COURSE OUTCOMES AND PROGRAM OUTCOMES

Course Outcomes (COs)

HS8151–COMMUNICATION ENGLISH	
C101.1	Read articles of a general kind in magazines and newspapers
C101.2	Participate effectively in informal conversations; introduce themselves and their friends
C101.3	Comprehend conversations and short talks delivered in English
C101.4	Write short essays of a general kind and personal letters and emails in English.
C101.5	Express opinions in English
MA8151- ENGINEERING MATHEMATICS-I	
C102.1	Use both the limit definition and rules of differentiation to differentiate functions.
C102.2	Apply differentiation to solve maxima and minima problems.
C102.3	Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus.
C102.4	Determine convergence/divergence of improper integrals and evaluate convergent improper integrals.
C102.5	Apply various techniques in solving differential equations.
PH8151 -ENGINEERINGPHYSICS	
C103.1	The students will gain knowledge on the basics of properties of matter and its applications
C103.2	The students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics
C103.3	The students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers
C103.4	The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes
C103.5	The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes
CY8151 ENGINEERINGCHEMISTRY	
C104.1	The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning.
C104.2	To develop an understanding of the basic concepts of phase rule and its applications to single and two component systems and appreciate the purpose and significance of alloys.
C104.3	To apply the knowledge of phase rule and composites for material selection requirements.
C104.4	To recommend suitable fuels for engineering processes and applications.

C104.5	To apply the Principles and generation of energy in batteries, nuclear reactors, solar cells, wind mills and fuel cells..
GE8151-PROBLEMSOLVINGANDPYTHONPROGRAMMING	
C105.1	Develop algorithmic solutions to simple computational problems.
C105.2	Develop and execute simple Python programs.
C105.3	Write simple Python programs using conditionals and loops for solving problems.
C105.4	Decompose a Python programming to functions.
C105.5	Represent compound data using Python lists, tupelos, dictionaries etc.
GE8152- ENGINEERING GRAPHICS	
C106.1	Familiarize with the fundamentals and standards of Engineering graphics
C106.2	Perform freehand sketching of basic geometrical constructions and multiple views of objects
C106.3	Project orthographic projections of lines and plane surfaces
C106.4	Draw projections and solids and development of surfaces
C106.5	Visualize and to project isometric and perspective sections of simple solids.
GE8161-PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY	
C107.1	Develop algorithmic solutions to simple computational problems
C107.2	Develop and execute simple Python programs.
C107.3	Implement programs in Python using conditionals and loops for solving problems.
C107.4	Deploy functions to decompose a Python program.
C107.5	Process compound data using Python data structures.
BS8161-PHYSICSANDCHEMISTRYLABORATORY	
C108.1	Understand the functioning of various physics laboratory equipment
C108.2	Use graphical models to analyze laboratory data.
C108.3	Access, process and analyze scientific information.
C108.4	To analyze and determine the composition of alloys.
C108.5	To learn simple method of synthesis of nano particles.
II-Semester	
HS8251-TECHNICAL ENGLISH	
C109.1	To Read technical texts and write area- specific texts effortlessly.

C109.2	To Listen and comprehend lectures and talks in their area of specialisation successfully.
C109.3	To Speak appropriately and effectively in varied formal and informal contexts.
C109.4	To Write reports and winning job applications.
C109.5	To present their ideas and opinions in a planned and logical manner
MA8251–ENGINEERING MATHEMAICS-II	
C110.1	Eigen values and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices.
C110.2	Gradient, divergence and curl of a vector point function and related identities.
C110.3	Evaluation of line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification
C110.4	Analytic functions, conformal mapping and complex integration
C110.5	Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients
PH8253 - PHYSICS FOR ELECTRONICS ENGINEERING	
C111.1	Gain knowledge on classical and quantum electron theories, and energy band structures
C111.2	Acquireknowledgeonbasicsofsemiconductorphysicsanditsapplicationsinvario usdevices
C111.3	Get knowledge on magnetic properties of materials and their applications in data storage,
C111.4	Have the necessary understanding on the functioning of optical materials for optoelectronics
C111.5	Understandthebasicsofquantumstructuresandtheirapplicationsandbasicsofqua ntumcomputing
BE8252-BASIC CIVIL AND MECHANICAL ENGINEERING	
C112.1	appreciate the Civil and Mechanical Engineering components of Projects
C112.2	Explain the usage of construction material and proper selection of construction materials.
C112.3	Identify the components used in power plant cycle.
C112.4	Demonstrate working principles of petrol and diesel engine.
C112.5	Elaborate the components of refrigeration and Air conditioning cycle
EE8251 -CIRCUIT THEORY	
C113.1	Ability to analyze electrical circuits
C113.2	Ability to apply circuit theorems

C113.3	Ability to apply circuit theorems
C113.4	Compute power, line/ phase voltage and currents of the given three phase circuit
C113.5	Explain the behavior of magnetically coupled circuits.
GE8291-ENVIRONMENTAL SCIENCE AND ENGINEERING	
C114.1	Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.
C114.2	Public awareness of environmental is at infant stage
C114.3	Ignorance and incomplete knowledge has lead to misconceptions
C114.4	Development and improvement in std. of living has lead to serious environmental disasters
C114.5	Study the integrated themes and biodiversity, natural resources, pollution control and waste management.
GE8261- ENGINEERING PRACTICES LABORATORY	
C115.1	Draw pipeline plan; lay and connect various pipe fittings used in common household plumbing work; Saw; plan; make joints in wood materials used in common household woodwork.
C115.2	Wire various electrical joints in common household electrical wirework.
C115.3	Weld various joints in steel plates using arc welding work; Machine various simple processes like turning, drilling, tapping in parts ; Assemble simple mechanical assembly of common household equipment; Make a tray out of metal sheet using sheet metal work.
C115.4	Solder and test simple electronic circuits ;Assemble and test simple electronic components on PCB.
C115.5	Measure the electrical quantities
EE8261-ELECTRIC CIRCUITS LABORATORY	
C116.1	Understand and apply circuit theorems and concepts in engineering applications.
C116.2	Simulate electric circuits.
C116.3	Analyze the performance of the given three-phase circuit using simulation and experimental methods
C116.4	Analyze transient behavior of the given RL/RC/RLC circuit using simulation and experimental methods
C116.5	Analyze frequency response of the given series and parallel RLC circuit using simulation and experimentation methods.
III-Semester	
MA8353- TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS	
C201.1	Understand how to solve the given standard partial differential equations
C201.2	Solve differential equations using Fourier series analysis which plays a vital role in engineering applications

C201.3	Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.
C201.4	Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering
C201.5	Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems.
EE8351-DIGITAL LOGIC CIRCUITS	
C202.1	Ability to design combinational and sequential Circuits
C202.2	Ability to simulate using software package
C202.3	Ability to study various number systems and simplify the logical expressions using Boolean functions
C202.4	Ability to introduce asynchronous sequential circuits and PLDs
C202.5	Ability to introduce digital simulation for development of application oriented logic circuits
EE8391 -ELECTROMAGNETIC THEORY	
C203.1	Ability to understand the basic mathematical concepts related to electromagnetic vector fields.
C203.2	Ability to understand the basic concepts about electrostatic fields, electrical potential, energy density and their applications
C203.3	Ability to understand the basic concepts electromagnetic waves and characterizing parameters
C203.4	Ability to understand and compute Electromagnetic fields and apply them for design and analysis of electrical equipment and systems
C203.5	Ability to acquire the knowledge in magneto static fields, magnetic flux density, vector potential and its applications
EE8301 - ELECTRICAL MACHINES - I	
C204.1	Ability to analyze the magnetic-circuits
C204.2	Ability to understand the concepts of electromechanical energy conversion.
C204.3	Ability to acquire the knowledge in working principles of DC Generator
C204.4	Ability to acquire the knowledge in working principles of DC Motor
C204.5	Ability to acquire the knowledge in various losses taking place in D.C. Machines
EC8353 -ELECTRON DEVICES AND CIRCUITS	
C205.1	Explain the structure and working operation of basic electronic devices
C205.2	Able to identify and differentiate both active and passive elements
C205.3	Analyze the characteristics of different electronic devices such as diodes and transistors
C205.4	Choose and adapt the required components to construct an amplifier circuit

C205.5	Employ the acquired knowledge in design and analysis of oscillators
ME8792-POWER PLANT ENGINEERING	
C206.1	Explain the layout, construction and working of the components inside a thermal power plant
C206.2	Explain the layout, construction and working of the components inside a Diesel, Gas and Combined cycle power plants
C206.3	Explain the layout, construction and working of the components inside nuclear power plants
C206.4	Explain the layout, construction and working of the components inside Renewable energy power plants.
C206.5	Explain the applications of power plants while extend their knowledge to power plant economics and environmental hazards and estimate the costs of electrical energy production
EC8311 -ELECTRONICS LABORATORY	
C207.1	Ability to understand and analyse electronic circuits
C207.2	Enability the students to understand the behavior of semiconductor device based on experimentation
C207.3	Analyze the characteristics of JFET and UJT experimentally
C207.4	Calculate the frequency and phase angle using CRO experimentally
C207.5	Analyze the frequency response characteristics of passive filters experimentally
EE8311 - ELECTRICAL MACHINES LABORATORY - I	
C208.1	Ability to understand and analyze DC Generator
C208.2	Ability to understand and analyze DC Motor
C208.3	Ability to understand and analyse Transformers.
C208.4	Identify suitable methods for testing of transformer and DC machines
C208.5	Understand DC motor starters and 3-phase transformer connections
IV-SEMESTER	
MA8491-NUMERICAL METHODS	
C209.1	Understand the basic concepts and techniques of solving algebraic and transcendental equations.
C209.2	Appreciate the numerical techniques of interpolation and error approximations in various intervals in real life situations.
C209.3	Apply the numerical techniques of differentiation and integration for engineering problems
C209.4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.
C209.5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.

EE8401-ELECTRICAL MACHINES - II	
C210.1	Ability to understand the construction and working principle of Synchronous Generator
C210.2	Ability to understand MMF curves and armature windings.
C210.3	Ability to acquire knowledge on Synchronous motor.
C210.4	Ability to understand the construction and working principle of Three phase Induction Motor
C210.5	Ability to predetermine the performance characteristics of Synchronous Machines and special machines
EE8402-TRANSMISSION AND DISTRIBUTION	
C211.1	To understand the importance and the functioning of transmission line parameters.
C211.2	To understand the concepts of Lines and Insulators
C211.3	To understand the importance of distribution of the electric power in power system
C211.4	To acquire knowledge on Underground Cables
C211.5	To become familiar with the function of different components used in Transmission and Distribution levels of power system and modelling of these components.
EE8403-MEASUREMENTS AND INSTRUMENTATION	
C212.1	To acquire knowledge on Basic functional elements of instrumentation
C212.2	Ability to compare between various measurement techniques
C212.3	To understand the concepts Various transducers and the data acquisition systems and various storage and display devices
C212.4	Ability to model and analyze electrical and electronic Instruments and understand the operational features of display Devices and Data Acquisition System.
C212.5	To understand the concepts of Fundamentals of electrical and electronic instruments
EE8451-LINEAR INTEGRATED CIRCUITS AND APPLICATIONS	
C213.1	To understand the concepts of Fundamentals of electrical and electronic instruments
C213.2	To understand the importance of Signal analysis using Op-amp based circuits
C213.3	Functional blocks and the applications of special ICs like Timers, PLL circuits, regulator Circuits
C213.4	To understand and acquire knowledge on the Applications of Op-amp
C213.5	Ability to understand and analyse, linear integrated circuits their Fabrication and Application.
IC8451-CONTROL SYSTEMS	
C214.1	Ability to develop various representations of system based on the knowledge of

	Mathematics, Science and Engineering fundamentals.
C214.2	Ability to do time domain and frequency domain analysis of various models of linear system
C214.3	Ability to interpret characteristics of the system to develop mathematical model.
C214.4	Ability to come out with solution for complex control problem.
C214.5	Ability to understand use of PID controller in closed loop system.
EE8411-ELECTRICAL MACHINES LABORATORY - II	
C215.1	Ability to understand and analyze EMF and MMF methods
C215.2	Ability to analyze the characteristics of V and Inverted V curves
C215.3	Ability to understand the importance of Synchronous machines
C215.4	Ability to understand the importance of Induction Machines
C215.5	Ability to acquire knowledge on separation of losses
EE8461-LINEAR AND DIGITAL INTEGRATED CIRCUITS LABORATORY	
C216.1	Ability to understand and implement Boolean Functions.
C216.2	Ability to understand the importance of code conversion
C216.3	Ability to Design and implement 4-bit shift registers
C216.4	Ability to acquire knowledge on Application of Op-Amp
C216.5	Ability to Design and implement counters using specific counter IC.
EE8412-TECHNICAL SEMINAR	
C217.1	Ability to review, prepare and present technological developments
C217.2	Ability to face the placement interviews
C217.3	Encourage the students to study advanced engineering developments
C217.4	prepare and present technical reports.
C217.5	Encourage the students to use various teaching aids such as overhead projectors, power point presentation and demonstrative models
V-SEMESTER	
EE8501-POWER SYSTEM ANALYSIS	
C301.1	Ability to model the power system under steady state operating condition
C301.2	Ability to understand and apply iterative techniques for power flow analysis

C301.3	Ability to model and carry out short circuit studies on power system
C301.4	Ability to model and analyze stability problems in power system
C301.5	Ability to model and understand various power system components and carry out power flow, short circuit and stability studies.
EE8551-MICROPROCESSORS AND MICROCONTROLLERS	
C302.1	Ability to acquire knowledge in Addressing modes & instruction set of 8085 & 8051
C302.2	Ability to understand the importance of Interfacing
C302.3	Ability to explain the architecture of Microprocessor and Microcontroller.
C302.4	Ability to write the assembly language programme
C302.5	Ability to develop the Microprocessor and Microcontroller based applications.
EE8552-POWER ELECTRONICS	
C303.1	Ability to analyse AC-AC and DC-DC and DC-AC converters.
C303.2	Ability to choose the converters for real time applications.
C303.3	Different types of power semiconductor devices and their switching
C303.4	Different modulation techniques of pulse width modulated inverters and to understand harmonic reduction methods.
C303.5	Operation of AC voltage controller and various configurations.
EE8591-DIGITAL SIGNAL PROCESSING	
C304.1	Ability to understand the importance of Fourier transform, digital filters and DS Processors
C304.2	Ability to acquire knowledge on Signals and systems & their mathematical representation.
C304.3	Ability to understand and analyze the discrete time systems.
C304.4	Ability to analyze the transformation techniques & their computation.
C304.5	Ability to acquire knowledge on programmability digital signal processor & quantization effects.
CS8392-OBJECT ORIENTED PROGRAMMING	
C305.1	Develop Java programs using OOP principles
C305.2	Develop Java programs with the concepts inheritance and interfaces
C305.3	Build Java applications using exceptions and I/O streams
C305.4	Develop Java applications with threads and generics classes

C305.5	Develop interactive Java programs using swings
OAT551-AUTOMOTIVE SYSTEMS	
C306.1	Upon completion of this course the students will be able to identify the components in automobile engineering
C306.2	Have clear understanding on different auxiliary and transmission systems usual.
C306.3	Understand the construction and working principle of various parts of an automobile
C306.4	To practice for assembling of engine parts and transmission system
C306.5	To practice for dismantling of engine parts and transmission system
EE8511-CONTROL AND INSTRUMENTATION LABORATORY	
C307.1	Ability to understand control theory and apply them to electrical engineering problems.
C307.2	Ability to analyze the various types of converters.
C307.3	Ability to design compensators
C307.4	Ability to understand the basic concepts of bridge networks.
C307.5	Ability to the basics of signal conditioning circuits.
HS8581-PROFESSIONAL COMMUNICATION	
C308.1	Make effective presentations
C308.2	Participate confidently in Group Discussions.
C308.3	Attend job interviews and be successful in them.
C308.4	Develop adequate Soft Skills required for the workplace
C308.5	Make them Employability Graduates
CS8383-OBJECT ORIENTED PROGRAMMING LABORATORY	
C309.1	Develop and implement Java programs for simple applications that make use of classes, packages and interfaces.
C309.2	Develop and implement Java programs with array list, exception handling and multi threading.
C309.3	Design applications using file processing, generic programming and event handling.
C309.4	To build software development skills using java programming for real-world applications
C309.5	To develop applications using generic programming and event handling.
VI-SEMESTER	
EE8601-SOLID STATE DRIVES	

C310.1	Ability to understand and suggest a converter for solid state drive
C310.2	Ability to select suitability drive for the given application.
C310.3	Ability to study about the steady state operation and transient dynamics of a motor load system.
C310.4	Ability to analyze the operation of the converter/chopper fed dc drive.
C310.5	Ability to analyze the operation and performance of AC motor drives.
EE8602-PROTECTION AND SWITCHGEAR	
C311.1	Ability to understand and analyze Electromagnetic and Static Relays.
C311.2	Ability to suggest suitability circuit breaker.
C311.3	Ability to find the causes of abnormal operating conditions of the apparatus and system.
C311.4	Ability to analyze the characteristics and functions of relays and protection schemes.
C311.5	Ability to study about the apparatus protection, static and numerical relays.
EE8691-EMBEDDED SYSTEMS	
C312.1	Ability to understand and analyze Embedded systems.
C312.2	Ability to suggest an embedded system for a given application.
C312.3	Ability to operate various Embedded Development Strategies
C312.4	Ability to study about the bus Communication in processors.
C312.5	Ability to acquire knowledge on various processor scheduling algorithms.
EE8004-MODERN POWER CONVERTERS	
C313.1	Ability to suggest converters for AC-DC conversion
C313.2	To know Switched mode power supplies
C313.3	Ability to understand Matrix Converter
C313.4	Ability to understand Soft switched converters
C313.5	Ability to suggest converters for SMPS
EE8006-POWER QUALITY	
C314.1	Ability to understand various sources, causes and effects of power quality issues, electrical systems and their measures and mitigation.
C314.2	Ability to analyze the causes & Mitigation techniques of various PQ events.

C314.3	Ability to understand the concepts about Voltage and current distortions, harmonics
C314.4	Ability to acquire knowledge on compensation techniques
C314.5	Ability to acquire knowledge on DVR.
EE8661-POWER ELECTRONICS AND DRIVES LABORATORY	
C315.1	Ability to practice and understand converter and inverter circuits and apply software for engineering problems.
C315.2	Ability to experiment about switching characteristics various switches.
C315.3	Ability to analyze about AC to DC converter circuits.
C315.4	Ability to analyze about DC to AC circuits.
C315.5	Ability to acquire knowledge on simulation software.
EE8681-MICROPROCESSORS AND MICROCONTROLLER LABORATORY	
C316.1	Ability to understand and apply computing platform and software for engineering problems.
C316.2	Ability to programming logics for code conversion.
C316.3	Ability to acquire knowledge on A/D and D/A
C316.4	Ability to understand basics of serial communication
C316.5	Ability to understand basics of software simulators.
EE8611-MINI PROJECT	
C317.1	On Completion of the mini project work students will be in a position to take up their final year project work
C317.2	To develop their own innovative prototype of ideas.
C317.3	To train the students in preparing mini project reports and examination.
C317.4	To find solution by formulating proper methodology
C317.5	To get knowledge about the technology used
VII-SEMESTER	
EE8701-HIGH VOLTAGE ENGINEERING	
C401.1	Ability to understand Transients in power system.
C401.2	Ability to understand Generation and measurement of high voltage.
C401.3	Ability to understand High voltage testing.
C401.4	Ability to understand various types of over voltages in power system.

C401.5	Ability to test power apparatus and insulation coordination
EE8702-POWER SYSTEM OPERATION AND CONTROL	
C402.1	Ability to understand the day-to-day operation of electric power system.
C402.2	Ability to analyze the control actions to be implemented on the system to meet the minute-to-minute variation of system demand.
C402.3	Ability to acquire knowledge on real power-frequency interaction.
C402.4	Ability to understand the reactive power-voltage interaction
C402.5	Ability to design SCADA and its application for real time operation.
EE8703-RENEWABLE ENERGY SYSTEMS	
C403.1	Ability to create awareness about renewable Energy Sources and technologies.
C403.2	Ability to get adequate inputs on a variety of issues in harnessing renewable Energy.
C403.3	Ability to recognize current and possible future role of renewable energy sources.
C403.4	Ability to explain the various renewable energy resources and technologies and their applications.
C403.5	Ability to acquire knowledge about solar energy.
0ML751-TESTING OF MATERIALS	
C404.1	Identify suitable testing technique to inspect industrial components
C404.2	Ability to use the different technique and know its applications and limitations
C404.3	Ability to understand about mechanical testing
C404.4	Ability to understand about nondestructive testing
C404.5	Ability to understand about the characterization of material testing
GE8071-DISASTER MANAGEMENT	
C405.1	Ability to understand Differentiate the types of disasters, causes and their impact on environment and society
C405.2	Ability to Assess vulnerability and various methods of risk reduction measures as well as mitigation
C405.3	To Draw the hazard and vulnerability profile of India, Scenarios in the Indian context, Disaster damage assessment and management
C405.4	To gain a preliminary understanding of approaches of Disaster Risk Reduction
C405.5	To enhance awareness of institutional processes in the country

GE8077-TOTAL QUALITY MANAGEMENT	
C406.1	To find solution by formulating proper methodology
C406.2	To understand of Quality Management principles and process.
C406.3	Ability to understand about the techniques
C406.4	Ability to understand about the tool's techniques
C406.5	Ability to understand Quality Function Deployment
	C407-NAAN MUDHALVAN
EE8711-POWER SYSTEM SIMULATION LABORATORY	
C408.1	Ability to understand power system planning and operational studies.
C408.2	Ability to acquire knowledge on Formation of Bus Admittance and Impedance Matrices and Solution of Networks.
C408.3	Ability to analyze the power flow using GS and NR method
C408.4	Ability to find Symmetric and Unsymmetrical fault
C408.5	Ability to understand the economic dispatch.
EE8712-RENEWABLE ENERGY SYSTEMS LABORATORY	
C409.1	Ability to understand and analyze Renewable energy systems.
C409.2	Ability to train the students in Renewable Energy Sources and technologies
C409.3	Ability to provide adequate inputs on a variety of issues in harnessing Renewable Energy.
C409.4	Ability to recognize current and possible future role of Renewable energy sources.
C409.5	Ability to understand basics of Intelligent Controllers.
VIII-SEMESTER	
EE8015-ELECTRIC ENERGY GENERATION UTILIZATION AND CONSERVATION	
C410.1	To understand the main aspects of generation, utilization and conservation
C410.2	To identify an appropriate method of heating for any particular industrial application.
C410.3	To evaluate domestic wiring connection and debug any faults occurred
C410.4	To construct an electric connection for any domestic appliance like refrigerator as well as to design a battery charging circuit for a specific household application
C410.5	To realize the appropriate type of electric supply system as well as to evaluate the performance of a traction unit

EE8018-MICROCONTROLLER BASED SYSTEM DESIGN	
C411.1	Ability to understand and apply computing platform and software for engineering problems
C411.2	Ability to understand the concepts of Architecture of PIC microcontroller
C411.3	Ability to understand the importance of Peripheral devices for data communication.
C411.4	Ability to acquire knowledge in Architecture of ARM processors
C411.5	Ability to understand the basics of sensor interfacing
EE8811-PROJECT WORK	
C412.1	On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology.
C412.2	Ability to identify, formulate, design, interpret, analyze and provide solutions to complex engineering and societal issues by applying knowledge gained on basics of science and Engineering.
C412.3	Ability to understand, formulate and propose new learning algorithms to solve engineering and societal problems of moderate complexity through multidisciplinary projects understanding commitment towards sustainable development.
C412.4	Ability to acknowledge the value of continuing education for oneself and to stay up with technology advancements.
C412.5	Ability to choose, conduct and demonstrate a sound technical knowledge of their selected project topics in the field of power components, protection, high voltage, electronics, process automation, power electronics and drives instrumentation and control by exploring suitable engineering and IT tools.

I-SEMESTER

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101.1	_	_	_	_	_	_	_	_	2	3	_	3	_	_
C101.2	_	_	_	_	_	_	_	_	2	3	_	3	_	_
C101.3	_	_	_	_	_	_	_	_	2	3	_	3	_	_
C101.4	_	_	_	_	_	_	_	_	2	2	_	3	_	_
C101.5	_	_	_	_	_	_	_	_	2	3	_	3	_	_
Average	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.0**	**2.8**	**0.0**	**3.0**	**0.0**	**0.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2

C102.1	3	3	_	_	2	_	_	_	_	_	_	3	_	_
C102.2	2	3	_	_	2	_	_	_	_	_	_	3	_	_
C102.3	3	3	_	_	2	_	_	_	_	_	_	3	_	_
C102.4	3	3	_	_	2	_	_	_	_	_	_	2	_	_
C102.5	2	3	_	_	1	_	_	_	_	_	_	3	_	_
Average	**2.6**	**3.0**	**0.0**	**0.0**	**1.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.8**	**0.0**	**0.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C103.1	2	3	3	_	2	_	2	_	_	_	_	3	_	_
C103.2	2	3	2	_	2	_	1	_	_	_	_	3	_	_
C103.3	2	3	3	_	2	_	2	_	_	_	_	3	_	_
C103.4	2	3	3	_	2	_	2	_	_	_	_	3	_	_
C103.5	2	3	3	_	2	_	2	_	_	_	_	3	_	_
Average	**2.0**	**3.0**	**2.8**	**0.0**	**2.0**	**0.0**	**1.8**	**0.0**	**0.0**	**0.0**	**0.0**	**3.0**	**0.0**	**0.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C104.1	2	3	1	–	2	_	_	_	_	_	_	2	_	_
C104.2	2	3	1	–	1	_	_	_	_	_	_	2	_	_
C104.3	1	3	1	–	1	_	_	_	_	_	_	2	_	_
C104.4	2	3	1	–	2	_	_	_	_	_	_	2	_	_
C104.5	2	3	1	–	2	_	_	_	_	_	_	2	_	_
Average	**1.8**	**3.0**	**1.0**	**0.0**	**1.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.0**	**0.0**	**0.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C105.1	1	2	2	3	3	_	_	_	_	_	_	2	_	2

C105.2	1	1	2	3	3	_	_	_	_	_	_	2	_	2
C105.3	1	2	2	3	3	_	_	_	_	_	_	2	_	2
C105.4	1	2	2	2	3	_	_	_	_	_	_	2	_	1
C105.5	1	2	2	3	3	_	_	_	_	_	_	2	_	2
Average	**1.0**	**1.8**	**2.0**	**2.8**	**3.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.0**	**0.0**	**1.8**

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
C106.1	_	_	3	2	_	_	_	_	_	_	_	_	2	2
C106.2	_	_	2	2	_	_	_	_	_	_	_	_	2	2
C106.3	_	_	2	1	_	_	_	_	_	_	_	_	2	2
C106.4	_	_	3	2	_	_	_	_	_	_	_	_	1	2
C106.5	_	_	3	2	_	_	_	_	_	_	_	_	2	2
Average	**0.0**	**0.0**	**2.6**	**1.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.8**	**2.0**
CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
C107.1	2	–	2	1	1	2	–	–	–	3	–	3	1	2
C107.2	3	–	2	1	1	1	–	–	–	3	–	2	1	2
C107.3	3	–	2	1	1	1	–	–	–	3	–	2	1	2
C107.4	3	–	2	1	1	2	–	–	–	3	–	3	1	2
C107.5	2	–	2	1	1	1	–	–	–	3	–	3	1	2
Average	**2.6**	**0.0**	**2.0**	**1.0**	**1.0**	**1.4**	**0.0**	**0.0**	**0.0**	**3.0**	**0.0**	**2.6**	**1.0**	**2.0**

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
C108.1	3	2	–	–	–	–	–	–	–	–	–	–	–	–
C108.2	3	2	–	–	–	–	–	–	–	–	–	–	–	–

C108.3	3	2	–	–	–	–	–	–	–	–	–	–	–	–
C108.4	3	2	–	–	–	–	–	–	–	–	–	–	–	–
C108.5	2	2	–	–	–	–	–	–	–	–	–	–	–	–
Average	**2.8**	**2.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

II-SEMESTER

CO	**PO13.0**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
C109.1	–	–	–	–	–	–	–	–	3	2	–	1	–	–
C109.2	–	–	–	–	–	–	–	–	3	2	–	1	–	–
C109.3	–	–	–	–	–	–	–	–	3	2	–	1	–	–
C109.4	–	–	–	–	–	–	–	–	3	2	–	1	–	–
C109.5	–	–	–	–	–	–	–	–	3	1	–	1	–	–
Average	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**3.0**	**1.8**	**0.0**	**1.0**	**0.0**	**0.0**
CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
C110.1	3	2	1	–	3	–	–	–	–	–	–	2	–	–
C110.2	3	2	1	–	2	–	–	–	–	–	–	2	–	–
C110.3	3	2	1	–	3	–	–	–	–	–	–	2	–	–
C110.4	3	2	1	–	3	–	–	–	–	–	–	2	–	–
C110.5	3	2	1	–	2	–	–	–	–	–	–	2	–	–
Average	**3.0**	**2.0**	**1.0**	**0.0**	**2.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.0**	**0.0**	**0.0**

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
C111.1	2	3	2	–	1		2	–	–	–	–	3	–	–

C111.2	1	3	2	–	1		3	–	–	–	–	3	–	–
C111.3	2	3	2	–	1		3	–	–	–	–	3	–	–
C111.4	2	3	2	–	1		3	–	–	–	–	3	–	–
C111.5	2	2	2	–	1		2	–	–	–	–	2	–	–
Average	**1.8**	**2.8**	**2.0**	**0.0**	**1.0**	**0.0**	**2.6**	**0.0**	**0.0**	**0.0**	**0.0**	**2.8**	**0.0**	**0.0**
CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
C112.1	–	–	–	3	–	1	–	–	–	–	–	–	–	–
C112.2	–	–	–	3	–	2	–	–	–	–	–	–	–	–
C112.3	–	–	–	2	–	2	–	–	–	–	–	–	–	–
C112.4	–	–	–	3	–	2	–	–	–	–	–	–	–	–
C112.5	–	–	–	2	–	2	–	–	–	–	–	–	–	–
Average	**0.0**	**0.0**	**0.0**	**2.6**	**0.0**	**1.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C113.1	3	2	2	2	1	–	–	–	–	–	–	3	3	3
C113.2	3	2	2	2	1	–	–	–	–	–	–	3	2	3
C113.3	3	2	2	2	1	–	–	–	–	–	–	3	3	3
C113.4	2	3	2	1	1	–	–	–	–	–	–	3	3	3
C113.5	2	3	2	1	1	–	–	–	–	–	–	3	2	3
Average	**2.6**	**2.4**	**2.0**	**1.6**	**1.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**3.0**	**2.6**	**3.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C114.1	2	3	–	–	3	2	1	1	–	–	–	2	–	–
C114.2	2	3	–	–	3	2	1	1	–	–	–	2	–	–
C114.3	2	3	–	–	2	2	1	1	–	–	–	2	–	–
C114.4	2	3	–	–	2	2	1	1	–	–	–	2	–	–
C114.5	1	3	–	–	3	2	1	2	–	–	–	2	–	–
Average	**1.8**	**3.0**	**0.0**	**0.0**	**2.6**	**2.0**	**1.0**	**1.2**	**0.0**	**0.0**	**0.0**	**2.0**	**0.0**	**0.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C115.1	3	–	2	2	3	3	–	–	–	1	–	–	–	1
C115.2	2	–	2	2	3	3	–	–	–	1	–	–	–	1
C115.3	3	–	2	2	2	3	–	–	–	1	–	–	–	1
C115.4	3	–	1	2	2	3	–	–	–	1	–	–	–	1
C115.5	3	–	1	2	2	3	–	–	–	1	–	–	–	1
Average	**2.8**	**0.0**	**1.6**	**2.0**	**2.4**	**3.0**	**0.0**	**0.0**	**0.0**	**1.0**	**0.0**	**0.0**	**0.0**	**1.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C116.1	1	–	2	2	2	3	–	–	–	2	–	3	3	2
C116.2	1	–	2	2	2	3	–	–	–	2	–	3	3	2
C116.3	1	–	2	2	3	3	–	–	–	2	–	3	3	3
C116.4	1	–	1	2	3	3	–	–	–	1	–	3	3	3
C116.5	1	–	2	2	3	3	–	–	–	1	–	3	3	3
Average	**1.0**	**0.0**	**1.8**	**2.0**	**2.6**	**3.0**	**0.0**	**0.0**	**0.0**	**1.6**	**0.0**	**3.0**	**3.0**	**2.6**

III-SEMESTER

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C201.1	1	2	–	3	–	–	–	–	–	–	–	3	–	–
C201.2	1	2	–	2	–	–	–	–	–	–	–	3	–	–
C201.3	1	2	–	2	–	–	–	–	–	–	–	3	–	–
C201.4	1	2	–	2	–	–	–	–	–	–	–	3	–	–
C201.5	1	2	–	2	–	–	–	–	–	–	–	3	–	–
Average	**1.0**	**2.0**	**0.0**	**2.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**3.0**	**0.0**	**0.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C202.1	–	–	–	2	3	–	–	–	–	–	–	–	3	–
C202.2	–	–	–	2	3	–	–	–	–	–	–	–	3	–
C202.3	–	–	–	2	3	–	–	–	–	–	–	–	3	–
C202.4	–	–	–	3	3	–	–	–	–	–	–	–	3	–
C202.5	–	–	–	2	3	–	–	–	–	–	–	–	3	–
Average	**0.0**	**0.0**	**0.0**	**2.2**	**3.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**3.0**	**0.0**

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C203.1	3	2	2	3	3	–	–	–	–	2	–	2	–	2
C203.2	3	2	1	3	3	–	–	–	–	2	–	2	–	3
C203.3	3	2	2	3	2	–	–	–	–	2	–	2	–	3
C203.4	3	2	2	3	2	–	–	–	–	2	–	2	–	3
C203.5	3	2	1	3	3	–	–	–	–	2	–	2	–	3
Average	**3.0**	**2.0**	**1.6**	**3.0**	**2.60**	**0.0**	**0.0**	**0.0**	**0.0**	**2.0**	**0.0**	**2.0**	**0.0**	**2.8**

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C204.1	3	2	3	3	2	–	–	–	–	2	–	–	2	2
C204.2	3	2	3	3	2	–	–	–	–	2	–	–	3	2
C204.3	3	2	3	2	2	–	–	–	–	1	–	–	3	3
C204.4	3	1	3	2	2	–	–	–	–	1	–	–	3	3
C204.5	3	2	3	2	2	–	–	–	–	2	–	–	3	3
Average	**3.0**	**1.8**	**3.0**	**2.4**	**2.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.6**	**0.0**	**0.0**	**2.8**	**2.6**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C205.1	3	2	2	3	3	–	–	–	–	–	–	3	2	–
C205.2	3	2	2	2	3	–	–	–	–	–	–	3	2	–
C205.3	3	2	2	2	3	–	–	–	–	–	–	3	3	–
C205.4	3	2	2	3	3	–	–	–	–	–	–	3	3	–
C205.5	3	1	2	3	3	–	–	–	–	–	–	2	3	–
Average	**3.0**	**1.8**	**2.0**	**2.6**	**3.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.8**	**2.6**	**0.0**

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C206.1	–	–	2	1	1	–	2	1	2	–	–	–	1	–
C206.2	–	–	2	1	1	–	2	1	2	–	–	–	1	–
C206.3	–	–	2	1	1	–	2	1	2	–	–	–	1	–
C206.4	–	–	2	1	1	–	2	1	2	–	–	–	1	–
C206.5	–	–	2	1	1	–	1	1	2	–	–	–	1	–
Average	**0.0**	**0.0**	**2.0**	**1.0**	**1.0**	**0.0**	**1.8**	**1.0**	**2.0**	**0.0**	**0.0**	**0.0**	**1.0**	**0.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C207.1	2	–	–	3	2	–	–	–	–	–	1	1	–	2
C207.2	2	–	–	3	2	–	–	–	–	–	1	1	–	2
C207.3	2	–	–	3	2	–	–	–	–	–	1	1	–	2
C207.4	2	–	–	2	2	–	–	–	–	–	1	1	–	2
C207.5	1	–	–	2	2	–	–	–	–	–	1	1	–	1
Average	**1.8**	**0.0**	**0.0**	**2.6**	**2.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.0**	**1.0**	**0.0**	**1.8**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C208.1	2	–	–	3	2	–	–	–	–	–	1	1	2	2
C208.2	2	–	–	3	2	–	–	–	–	–	1	1	2	2
C208.3	2	–	–	3	2	–	–	–	–	–	1	1	2	2
C208.4	2	–	–	3	2	–	–	–	–	–	1	1	3	2
C208.5	1	–	–	3	2	–	–	–	–	–	1	1	3	1
Average	**1.8**	**0.0**	**0.0**	**3.0**	**2.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.0**	**1.0**	**2.4**	**1.8**

IV-SEMESTER

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C209.1	1	2	2	–	–	–	–	–	–	–	–	2	–	–
C209.2	1	1	2	–	–	–	–	–	–	–	–	2	–	–
C209.3	1	1	2	–	–	–	–	–	–	–	–	2	–	–
C209.4	1	2	3	–	–	–	–	–	–	–	–	2	–	–
C209.5	1	2	3	–	–	–	–	–	–	–	–	2	–	–
Average	**1.0**	**1.6**	**2.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.0**	**0.0**	**0.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C210.1	2	3	3	2	1	–	1	–	–	–	–	2	1	3
C210.2	2	3	3	2	1	–	1	–	–	–	–	2	1	3
C210.3	2	3	3	2	1	–	1	–	–	–	–	2	1	3
C210.4	2	3	2	2	1	–	1	–	–	–	–	2	1	2
C210.5	2	3	3	2	1	–	1	–	–	–	–	2	1	3
Average	**2.0**	**3.0**	**2.8**	**2.0**	**1.0**	**0.0**	**1.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.0**	**1.0**	**2.8**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C211.1	2	3	3	2	1	–	1	–	–	–	–	1	–	2
C211.2	2	3	3	2	1	–	1	–	–	–	–	1	–	2
C211.3	2	3	2	2	1	–	1	–	–	–	–	1	–	2
C211.4	2	3	2	1	1	–	1	–	–	–	–	1	–	2
C211.5	1	3	3	1	1	–	1	–	–	–	–	1	–	1
Average	**1.8**	**3.0**	**2.6**	**1.6**	**1.0**	**0.0**	**1.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.0**	**0.0**	**1.8**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C212.1	2	1	1	2	1	–	–	–	–	–	–	2	2	–
C212.2	2	1	1	2	1	–	–	–	–	–	–	2	2	–
C212.3	2	1	1	2	1	–	–	–	–	–	–	2	2	–
C212.4	2	1	1	2	1	–	–	–	–	–	–	2	2	–
C212.5	2	1	1	2	1	–	–	–	–	–	–	2	1	–
Average	**2.0**	**1.0**	**1.0**	**2.0**	**1.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.0**	**1.8**	**0.0**

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C213.1	1	2	2	–	3	–	–	–	–	–	–	–	–	2
C213.2	1	2	2	–	3	–	–	–	–	–	–	–	–	2
C213.3	1	2	2	–	2	–	–	–	–	–	–	–	–	2
C213.4	1	2	2	–	2	–	–	–	–	–	–	–	–	2
C213.5	1	2	2	–	3	–	–	–	–	–	–	–	–	1
Average	**1.0**	**2.0**	**2.0**	**0.0**	**2.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.8**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C214.1	3	3	3	3	3	–	–	–	–	–	–	2	3	3
C214.2	3	3	3	3	3	–	–	–	–	–	–	2	3	3
C214.3	3	3	2	2	3	–	–	–	–	–	–	2	2	2
C214.4	3	3	2	2	3	–	–	–	–	–	–	2	2	2
C214.5	3	3	3	1	3	–	–	–	–	–	–	1	3	1
Average	**3.0**	**3.0**	**2.6**	**2.2**	**3.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.8**	**2.6**	**2.2**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C215.1	1	2	2	1	2	2	–	–	–	–	–	1	–	2
C215.2	1	2	2	1	2	2	–	–	–	–	–	1	–	2
C215.3	1	2	2	1	2	1	–	–	–	–	–	1	–	2
C215.4	1	2	2	1	2	1	–	–	–	–	–	1	–	2
C215.5	1	1	2	1	2	2	–	–	–	–	–	1	–	2
Average	**1.0**	**1.8**	**2.0**	**1.0**	**2.0**	**1.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.0**	**0.0**	**2.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C216.1	2	–	1	1	–	–	–	–	–	2	3	2	1	–
C216.2	2	–	1	1	–	–	–	–	–	2	3	2	1	–
C216.3	2	–	1	1	–	–	–	–	–	2	3	2	1	–
C216.4	2	–	1	1	–	–	–	–	–	2	3	2	1	–
C216.5	2	–	1	1	–	–	–	–	–	2	3	2	1	–
Average	**2.0**	**0.0**	**1.0**	**1.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.0**	**3.0**	**2.0**	**1.0**	**0.0**

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C217.1	–	–	–	–	–	–	–	–	2	1	1	–	–	–
C217.2	–	–	–	–	–	–	–	–	2	1	1	–	–	–
C217.3	–	–	–	–	–	–	–	–	2	1	1	–	–	–
C217.4	–	–	–	–	–	–	–	–	2	1	1	–	–	–
C217.5	–	–	–	–	–	–	–	–	2	1	1	–	–	–
Average	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.0**	**1.0**	**1.0**	**0.0**	**0.0**	**0.0**

V-SEMESTER

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C301.1	3	3	2	2	3	–	1	–	–	–	–	2	3	3
C301.2	3	3	2	2	2	–	1	–	–	–	–	2	3	3
C301.3	3	3	2	2	2	–	1	–	–	–	–	2	3	3
C301.4	2	3	2	2	2	–	1	–	–	–	–	2	3	2
C301.5	2	3	2	1	2	–	1	–	–	–	–	2	3	2
Average	**2.6**	**3.0**	**2.0**	**1.8**	**2.2**	**0.0**	**1.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.0**	**3.0**	**2.6**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C302.1	2	–	3	–	2	–	–	2	2	–	3	2	2	–
C302.2	2	–	3	–	2	–	–	2	2	–	3	2	2	–
C302.3	2	–	3	–	2	–	–	2	3	–	3	2	2	–
C302.4	2	–	3	–	2	–	–	2	3	–	3	2	2	–
C302.5	2	–	3	–	2	–	–	2	3	–	3	2	2	–
Average	**2.0**	**0.0**	**3.0**	**0.0**	**2.0**	**0.0**	**0.0**	**2.0**	**2.6**	**0.0**	**3.0**	**2.0**	**2**	**0.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C303.1	2	3	3	3	2	–	2	–	–	–	–	–	3	–
C303.2	2	3	2	3	2	–	2	–	–	–	–	–	3	–
C303.3	2	3	2	3	2	–	2	–	–	–	–	–	3	–
C303.4	2	3	2	3	2	–	2	–	–	–	–	–	2	–
C303.5	1	3	3	2	2	–	2	–	–	–	–	–	2	–
Average	**1.8**	**3.0**	**2.4**	**2.8**	**2.0**	**0.0**	**2.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.6**	**0.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C304.1	2	3	3	3	2	–	2	–	–	–	–	2	–	–
C304.2	2	3	3	3	2	–	2	–	–	–	–	2	–	–
C304.3	2	3	3	3	2	–	2	–	–	–	–	2	–	–
C304.4	2	3	3	3	2	–	2	–	–	–	–	2	–	–
C304.5	2	3	3	3	2	–	2	–	–	–	–	2	–	–
Average	**2.0**	**3.0**	**3.0**	**3.0**	**2.0**	**0.0**	**2.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.0**	**0.0**	**0.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C305.1	–	–	3	2	3	–	–	–	–	–	–	2	–	2
C305.2	–	–	2	2	3	–	–	–	–	–	–	2	–	2
C305.3	–	–	2	2	3	–	–	–	–	–	–	2	–	2
C305.4	–	–	2	2	3	–	–	–	–	–	–	2	–	2
C305.5	–	–	3	2	3	–	–	–	–	–	–	2	–	2
Average	**0.0**	**0.0**	**2.4**	**2.0**	**3.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.0**	**0.0**	**2.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C306.1	3	2	1	–	–	–	–	–	–	–	–	–	–	–
C306.2	3	2	1	–	–	–	–	–	–	–	–	–	–	–
C306.3	3	2	1	–	–	–	–	–	–	–	–	–	–	–
C306.4	3	2	1	–	–	–	–	–	–	–	–	–	–	–
C306.5	3	2	1	–	–	–	–	–	–	–	–	–	–	–
Average	**3.0**	**2.0**	**1.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C307.1	3	3	1	–	–	–	–	–	–	–	–	–	3	–
C307.2	3	3	1	–	–	–	–	–	–	–	–	–	3	–
C307.3	3	2	1	–	–	–	–	–	–	–	–	–	2	–
C307.4	3	2	1	–	–	–	–	–	–	–	–	–	2	–
C307.5	3	2	1	–	–	–	–	–	–	–	–	–	2	–
Average	**3.0**	**2.4**	**1.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.4**	**0.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C308.1	-	-	-	-	-	-	-	-	1	3	3	-	-	-
C308.2	-	-	-	-	-	-	-	-	1	3	3	-	-	-
C308.3	-	-	-	-	-	-	-	-	1	2	3	-	-	-
C308.4	-	-	-	-	-	-	-	-	1	2	3	-	-	-
C308.5	-	-	-	-	-	-	-	-	1	1	3	-	-	-
Average	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.0**	**2.2**	**3.0**	**0.0**	**0.0**	**0.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C309.1	-	-	3	2	1	-	-	-	-	-	-	1	-	-
C309.2	-	-	3	2	1	-	-	-	-	-	-	1	-	-
C309.3	-	-	3	2	1	-	-	-	-	-	-	1	-	-
C309.4	-	-	3	2	1	-	-	-	-	-	-	1	-	-
C309.5	-	-	3	2	1	-	-	-	-	-	-	1	-	-
Average	**0.0**	**0.0**	**3.0**	**2.0**	**1.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.0**	**0.0**	**0.0**

VI-SEMESTER

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C310.1	3	1	3	2	3	-	3	-	-	-	-	-	3	-
C310.2	3	1	3	2	3	-	3	-	-	-	-	-	3	-
C310.3	2	1	3	2	2	-	3	-	-	-	-	-	2	-
C310.4	2	1	3	2	2	-	3	-	-	-	-	-	2	-
C310.5	3	1	3	2	2	-	3	-	-	-	-	-	2	-
Average	**2.6**	**1.0**	**3.0**	**2.0**	**2.4**	**0.0**	**3.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.4**	**0.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C311.1	3	2	3	3	3	-	3	-	-	-	-	-	2	3
C311.2	3	2	3	3	3	-	3	-	-	-	-	-	2	3
C311.3	3	2	2	3	3	-	2	-	-	-	-	-	2	2
C311.4	3	2	2	3	3	-	2	-	-	-	-	-	2	2
C311.5	3	2	1	3	3	-	2	-	-	-	-	-	2	3

Average	3.0	2.0	2.2	3.0	3.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	2.0	2.6

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C312.1	-	2	3	-	-	1	-	-	-	-	-	-	-	3
C312.2	-	2	3	-	-	1	-	-	-	-	-	-	-	3
C312.3	-	2	3	-	-	1	-	-	-	-	-	-	-	2
C312.4	-	2	3	-	-	1	-	-	-	-	-	-	-	2
C312.5	-	2	3	-	-	1	-	-	-	-	-	-	-	2
Average	0.0	2.0	3.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C313.1	3	-	3	1	3	-	3	-	-	-	-	-	-	3
C313.2	3	-	3	1	3	-	3	-	-	-	-	-	-	3
C313.3	2	-	3	1	2	-	2	-	-	-	-	-	-	2
C313.4	2	-	3	1	2	-	2	-	-	-	-	-	-	2
C313.5	3	-	3	1	1	-	3	-	-	-	-	-	-	1
Average	2.6	0.0	3.0	1.0	2.2	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	2.2

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C314.1	1	-	3	3	3	-	-	3	-	-	-	3	-	3
C314.2	1	-	3	2	3	-	-	3	-	-	-	3	-	3
C314.3	1	-	3	3	2	-	-	2	-	-	-	2	-	2
C314.4	1	-	3	3	2	-	-	2	-	-	-	2	-	2
C314.5	1	-	3	3	1	-	-	3	-	-	-	3	-	1

Average	**1.0**	**0.0**	**3.0**	**2.8**	**2.2**	**0.0**	**0.0**	**2.6**	**0.0**	**0.0**	**0.0**	**2.6**	**0.0**	**2.2**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C315.1	1	-	2	3	-	-	-	-	-	3	3	3	1	-
C315.2	1	-	2	3	-	-	-	-	-	3	3	3	1	-
C315.3	1	-	2	3	-	-	-	-	-	2	3	2	1	-
C315.4	1	-	2	3	-	-	-	-	-	2	3	2	1	-
C315.5	1	-	2	3	-	-	-	-	-	3	3	1	1	-
Average	**1.0**	**0.0**	**2.0**	**3.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.6**	**3.0**	**2.2**	**1.0**	**0.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C316.1	2	-	1	3	-	-	-	-	-	2	3	3	-	1
C316.2	2	-	1	2	-	-	-	-	-	2	3	3	-	1
C316.3	2	-	1	3	-	-	-	-	-	2	2	3	-	1
C316.4	2	-	1	3	-	-	-	-	-	2	2	3	-	1
C316.5	2	-	1	3	-	-	-	-	-	2	1	3	-	1
Average	**2.0**	**0.0**	**1.0**	**2.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.0**	**2.2**	**3.0**	**0.0**	**1.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C317.1	2	-	3	2	-	-	-	-	-	3	3	3	3	3
C317.2	2	-	3	2	-	-	-	-	-	3	3	3	3	3
C317.3	2	-	2	2	-	-	-	-	-	2	3	2	2	3
C317.4	2	-	2	2	-	-	-	-	-	2	3	2	2	3
C317.5	2	-	3	2	-	-	-	-	-	1	3	2	3	3
Average	**2.0**	**0.0**	**2.6**	**2.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.2**	**3.0**	**2.4**	**2.6**	**3.0**

VII-SEMESTER

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C401.1	2	3	3	3	3	-	3	-	-	-	-	3	2	3
C401.2	2	3	3	2	3	-	3	-	-	-	-	3	2	3
C401.3	2	3	3	3	3	-	2	-	-	-	-	3	2	3
C401.4	2	3	3	3	3	-	2	-	-	-	-	3	2	3
C401.5	2	3	3	3	3	-	3	-	-	-	-	3	2	3
Average	**2.0**	**3.0**	**3.0**	**2.8**	**3.0**	**0.0**	**2.6**	**0.0**	**0.0**	**0.0**	**0.0**	**3.0**	**2.0**	**3.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C402.1	3	3	3	2	3	-	3	-	-	-	-	3	-	2
C402.2	3	3	3	2	3	-	2	-	-	-	-	3	-	2
C402.3	2	3	3	2	2	-	3	-	-	-	-	3	-	2
C402.4	2	3	3	2	2	-	3	-	-	-	-	3	-	2
C402.5	1	3	3	2	2	-	3	-	-	-	-	3	-	2
Average	**2.2**	**3.0**	**3.0**	**2.0**	**2.4**	**0.0**	**2.8**	**0.0**	**0.0**	**0.0**	**0.0**	**3.0**	**0.0**	**2.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C403.1	3	3	3	2	3	-	3	-	-	-	-	3	3	-
C403.2	3	3	3	2	3	-	2	-	-	-	-	3	3	-
C403.3	2	3	3	2	2	-	3	-	-	-	-	3	2	-
C403.4	2	3	3	2	2	-	3	-	-	-	-	3	2	-
C403.5	1	3	3	2	2	-	3	-	-	-	-	3	1	-
Average	**2.2**	**3.0**	**3.0**	**2.0**	**2.4**	**0.0**	**2.8**	**0.0**	**0.0**	**0.0**	**0.0**	**3.0**	**2.2**	**0.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C404.1	3	3	1	-	-	-	-	-	-	-	-	3	-	-
C404.2	3	3	1	-	-	-	-	-	-	-	-	3	-	-
C404.3	3	2	1	-	-	-	-	-	-	-	-	3	-	-
C404.4	3	2	1	-	-	-	-	-	-	-	-	3	-	-
C404.5	3	2	1	-	-	-	-	-	-	-	-	3	-	-
Average	**3.0**	**2.4**	**1.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**3.0**	**0.0**	**0.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C405.1	3	-	3	-	2	2	-	-	-	-	3	3	-	-
C405.2	3	-	3	-	2	2	-	-	-	-	3	3	-	-
C405.3	3	-	2	-	2	2	-	-	-	-	2	3	-	-
C405.4	3	-	2	-	2	2	-	-	-	-	2	3	-	-
C405.5	3	-	1	-	2	2	-	-	-	-	2	3	-	-
Average	**3.0**	**0.0**	**2.2**	**0.0**	**2.0**	**2.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.4**	**3.0**	**0.0**	**0.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C406.1	-	2	-	-	3	3	3	3	3	3	-	-	-	-
C406.2	-	2	-	-	3	2	3	2	3	2	-	-	-	-
C406.3	-	2	-	-	3	3	3	3	3	3	-	-	-	-
C406.4	-	2	-	-	3	3	3	3	3	3	-	-	-	-
C406.5	-	2	-	-	3	3	3	3	3	3	-	-	-	-
Average	**0.0**	**2.0**	**0.0**	**0.0**	**3.0**	**2.8**	**3.0**	**2.8**	**3.0**	**2.8**	**0.0**	**0.0**	**0.0**	**0.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C407.1	2	-	3	3	-	-	-	-	-	3	2	3	-	3
C407.2	2	-	3	3	-	-	-	-	-	3	2	3	-	3
C407.3	2	-	3	2	-	-	-	-	-	2	2	3	-	2
C407.4	2	-	3	2	-	-	-	-	-	2	2	3	-	2
C407.5	2	-	3	3	-	-	-	-	-	1	2	3	-	1
Average	**2.0**	**0.0**	**3.0**	**2.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.2**	**2.0**	**3.0**	**0.0**	**2.2**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C408.1	2	-	3	3	-	-	-	-	-	3	2	3	-	3
C408.2	2	-	3	3	-	-	-	-	-	3	2	3	-	3
C408.3	2	-	3	2	-	-	-	-	-	2	2	3	-	2
C408.4	2	-	3	2	-	-	-	-	-	2	2	3	-	2
C408.5	2	-	3	3	-	-	-	-	-	1	2	3	-	1
Average	**2.0**	**0.0**	**3.0**	**2.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.2**	**2.0**	**3.0**	**0.0**	**2.2**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C409.1	3	-	2	3	-	-	-	-	-	3	3	-	-	2
C409.2	3	-	2	2	-	-	-	-	-	3	3	-	-	2
C409.3	2	-	2	3	-	-	-	-	-	3	2	-	-	2
C409.4	2	-	2	3	-	-	-	-	-	3	2	-	-	2
C409.5	2	-	2	3	-	-	-	-	-	3	1	-	-	2
Average	**2.4**	**0.0**	**2.0**	**2.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**3.0**	**2.2**	**0.0**	**0.0**	**2.0**

VIII-SEMESTER

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C410.1	-	-	-	-	2	3	-	-	3	-	-	3	-	-
C410.2	-	-	-	-	2	3	-	-	2	-	-	3	-	-
C410.3	-	-	-	-	2	2	-	-	3	-	-	3	-	-
C410.4	-	-	-	-	2	2	-	-	3	-	-	3	-	-
C410.5	-	-	-	-	2	2	-	-	3	-	-	3	-	-
Average	**0.0**	**0.0**	**0.0**	**0.0**	**2.0**	**2.4**	**0.0**	**0.0**	**2.8**	**0.0**	**0.0**	**3.0**	**0.0**	**0.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C411.1	3	2	3	-	-	-	-	3	2	-	-	3	2	-
C411.2	3	2	2	-	-	-	-	2	2	-	-	3	2	-
C411.3	3	2	3	-	-	-	-	3	2	-	-	2	2	-
C411.4	3	2	3	-	-	-	-	3	2	-	-	2	2	-
C411.5	3	2	3	-	-	-	-	3	2	-	-	2	2	-
Average	**3.0**	**2.0**	**2.8**	**0.0**	**0.0**	**0.0**	**0.0**	**2.8**	**2.0**	**0.0**	**0.0**	**2.4**	**2.0**	**0.0**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C412.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
C412.2	3	3	3	2	2	2	3	3	3	2	2	3	3	3
C412.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
C412.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3
C412.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Average	**3.0**	**3.0**	**3.0**	**2.8**	**2.8**	**2.8**	**3.0**	**3.0**	**3.0**	**2.8**	**2.8**	**3.0**	**3.0**	**3.0**

Program level Course-PO matrix of all courses INCLUDING first year courses

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.8	0.0	3.0	0.0	0.0
C102	2.6	3.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0
C103	2.0	3.0	2.8	0.0	2.0	0.0	1.8	0.0	0.0	0.0	0.0	3.0	0.0	0.0
C104	1.8	3.0	1.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
C105	1.0	1.8	2.0	2.8	3.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	1.8
C106	0.0	0.0	2.6	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	2.0
C107	2.6	0.0	2.0	1.0	1.0	1.4	0.0	0.0	0.0	3.0	0.0	2.6	1.0	2.0
C108	2.8	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C109	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	1.8	0.0	1.0	0.0	0.0
C110	3.0	2.0	1.0	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
C111	1.8	2.8	2.0	0.0	1.0	0.0	2.6	0.0	0.0	0.0	0.0	2.8	0.0	0.0
C112	0.0	0.0	0.0	2.6	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C113	2.6	2.4	2.0	1.6	1.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	2.6	3.0
C114	1.8	3.0	0.0	0.0	2.6	2.0	1.0	1.2	0.0	0.0	0.0	2.0	0.0	0.0
C115	2.8	0.0	1.6	2.0	2.4	3.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0
C116	1.0	0.0	1.8	2.0	2.6	3.0	0.0	0.0	0.0	1.6	0.0	3.0	3.0	2.6
C201	1.0	2.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
C202	0.0	0.0	0.0	2.2	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
C203	3.0	2.0	1.6	3.0	2.60	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.8
C204	3.0	1.8	3.0	2.4	2.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	2.8	2.6
C205	3.0	1.8	2.0	2.6	3.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	2.6	0.0
C206	0.0	0.0	2.0	1.0	1.0	0.0	1.8	1.0	2.0	0.0	0.0	0.0	1.0	0.0

C207	1.8	0.0	0.0	2.6	2.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	1.8
C208	1.8	0.0	0.0	3.0	2.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	2.4	1.8
C209	1.0	1.6	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
C210	2.0	3.0	2.8	2.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	2.0	1.0	2.8
C211	1.8	3.0	2.6	1.6	1.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	1.8
C212	2.0	1.0	1.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	1.8	0.0
C213	1.0	2.0	2.0	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8
C214	3.0	3.0	2.6	2.2	3.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	2.6	2.2
C215	1.0	1.8	2.0	1.0	2.0	1.6	0.0	0.0	0.0	0.0	0.0	1.0	0.0	2.0
C216	2.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	2.0	3.0	2.0	1.0	0.0
C217	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	1.0	1.0	0.0	0.0	0.0
C301	2.6	3.0	2.0	1.8	2.2	0.0	1.0	0.0	0.0	0.0	0.0	2.0	3.0	2.6
C302	2.0	0.0	3.0	0.0	2.0	0.0	0.0	2.0	2.6	0.0	3.0	2.0	2	0.0
C303	1.8	3.0	2.4	2.8	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0
C304	2.0	3.0	3.0	3.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
C305	0.0	0.0	2.4	2.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
C306	3.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C307	3.0	2.4	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0
C308	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.2	3.0	0.0	0.0	0.0
C309	0.0	0.0	3.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
C310	2.6	1.0	3.0	2.0	2.4	0.0	3.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0
C311	3.0	2.0	2.2	3.0	3.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	2.0	2.6
C312	0.0	2.0	3.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4
C313	2.6	0.0	3.0	1.0	2.2	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	2.2

C314	1.0	0.0	3.0	2.8	2.2	0.0	0.0	2.6	0.0	0.0	0.0	2.6	0.0	2.2
C315	1.0	0.0	2.0	3.0	0.0	0.0	0.0	0.0	0.0	2.6	3.0	2.2	1.0	0.0
C316	2.0	0.0	1.0	2.8	0.0	0.0	0.0	0.0	0.0	2.0	2.2	3.0	0.0	1.0
C317	2.0	0.0	2.6	2.0	0.0	0.0	0.0	0.0	0.0	2.2	3.0	2.4	2.6	3.0
C401	2.0	3.0	3.0	2.8	3.0	0.0	2.6	0.0	0.0	0.0	0.0	3.0	2.0	3.0
C402	2.2	3.0	3.0	2.0	2.4	0.0	2.8	0.0	0.0	0.0	0.0	3.0	0.0	2.0
C403	2.2	3.0	3.0	2.0	2.4	0.0	2.8	0.0	0.0	0.0	0.0	3.0	2.2	0.0
C404	3.0	2.4	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
C405	3.0	0.0	2.2	0.0	2.0	2.0	0.0	0.0	0.0	0.0	2.4	3.0	0.0	0.0
C406	0.0	2.0	0.0	0.0	3.0	2.8	3.0	2.8	3.0	2.8	0.0	0.0	0.0	0.0
C407	2.0	0.0	3.0	2.6	0.0	0.0	0.0	0.0	0.0	2.2	2.0	3.0	0.0	2.2
C408	2.0	0.0	3.0	2.6	0.0	0.0	0.0	0.0	0.0	2.2	2.0	3.0	0.0	2.2
C409	2.4	0.0	2.0	2.8	0.0	0.0	0.0	0.0	0.0	3.0	2.2	0.0	0.0	2.0
C410	0.0	0.0	0.0	0.0	2.0	2.4	0.0	0.0	2.8	0.0	0.0	3.0	0.0	0.0
C411	3.0	2.0	2.8	0.0	0.0	0.0	0.0	2.8	2.0	0.0	0.0	2.4	2.0	0.0
C412	3.0	3.0	3.0	2.8	2.8	2.8	3.0	3.0	3.0	2.8	2.8	3.0	3.0	3.0