K4	3	3	2	2	3	-	-	-	-	-	-
C605.10	K1	1	-	-	-	-	-	-	-	-	-	-
C605.11	K1	1	-	-	-	-	-	-	-	-	-	-
C605.12	K2	2	1	-	-	2	-	-	-	-	-	-
C605		2.2	1.75	1	1	2.03	-	-	-	-	-	-

**Course Name:** Power Electronics and Drives Laboratory

**Course Code:** EE8661

Course Code	Course Name	CO No	COURSE OUTCOMES			Knowledge level
		C606.1	Analyze the VI characteristics of SCR,TRIAC and Generation of Gate Pulse using R, RC and UJT.			K4
		C606.2	Analyze the characteristics of MOSFET,IGBT,GTO and IGCT			K4

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

EE8661	Power Electronics and Drives Laboratory	C606.3	Design a single phase AC to DC half controlled converter, AC to DC fully controlled converter, step down chopper and step up MOSFET, Switched Mode Power Converter and analyze the output response.	K5
		C606.4	Analyze the output waveforms of single phase and three phase IGBT based PWM inverter, AC Voltage controller and the characteristic of PMBLDC motor.	K4
		C606.5	Analyze the Simulation of output waveform PE circuits (1Φ & 3Φ semi converters, 1Φ & 3Φ full converters, DC-DC converters, AC voltage controllers).	K4

**CO PO MAPPING**

COs		Program Outcomes										
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
		K3	K4	K5	K5	K3/K5 /K6	K4	K2	K3	K3	K2	K3
C606.1	K4	3	3	2	2	3	-	-	-	-	-	-
C606.2	K4	3	3	2	2	3	-	-	-	-	-	-
C606.3	K5	3	3	3	3	3	-	-	-	-	-	-
C606.4	K4	3	3	2	2	3	-	-	-	-	-	-
C606.5	K4	3	3	2	2	3	-	-	-	-	-	-
C606		2	2	2.2	2.2	-	-	-	-	-	-	-

**Course Name:** Microprocessors and Microcontrollers Laboratory

**Course Code:** EE8681

Course code	Course Name		Course Outcome (CO) <b>Students will be able to</b>	Knowledge level
EE8681	Microprocessors and	C607.1	Understand the simple arithmetic operations using 8085	K2
		C607.2	Analyze the programming with control instructions in 8085	K4

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

	microcontrollers laboratory	C607.3	Experiment the A/D & D/A interfacing							K3
		C607.4	Experiment the traffic light controller							K3
		C607.5	Analyze the I/O port and serial communication							K4
		C607.6	Simulate the programming exercises							K5
		C607.7	Test the keyboard/display interfacing							K5
		C607.8	Demonstrate of basic instructions with 8051							K5
		C607.9	program for interfacing I/O port 8051							K5
		C607.10	Develop mini project							K5

**CO-PO Mapping**

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	-	-	-	-	-	-	-
C607.1	K2	2	1	-	-	3	-	-	-	-	-	-	-
C607.2	K4	3	3	2	1	3	-	-	-	-	-	-	-
C607.3	K3	3	2	1	-	3	-	-	-	-	-	-	-
C607.4	K3	3	2	1	-	3	-	-	-	-	-	-	-
C607.5	K4	3	3	2	1	3	-	-	-	-	-	-	-
C607.6	K5	3	3	3	2	3	-	-	-	-	-	-	-
C607.7	K5	3	3	3	2	3	-	-	-	-	-	-	-
C607.8	K5	3	3	3	2	3	-	-	-	-	-	-	-
C607.9	K5	3	3	3	2	3	-	-	-	-	-	-	-
C607.10	K5	3	3	3	2	3	-	-	-	-	-	-	-
C607.11	K2	2	1	-	-	3	-	-	-	-	-	-	-
C607		2.8	2.4	1.9	1	3	-	-	-	-	-	-	-

**REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

**Course Name:** Mini Project

**Course Code:** EE8611

Course code	Course Name	Course Outcome (CO) Students will be able to				Knowledge level	
EE8611	Mini Project	C608.1	Apply practical knowledge within the chosen area of expertise for project development				K3
		C608.2	Identify, analyze, design and handle prototype projects with a complete and organized approach				K1
		C608.3	Contribute as an individual or in a team in development of technical projects				K4
		C608.4	Develop effective communication skills for presentation of project related activities and prepare mini project reports and examination				K5

**CO-PO Mapping**

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	-	-	-	-	-	-	-
C608.1	K3	3	2	1	-	3	-	-	-	-	-	-	-
C608.2	K1	1	-	-	-	1	-	-	-	-	-	-	-
C608.3	K4	3	3	2	1	3	-	-	-	-	-	-	-
C608.4	K5	3	3	3	2	3	-	-	-	-	-	-	-
C608		2.5	2	1.5	0.75	2.5	-	-	-	-	-	-	-

## **REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

## **Course Name:** High Voltage Engineering

**Course Code:** EE8701

Course code	Course Name	Course Outcome (CO)		Knowledge level
Students will be able to				
EE8701	High voltage engineering	C701.1	Know the different types of generation of over voltages, causes of over voltages and protection devices	K1
		C701.2	Solve the problem of lightning discharges using surge arrester	K3
		C701.3	Use proper power system design for limiting corona discharges	K3
		C701.4	Differentiate the dielectric breakdown	K2
		C701.5	Describe the principles behind generating high DC, AC and impulse voltages	K2
		C701.6	Design the marx circuit for required voltage level generation	K3
		C701.7	Calculate the maximum output voltage of the generator of different stages o impulse generator	K3
		C701.8	Analyze the high voltage testing techniques of power apparatus	K4
		C701.9	Use the sphere gap for measuring high voltage	K3
		C701.10	Infer about the types of insulation coordination	K4

## CO-PO Mapping

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERING I TO VIII SEMESTERS  
CO PO MAPPING**

**Course Name:** Power System Operation and Control**Course Code:** EE8702

<b>Course code</b>	<b>Course Name</b>	<b>Course Outcome (CO)</b>				<b>Knowledge level</b>		
		<b>Students will be able to</b>						
EE8702	Power System Operation and Control	C702.1	Outline the voltage, frequency regulation and load forecasting methods				K3	
		C702.2	Analyze the real – power frequency control for single area and two area power system				K4	
		C702.3	Analyze reactive power – voltage control and select a suitable controller to improve the voltage profile				K4	
		C702.4	Predict the unit to be committed and evaluate the generation scheduling by analyzing cost equation of the units.				K5	
		C702.5	Analyze the Energy Management System and Design a SCADA system				K4	
		C702.6	Prepare a comprehensive report on micro turbine modelling				K6	

**CO-PO Mapping**

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
C702.1	K3	3	2	1	1	-	-	-	-	-	-	-	-
C702.2	K4	3	3	2	2	-	-	-	-	-	-	-	-
C702.3	K4	3	3	2	2	-	-	-	-	-	-	-	-
C702.4	K5	3	3	3	2	3	-	-	-	-	-	-	-
C702.5	K4	3	3	2	2	-	-	-	-	-	-	-	-
C702.6	K6	3	3	3	3	-	-	-	-	-	-	-	-
C702		3	2.8	2.1	2	3	-	-	-	-	-	-	-

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

**Course Name:** Renewable Energy Systems**Course Code:** EE8703

Course Code	Course Name	Course Outcome Students will be able to			Knowledge Level
EE8703	Renewable Energy Systems	C703.1	Interpreting the solar radiation and its environmental impacts to power.		
		C703.2	Classify the various types of wind power plant.		
		C703.3	Explaining the Solar Radiation and Radiation Measurement,		
		C703.4	Summarizing the wind energy and biomass and its economic aspects.		
		C703.5	Explaining Tidal energy with other energy sources.		

**CO-PO Mapping**

CO		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
K3	K4	K5	K5	K3/K5 /K6									
C703.1	K2	2	1	-	-	-	-	1	-	-	-	-	-
C703.2	K2	2	1	1		-	-	-	-	-	-	-	-
C703.3	K2	2	1	1	-	-	-	1	-	-	-	-	-
C703.4	K2	2	1	-	-	-	-	-	-	-	-	-	-
C703.5	K2	2	1	-	-	-	-	-	-	-	-	-	-
C703		2	1	0.4	-	-	-	0.4	-	-	-	-	-

## **REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

## **Course Name:** Fibre Optics and Laser Instrumentation

Course Code: EI8075

Course Code	Course Name	Course Outcome(CO)		Knowledge Level
		Students will be able to		
EI8075	Fibre Optics And Laser Instrumentation	C704.1	Describe about the basic concepts of optical fibre and their properties.	K2
		C704.2	Discuss the transmission and mechanical characteristics and different losses in optical fibre	K2
		C704.3	Discuss about dispersion, attenuation characteristics of optical fiber	K2
		C704.4	Explain fibre optic sensors and different types of sensors.	K2
		C704.5	Discuss about fundamentals characteristics of laser	K2
		C704.6	Describe the types of laser and its advantages	K2
		C704.7	Explain about the measurements of laser	K2
		C704.8	Discuss the industrial application of lasers	K2
		C704.9	Describe about Holography and its principles	K2
		C704.10	Explain the different application of laser in medicine	K2

## CO-PO Mapping

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

**Course Name:** Total Quality Management**Course Code:** GE8077

Course Code	Course Name	Course Outcome			Knowledge Level		
		Students will be able to					
GE8077	Total Quality Management	C705.1	Interpret the customer focus, customer orientation and satisfaction			K2	
		C705.2	Classify the PDCA cycle, 5S and kaizen in tqm principles.			K2	
		C705.3	Infer the effect of bench marking process			K2	
		C705.4	Paraphrase the Taguchi's method used as tools in total quality management.			K2	
		C705.5	Compare the quality management system and environmental management system.			K2	

**CO-PO Mapping**

CO		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5 /K6							
C705.1	K2	3	1	-	-	-	-	-	-	-	-	-	-
C705.2	K2	2	-	-	-	-							
C705.3	K2	1	-	2	1	1	-	-	-	-	-	-	-
C705.4	K2	2	3	-	-	-	-	-	-	-	-	-	-
C705.5	K2	2	-	-	-	-	-	-	-	-	-	-	-
C705		2	0.8	0.4	0.2	0.2	-	-	-	-	-	-	-

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

**Course Name:** Analytical Methods and Instruments**Course Code:** OBT751

Course Code	Course Name	Course Outcome Students will be able to			Knowledge Level
OBT751	Analytical Methods and Instruments	C706.1	Outline the principles of various spectrometric techniques		K4
		C706.2	Illustrate the basic principles of general instrumentation and calibration		K3
		C706.3	Outline the NMR and Mass Spectrometry		K4
		C706.4	Explain the various types of Techniques are used for separation.		K2
		C706.5	Outline about radioisotope techniques and instrumentation.		K4

**CO-PO Mapping**

CO		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5 /K6	-	-	-	-	-	-	-
C706.1	K4	3	2	1	1	1	-	-	-	-	-	-	-
C706.2	K3	3	3	2	2	3	-	-	-	-	-	-	-
C706.3	K4	2	1	-	-	-	-	-	-	-	-	-	-
C706.4	K2	2	1	-	-	-	-	-	-	-	-	-	-
C706.5	K4	2	1	-	-	-	-	-	-	-	-	-	-
C706		2.4	1.6	0.6	0.6	0.8	-	-	-	-	-	-	-

REGULATIONS – 2017

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

**Course Name:** Power System Simulation Laboratory

**Course Code:** EE8711

Course code	Course Name	Course Outcome (CO)		Knowledge level
		Students will be able to		
EE8711	Power system simulation laboratory	C707.1	compute and model of short, medium and long transmission line parameters	K3
		C707.2	develop a computer program to form the bus admittance matrix (Y) bus impedance matrix (Z) of a power system	K3
		C707.3	analyze the various parameters of power system by perform various load flow techniques	K4
		C707.4	determine the fault current by fault method for both balanced and unbalanced systems	K3
		C707.5	analyze the transient stability of a system using Runga-kutta method	K4
		C707.6	plot the electromagnetic transients in the power system using MATLAB	K3
		C707.7	construct a simulink model of AGC of single area & two area systems	K3
		C707.8	solve the ED problem using direct method and Lambda iteration method	K3

CO-PO Mapping

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERING I TO VIII SEMESTERS  
CO PO MAPPING**

## **Course Name:** Renewable Energy System Laboratory

**Course Code:** EE8711

Course Code	Course Name	Course Outcome(CO) Students will be able to		Knowledge level
EE8712	Renewable Energy Systems Laboratory	C708.1	Analyze the V-I characteristics and efficiency of 1 KW solar PV system with standalone and grid connected by conducting experient and simulation using MATLAB Simulink.	K4
		C708.2	Analyze the performance and assessment of micro wind energy generator by conducting experiment and simulation using MATLAB Simulink.	K4
		C708.3	Analyze the performance and assessment of solar-wind hybrid system by conducting experiment And simulation using MATLAB Simulink.	K4
		C708.4	Analyze the Hydel power using MATLAB Simulink and analyze the performance and assessment of Fuel cell by conducting experiment and simulation using MATLAB Simulink.	K4
		C708.5	Analyze the various types of intelligent controller for hybrid system using MATLAB Simulink.	K4

## CO-PO Mapping

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

Course Name: Biomedical Instrumentation

Course Code: EI8073

Course Code	Course Name	Course Outcome(CO) Students will be able to			Knowledge Level	
EI8073	Biomedical Instrumentation	C801.1	Understand the philosophy of the heart, lung, blood circulation and respiration system.			K2
		C801.2	Identify the latest ideas on devices of non-electrical devices.			K1
		C801.3	Explain the various sensing and measurement devices of electrical origin.			K1
		C801.4	Understand the analysis systems of various organ types.			K2
		C801.5	Summarize the important and modern methods of imaging techniques and their analysis.			K2
		C801.6	Explain the medical assistance/techniques, robotic and therapeutic equipments.			K1
		C801.7	Conceive the mechanism about the kidney function and urine formation			K6
		C801.8	Perceive the concepts about the body fluids and its circulatory pathways in human body.			K4
		C801.9	Recognize the breathing mechanism, gaseous exchange, human neural system and its conduction of nerve impulse.			K1

### CO-PO Mapping

COs		POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
C801.1	K2	2	1	-	-	-	-	-	-	-	-	-	-
C801.2	K1	1	-	-	-	-	-	-	-	-	-	-	-
C801.3	K1	1	-	-	-	-	-	-	-	-	-	-	-
C801.4	K2	2	1	-	-	-	-	-	-	-	-	-	-
C801.5	K2	2	1	-	-	-	-	-	-	-	-	-	-
C801.6	K1	1	-	-	-	-	-	-	-	-	-	-	-
C801.7	K6	-	-	3	3	-	-	-	-	-	-	-	-
C801.8	K4	3	3	2	2	-	-	-	-	-	-	-	-
C801.9	K1	1	-	-	-	-	-	-	-	-	-	-	-
C801		1.4	0.6	0.5	0.5	0.1	-	-	-	-	-	-	-

## **REGULATIONS – 2017**

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

## **Course Name:** Principles of Management

**Course Code:** MG8591

Course Code	Course Name	Course Outcome(CO)		Knowledge Level
		Students will be able to		
MG8591	Principles Of Management	C802.1	Describe what management is	K2
		C802.2	Classify managers and non-managerial employees	K2
		C802.3	Describe the functions, roles, and skills of managers	K4
		C802.4	Describe how the manager's job is changing and the characteristics of an organization	K2
		C802.5	Define the nature and purpose of planning	K4
		C802.6	Classify the types of goals organizations might have and the plans they use	K3
		C802.7	Classify strategies of organizations and the issues in strategic management	K4
		C802.8	Describe and classify effective decision making techniques	K4
		C802.9	Describe the key elements in organizational design	K4
		C802.10	Discuss contemporary issues in managing Human resources	K4

## CO-PO Mapping

**B.E. ELECTRICAL AND ELECTRONICS  
ENGINEERINGI TO VIII SEMESTERS  
CO PO MAPPING**

**Course Name:** Project Work**Course Code:** EE8811

<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcome(CO) Students will be able to</b>			<b>Knowledge level</b>	
EE8811	Project Work	C803.1	Identify and apply the real world and societal importance problems in the Electrical and its allied area.			K1
		C803.2	Apply modern engineering tools for solution			K3
		C803.3	Identify, analyze, design, implement and handle prototype projects with a complete and organized solution methodologies			K6
		C803.4	Contribute as an individual or in a team in development of technical projects			K6
		C803.5	Develop effective communication skills for presentation of project related activities and prepare reports and examination following professional ethics			K6

**CO-PO Mapping**

COs		Pos											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		K3	K4	K5	K5	K3/K5/K6	K4	K2	K3	K3	K2	K3	K3
C803.1	K1	3	2	1	1	-	-	-	-	-	-	-	-
C803.2	K3	3	2	1	1	3	-	-	-	-	-	-	-
C803.3	K6	3	3	3	3	-	-	-	-	-	-	-	-
C803.4	K6	3	3	3	3	-	-	-	-	-	-	-	-
C803.5	K6	3	3	3	3	-	-	-	-	-	-	-	-
C803		3	2.6	2.2	2.2	3	-	-	-	-	-	-	-

Mount Zion College of Engineering & Technology



## **MECHANICAL ENGINEERING COURSE MAPPING CHART**

## **COURSE NAME: TECHNICAL ENGLISH-I**

YEAR & SEMESTER: 1&1



## Mechanical Engineering COURSE MAPPING CHART

Course Name: PH6151 ENGINEERING PHYSICS

YEAR&SEMESTER :1&1

COURSE	CO Statement	PO1(k3 )	PO2(k4 )	PO3(k5 )	PO4(k5 )	PO5 (k3,5,6)	PO6	PO7	PO8	PO9	P10	P11	P12
PH6151-ENGINEERING PHYSICS	At the end of the course, the students will												
	Apply the non-uniform bending concept in I-shape girders (K3)	3	2	1	-	-	-	-	-	-	-	-	-
	Demonstrate the torsional stress and deformation using torsional pendulum experiment (K4)	3	3	2	2	-	-	-	-				
	Illustrate the uses of LASER in low and high level energy applications (K3)	3	2										
	Explain the concept of resonance in real day applications (K5)	3	3	3	3	3	-	-	-	-	-	-	-
	Show the energy conversion in solar water heaters (K4)	3	3	2	2	-	-	-	-	-	-	-	-
	Calculate the thermal conductivity of good conductors (K3)	3	2	1	-	-	-	-	-	-	-	-	-
	Justify the tunneling effect occurs in potential barrier (K2)	2	1	-	-	-	-	-	-	-	-	-	-
	Compare the SC, BCC, FCC, HCP, diamond crystal structure (K3)	3	2	1	-	-	-	-	-	-	-	-	-
	Identify the Schottky and Frankel defect in crystal lattice (K5)	3	3	3	3	3	-	-	-	-	-	-	-
AVERAGE		2.88	2.22	1.55	1.11	0.66	-	-	-	-	-	-	-



## Mechanical Engineering COURSE MAPPING CHART

COURSE NAME: GE6152 ENGINEERING GRAPHICS

YEAR&SEMESTER :1&1

COURSE	CO Statement	PO1(k3 )	PO2(k4 )	PO3(k5 )	PO4(k5 )	PO5 (k3,5,6)	PO6	PO7	PO8	PO9	P10	P11	P12
	At the end of the course, the students will												
GE6152-ENGINEERING GRAPHICS	CO1: Know freehand sketching of basic geometrical constructions(K1)	1	-	-	-	-	-	-	-	-	-	-	-
	CO2: Draw orthographic projections of lines and plane surfaces. (K3)	3	2	1	1	-	-	-	-	-	-	-	-
	CO3: Develop 3Dsolid computer models (K3)	3	2	1	1	-	-	-	-	-	1	-	-
	CO4: Develop the visualize and to project isometric and perspective sections of simple solids. (K3)	3	2	1	1	-	-	-	-	-	-	-	-
	CO5: Apply the knowledge of development of surfaces in manufacturing and Rapid Prototyping Methods (K3)	3	2	1	1	-	-	-	-	-	1	-	-
	CO6: Make use of the fundamentals and standards of Engineering graphics (K3)	3	2	1	1	3	-	-	-	-	-	-	-
	CO7: Draw isometric and perspective views of the simple solids. (K3)	3	2	1	1	3	-	-	-	-	-	-	-
	CO8: Apply Orthographic projections of real time parts in the engineering Field. (K3).	3	2	1	1	3	-	-	-	-	1	-	-
	CO9: Project the sectioned solids and true shape of the section. (K4)	3	3	2	2	3	-	-	-	-	-	-	-



## **MECHANICAL ENGINEERING COURSE MAPPING CHART**

## COURSE NAME: TECHNICAL ENGLISH-II

YEAR & SEMESTER: 1&II



# Mechanical Engineering

## COURSE MAPPING CHART

## COURSE NAME: ENGINEERING MECHANICS

YEAR&SEMESTER :1&II

Mount Zion College of Engineering & Technology



## MECHANICAL ENGINEERING

## COURSE MAPPING CHART

## **COURSE NAME: TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS**

**YEAR & SEMESTER:** 1I&1II

COURSE	COURSE CODE-COURSE NAME MA6351-TRANSFORMS AND DIFFERENTIAL EQUATIONS	CO Statement											
		At the end of the course, the students will able to											
PARTIAL DIFFERENTIAL EQUATIONS	CO1: Compare wave equation and heat equation (K2)	2	1	-	-	-	-	-	-	-	-	-	
	CO2: Solve first and higher order partial differential equation, Lagrange's equations (K3)	3	2	1	1	-	-	-	-	-	-	-	
	CO3: Compute upto the third harmonics of the Fourier series (K3)	3	2	1	1	-	-	-	-	-	-	-	
	CO4: Use half range sine and cosine series, Parseval's Identify (K3)	3	2	1	1	-	-	-	-	-	-	-	
	CO5: Apply effective mathematical tools for the solutions of PDE and justify it (K4)	3	3	2	2	-	-	-	-	-	-	-	
	CO6: Evaluate Parseval's Identity by find he Fourier transform (K5)	3	3	3	3	-	-	-	-	-	-	-	
	CO7: Explain the possible solutions for two dimensional heat equation (K2)	2	1	-	-	-	-	-	-	-	-	-	
	CO8: Compute the Z-transform techniques, Using properties (K3)	3	2	1	1	-	-	-	-	-	-	-	
	CO9: Apply the inverse Z-transform, Using Convolution theorem and Residue methods (K3)	2	1	-	-	-	-	-	-	-	-	-	
AVERAGE		2.7	2	1.1	1.1	-	-	-	-	-	-	-	
		P01(k3)	P02(k4)	P03(k5)	P04(k5)	P05 (k3,5,6)	P06	P07	P08	P09	P10	P11	P12

Mount Zion College of Engineering & Technology



## MECHANICAL ENGINEERING

## COURSE MAPPING CHART

## COURSE NAME: CE6306 STRENGTH OF MATERIALS

YEAR & SEMESTER: I1&1V

Mount Zion College of Engineering & Technology



## MECHANICAL ENGINEERING

## COURSE MAPPING CHART

## COURSE NAME: ENGINEERING THERMODYNAMICS

YEAR & SEMESTER: I1&1II



# Mechanical Engineering

## COURSE MAPPING CHART

## COURSE NAME: FLUID MECHANICS AND MACHINERY

YEAR&SEMESTER :1I&1II



# Mechanical Engineering

## COURSE MAPPING CHART

## COURSE NAME: MANUFACTURING TECHNOLOGY-1

YEAR&SEMESTER :1I&1II



## Mechanical Engineering **COURSE MAPPING CHART**

## COURSE NAME: STATISTICS AND NUMERICAL METHODS

YEAR&SEMESTER :1I&1V



# Mechanical Engineering

## COURSE MAPPING CHART

## COURSE NAME: KINEMATICS OF MACHINERY

YEAR&SEMESTER :1I&1V



## Mechanical Engineering

### COURSE MAPPING CHART

COURSE NAME : ENGINEERING MATERIALS AND METALLURGY

YEAR&SEMESTER :I1/1V

COURSE	CO Statement											
	At the end of the course, the students will											
ME6303-ENGINEERING MATERIALS & METALLURGY	CO1: Explain alloys and phase diagram, Iron-Iron carbon diagram and steel classification (K2)	2	1	-	-	-	-	-	-	-	-	-
	CO2: Contrast the effect of alloying elements in steel (K2)	2	1	-	-	-	-	-	-	-	-	-
	CO3: Demonstrate different heat treatment processes (K3)	3	2	1	1	-	-	-	-	-	-	-
	CO4: Explain isothermal transformation and continuous cooling diagrams (K2)	2	1	-	-	-	-	-	-	-	-	-
	CO5: Distinguish ferrous and non-ferrous metals (K2)	2	1	-	-	-	-	-	-	-	-	-
	CO6: Choose the right ferrous and non-ferrous metals for applications ((K3)	3	2	1	1	-	-	-	-	-	-	-
	CO7: Summarize the properties and applications of non-metallic materials (K2)	2	1	-	-	-	-	-	-	-	-	-
	CO8: Classify the different types of polymers and ceramics (K2)	2	1	-	-	-	-	-	-	-	-	-
	CO9: Experiment the testing of mechanical properties (K2)	3	2	1	1	-	-	-	-	-	-	-
	Average	2.6	1.6	0.7	0.7	-	-	-	-	-	-	-



# Mechanical Engineering

## COURSE MAPPING CHART

## COURSE NAME : THERMAL ENGINEERING-I

YEAR&SEMESTER :I1/1V



## Mechanical Engineering COURSE MAPPING CHART

COURSE NAME: COMPUTER AIDED DESIGN

YEAR&SEMESTER :II1/IV

COURSE	CO Statement	PO1(K3)	PO2(K4)	PO3(K5)	PO4(K5)	PO5(K3, 5,6)	PO6	PO7	PO8	PO9	P10	P11	P12
	At the end of the course, the students will												
- ME6501 COMPUTER AIDED DESIGN	different wireframe Primitives representations (K1)	1	-	-	-	1	-	-	-	-	-	-	-
	<b>VERIFIED BY HOD</b>												
	Surface primitives using parametric	1	-	-	-	1	-	-	-	-	-	-	-
	Metric transformations on the surface and solid models (K3)	3	2	1	1	3	-	-	-	-	-	-	-
	Coordinate system for the geometric models (K2)	2	1	-	-	1	-	-	-	-	-	-	-
	Curves and surfaces using (K3)	3	2	1	1	3	-	-	-	-	-	-	-
	Solid models using different (K3)	3	2	1	1	3	-	-	-	-	-	-	-
	Rithm for line & surface (K3)	3	2	1	1	3	-	-	-	-	-	-	-
	Neutral file formats over 2D (K3)	3	2	1	1	3	-	-	-	-	-	-	-
	Engineering parts (K3)	3	2	1	1	3	-	-	-	-	-	-	-
	Average	2.44	1.44	0.66	0.66	2.33	-	-	-	-	-	-	-



## Mechanical Engineering

## COURSE NAME: HEAT AND MASS TRANSFER

YEAR&SEMESTER: I1I&1V





## Mechanical Engineering

### COURSE MAPPING CHART

COURSE NAME: METROLOGY AND MEASUREMENTS

YEAR&SEMESTER: II1/V

COURSE	CO Statement	PO1(K3)	PO2(K4)	PO3(K5)	PO4(K5)	PO5(K3, 5,6)	PO6	PO7	PO8	PO9	P10	P11	P12
	At the end of the course, the students will												
<b>-ME8501 - METROLOGY AND MEASUREMENTS</b>	Measurement methods instruments and errors.	1	-	-	-	-	-	-	-	-	-	-	-
	The linear measurements of machine suitable instruments. (K3)	3	2	1	1	1	-	-	-	-	-	-	-
	The angular measurement of machine suitable instruments. (K3)	3	2	1	1	1	-	-	-	-	-	-	-
	The concept of laser interferometers, CMM on system. (K2)	2	1	-	-	-	-	-	-	-	-	-	-
	Suitable advanced metrology techniques for of engineering components. (K3)	3	2	1	1	-	-	-	-	-	-	-	-
	Principles and methods for measuring flatness, straightness. (K3)	3	2	1	1	1	-	-	-	-	-	-	-
	Principles and methods for measuring thread, finish measurement. (K3)	3	2	1	1	1	-	-	-	-	-	-	-
	Suitable method for measurement of force, and temperature. (K3)	3	2	1	1	1	-	-	-	-	-	-	-
	Readability, reliability and calibration of moments. (K2)	2	1	-	-	-	-	-	-	-	-	-	-
	Average	2.6	1.6	0.7	0.7	0.6	-	-	-	-	-	-	-



## Mechanical Engineering

### COURSE MAPPING CHART

## **COURSE NAME: DYNAMICS OF MACHINERY**

YEAR&SEMESTER: II1/V



**Mechanical Engineering**  
**COURSE MAPPING CHART**

COURSE NAME: PROFESSIONALL ETHICS IN ENGINEERING

YEAR&SEMESTER: I1I&V

COURSE	CO Statement	PO1(K3)	PO2(K4)	PO3(K5)	PO4(K5)	PO5(K3, 5,6)	PO6	PO7	PO8	PO9	P10	P11	P12
ME6404- PROFESSIONALL ETHICS IN ENGINEERING	CO1: Be equipped to understand professional and ethical values (K3)	2	-	-	-	-	-	-	-	-	-	-	-
	CO2: Have instinct to locate, analyze, evaluate and synthesis information from a wide variety of sources in a planned and timely manner (K6)	-	-	-	-	-	3	3	3				
	CO3: Have the ability to apply effective, creative and innovative solutions, both independently and cooperatively, to current and future problems. (K6)	-	-	-	-	-	3	3	3	-	-	-	-
	CO4: Have skills of high order in interpersonal understanding, teamwork and communication (K4)	3	-	-	-	-	-	-	-	2	-	-	-
	CO5: Have a proficiency in the appropriate use of contemporary technologies ( K3)	3	3	-	-	3	-	-	-	-	-	-	-
	CO6: Have a commitment to continuous learning and capacity to maintain intellectual curiosity throughout life (K5)	-	-	-	-	-	2	-	-	-	-	2	-
	CO7: Have a commitment to the highest standards of professional endeavor and ability take a leadership role in the community (K4)	-	-	-	-	-	-	-	-	-	2	-	-
	CO8: Have an awareness of ethical, social and cultural issues within a global context and their importance in the exercise of professional skills and responsibilities(K5)	-	-	-	-	-	2	-	3	-	-	-	-
	CO9: Apply the content and techniques of a chosen discipline at advanced levels (K3)	3	-	-	2	3	-	-	-	-	-	-	-
	Average	2.75	3	-	2	3	2.5	3	3	-	2	2	-



## Mechanical Engineering

### COURSE MAPPING CHART

COURSE NAME: DESIGN OF TRANSMISSION SYSTEM

YEAR&SEMESTER: II1/VI

COURSE	CO Statement	PO1(K3)	PO2(K4)	PO3(K5)	PO4(K5)	PO5(K3, 5,6)	PO6	PO7	PO8	PO9	P10	P11	P12
	At the end of the course, the students will												
ME6601-DESIGN OF TRANSMISSION SYSTEMS	CO1: Design a chain drive for the motor vehicle. (K6)	3	3	3	3	3	-	-	-	-	-	-	-
	CO2: Select the suitable gear drive for machine. (K3)	3	2	1	1	-	-	-	-	-	-	-	-
	CO3: Model a gear drive for the lathe machine. (K3)	3	2	1	1	-	-	-	-	-	-	-	-
	CO4: Determine the basic dimensions of helical gear parameters. (K5)	3	3	3	3	-	-	-	-	-	-	-	-
	CO5: Estimate the number of teeth on bevel gear. (K6)	3	3	3	3	-	-	-	-	-	-	-	-
	CO6: Choose the suitable worm gear drive for machine (K1)	1	-	-	-	-	-	-	-	-	-	-	-
	CO7: Design the gear box for the vehicle (K6)	3	3	3	3	3	-	-	-	-	-	-	-
	CO8: List out the types of gearbox (K1)	1	-	-	-	-	-	-	-	-	-	-	-
	CO9: Determine the dimensions of the clutch plate. (K5)	1	-	-	-	-	-	-	-	-	-	-	-
	Average	2.33	1.77	1.55	1.55	0.66	-	-	-	-	-	-	-

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## Mechanical Engineering

## COURSE MAPPING CHART

## COURSE NAME: PRINCIPLES OF MANAGEMENT

**YEAR&SEMESTER: II1/VI**



## Mechanical Engineering

## COURSE MAPPING CHART

## COURSE NAME: AUTOMOBILE ENGINEERING

YEAR&SEMESTER: II1/VI



## Mechanical Engineering

## COURSE MAPPING CHART

## COURSE NAME: FINITE ELEMENT ANALYSIS

YEAR&SEMESTER: II1/V



# Mechanical Engineering

## COURSE MAPPING CHART

## COURSE NAME: UNCONVENTIONAL MACHINING PROCESSES

**YEAR&SEMESTER: II1&VI**



# Mechanical Engineering

## COURSE MAPPING CHART

# COURSE NAME: ME6702-MECHATRONICS

**YEAR&SEMESTER:** IV/VII



# Mechanical Engineering

## COURSE MAPPING CHART

## COURSE NAME: COMPUTER INTEGRATED MANUFACTURING

**YEAR&SEMESTER: IV/VIII**



## Mechanical Engineering

## COURSE MAPPING CHART

## COURSE NAME: TOTAL QUALITY MANAGEMENT

**YEAR&SEMESTER: IV/VII**



## COURSE MAPPING CHART

COURSE NAME: ME6005-PROCESS PLANNING AND COST ESTIMATION

YEAR&SEMESTER: IV&VII

COURSE ESTIMATION	CO Statement												
		PO1(k3 )	PO2(k4 )	PO3(k5 )	PO4(k5 )	PO5 (k3,5,6)	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ME6005 – PROCESS PLANNING AND COST ESTIMATION	At the end of the course, the students will able to	2	1	-	-	-	-	-	-	-	-	-	-
	Describe methods of process planning in various areas of manufacturing planning (k2)	2	1	-	-	-	-	-	-	-	-	-	-
	Identify the operation parameters through symbols from drawings. (K1)	1	-	-	-	-	-	-	-	-	-	-	-
	Select the suitable material, equipment and tools for the operations.(K2)	2	1	-	-	-	-	-	-	-	-	-	-
	Calculate the process parameters for turning operations (K3)	3	2	1	-	-	-	-	-	-	-	-	-
	Summarize various operations planning for the given job (k2)	2	1	-	-	-	-	-	-	-	-	-	-
	Illustrate the various cost estimation elements in the production process. (k2)	2	1	-	-	-	-	-	-	-	-	-	-
	Use the estimation costs of a product before production. (k3)	3	2	1	-	-	-	-	-	-	-	-	-
	Compute the cost of different material forming operations. (k3)	3	2	1	-	-	-	-	-	-	-	-	-
	Calculate machining time for different machining process. (k3)	3	2	1	-	-	-	-	-	1	-	-	3
AVERAGE		2.33	1.33	0.44	-	-	-	-	-	0.11	-	-	0.33



# Mechanical Engineering

## COURSE MAPPING CHART

## COURSE NAME: MAINTENANCE ENGINEERING

YEAR&SEMESTER: IV&VII



# Mechanical Engineering

## COURSE MAPPING CHART

# COURSE NAME: ENGINEERING ECONOMICS

**YEAR&SEMESTER: IV/VIII**



# Mechanical Engineering

## COURSE MAPPING CHART

COURSE NAME: IE6605-PRODUCTION PLANNING AND CONTROL

**YEAR&SEMESTER:** IV&VII



## Mechanical Engineering

## COURSE MAPPING CHART

## COURSE NAME: ADVANCED IC ENGINES

**YEAR&SEMESTER:** IV/VII

COURSE	CO Statement										
		PO1(k3 )	PO2(k4 )	PO3(k5 )	PO4(k5 )	PO5 (k3,5,6)	PO6	PO7	PO8	PO9	PO10
ME6016 - ADVANCED IC ENGINES	At the end of the course, the students will able to										
	the underlying principles of IC Engines (k2)	2	1	-	-	-	-	-	-	-	-
	The components of IC engines (k2)	2	1	-	-	-	-	-	-	-	-
	Different IC engines and its applications (K3)	3	3	2	2	-	-	-	-	-	-
	Pollution formation (K4)	3	3	3	3	-	-	-	-	-	-
	Concept of alternate fuel and importance of alternate fuels (K3)	3	2	1	1	-	-	-	-	-	-
	Pollution norms and Indian Standards (K2)	2	1	-	-	-	-	-	-	-	-
	Air Pollutants (K2)	2	1	-	-	-	-	-	-	-	-
	Internal combustion engines (K4)	3	3	2	2	-	-	-	-	-	-
	Recent trends in automobiles (K2)	2	1	-	-	-	-	-	-	-	-
AVERAGE		2.44	1.77	0.88	0.88	-	-	-	-	-	-