CO-PO-PSO MAPPING

Course Name: Algebra and Calculus | **Regulation: R20**
Year & Sem: I – I | **Branch: CSE (DS)**
Course Coordinator Name: Dr. Swetha | **Course Code: C101**

Course Outcomes:
At the end of the course student will be able to

CO#	Course Outcome
C101.1	Describe the matrix representation of linear equations.
C101.2	Evaluate Eigen values and Eigen vectors.
C101.3	Analyze the nature of convergence of sequence and series.
C101.4	Interpret Mean value theorems to applications.
C101.5	Determine the extreme values of functions of two variables with/ without constraints.

CO-PO MAPPING:

CO#	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO 11	PO12
C101.1	3	2	-	-	2	-	-	-	-	-	-	-
C101.2	3	2	2	2	2	-	-	-	-	-	-	-
C101.3	3	3	2	2	-	-	-	-	-	-	-	-
C101.4	3	2	3	3	2	-	-	-	-	-	2	2
C101.5	3	-	2	2	2	-	-	-	-	-	-	-
Average	3	2.25	2.25	2.25	2	-	-	-	-	-	2	2

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C101.1	3	2	2
C101.2	3	2	2
C101.3	2	2	3
C101.4	2	2	3
C101.5	1	2	1
Average	2.2	2	2.2

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

CO-PO-PSO MAPPING
Course Name: Applied Physics **Regulation: R20**
Year & Sem: I – I **Branch: CSE (DS)**
Course Coordinator Name: M. Naresh Kumar **Course Code: C102**

Course Outcomes:
At the end of the course student will be able to

CO#	Course Outcome
C102.1	Describe Quantum mechanics and principles.
C102.2	Analyze the Semiconductor devices and its characteristics.
C102.3	Demonstrate optics phenomenon and applications.
C102.4	Explore different Laser techniques and principles of fiber optics.
C102.5	Identify Dielectric and Magnetic Properties of Materials.

CO-PO MAPPING:

CO#	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO 11	PO1 2
C102.1	3	2	2	2	-	-	-	-	-	-	-	
C102.2	2	3	2	2	-	-	-	-	-	-	-	
C102.3	2	2	3	2	-	-	-	-	-	-	-	
C102.4	2	2	2	2	-	-	-	-	-	-	-	
C102.5	2	3	2	2	-	-	-	-	-	-	-	
Average	2.2	2.4	2.2	2.2	-	-	-	-	-	-	-	

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C102.1	3	2	2
C102.2	3	3	3
C102.3	3	2	2
C102.4	3	3	3
C102.5	3	2	3
Average	3	2.4	2.6

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Basic Electrical &Electronics Engineering | **Regulation: R20**
Year & Sem: I – I | **Branch: CSE (DS)**
Course Coordinator Name: J. Ratna Babu | **Course Code: C103**

Course Outcomes:

At the end of the course student will be able to

CO#	Course Outcome
C103.1	Analyze the basic Electrical circuits using different network reduction techniques.
C103.2	Describe the components of low Voltage Electrical Installations
C103.3	Explore working principles of Electrical Machines.
C103.4	Illustrate characteristics of diodes and its applications
C103.5	Summarize characteristics of transistors and their applications.

CO-PO MAPPING:

CO#	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO 11	PO12
C103.1	2	3	2	2	-	-	-	-	-	-	-	-
C103.2	2	2	2		-	-	-	-	-	-	-	-
C103.3	2	2	2		-	-	-	-	-	-	-	-
C103.4	2	2	3	2	-	-	-	-	-	-	-	-
C103.5	2	2	2	2	-	-	-	-	-	-	-	-
Average	2	2.2	2.2	2	-	-	-	-	-	-	-	-

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C103.1	2	3	2
C103.2	2	-	3
C103.3	2	2	2
C103.4	-	-	3
C103.5	-	3	2
Average	2.0	2.6	2.4

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator | Module Coordinator | HOD CSE (DS)

CO-PO-PSO MAPPING
Course Name: Engineering Graphics | **Regulation: R20**
Year & Sem: I – I | **Branch: CSE (DS)**
Course Coordinator Name: M. Gowtham | **Course Code: C104**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C104.1	Describe basics of engineering drawing.
C104.2	Implement different types of projections.
C104.3	Analyze Auxiliary views.
C104.4	Develop section views and true shape section of various types of solids
C104.5	Explore the different Isometric Projections.

CO-PO MAPPING:

CO#	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO 11	PO12
C104.1	3	2	2	-	-	-	-	-	-	-	-	-
C104.2	2	2	3	3	3	-	-	-	-	-	-	-
C104.3	2	3	2	3	3	-	-	-	-	-	-	-
C104.4	2	2	3	3	3	-	-	-	-	-	-	-
C104.5	3	2	2	2	2	-	-	-	-	-	-	-
Average	2.4	2.2	2.4	2.75	2.75	-	-	-	-	-	-	-

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C104.1	3	-	3
C104.2	-	3	-
C104.3	3	-	2
C104.4	-	3	-
C104.5	-	3	3
Average	**3.0**	**3.0**	**2.4**

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

CO-PO-PSO MAPPING
Course Name: Applied Physics Lab
Year & Sem: I – I
Course Coordinator Name: M. Naresh Kumar

Regulation: R20
Branch: CSE (DS)
Course Code: C105

Course Outcomes:
At the end of the course student will be able to

CO#	Course Outcome
C105.1	Analyze the characteristics of Light.
C105.2	Explore the characteristics of the material using pendulum method.
C105.3	Determine the characteristics of different electric circuits.
C105.4	Demonstrate V-I characteristics of LASER and semi-conductor devices.
C105.5	Illustrate the different characteristics of optical fiber.

CO-PO MAPPING:

CO#	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO 11	PO12
C105.1	2	3	2	2	2	-	-	-	-	-	-	
C105.2	2	2	2	2	3	-	-	-	-	-	-	
C105.3	2	2	3	3	3	-	-	-	-	-	-	
C105.4	2	2	3	3	3	-	-	2	2	-	-	
C105.5	2	2	2	3	3	-	-	2	-	-	-	
Average	2	2.2	2.40	2.6	2.80	-	-	2	2	-	-	

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C105.1	2	3	3
C105.2	2	2	-
C105.3	-		3
C105.4	-	2	-
C105.5	2	1	2
Average	2.0	2	2.4

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Basic Electrical &electronics Engineering Lab **Regulation: R20**
Year & Sem: I – I **Branch: CSE (DS)**
Course Coordinator Name: J. Ratna Babu **Course Code: C106**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C106.1	Analyze various electrical networks using circuit laws.
C106.2	Demonstrate the performance of DC Motors and single-phase transformer.
C106.3	Explore the performance of three phase induction motors and alternators.
C106.4	Illustrate the characteristics of semi-conductor devices.
C106.5	Describe the half wave and full wave rectifiers.

CO-PO MAPPING:

CO#	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO 11	PO12
C106.1	2	3	2	2	-	-	-	-	-	-	-	-
C106.2	2	2	2	3	-	-	-	3	3	-	2	-
C106.3	2	2	2	2	-	-	-	2	-	-	-	-
C106.4	2	2	2	2	-	-	-	-	-	-	2	-
C106.5	3	2	2	2	-	-	-	-	-	-	-	-
Average	2.2	2.2	2	2.2	-	-	-	2.5	3.0	-	2.0	-

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C106.1	2	-	2
C106.2	2	3	-
C106.3	-	-	2
C106.4	-	2	-
C106.5	2	-	3
Average	2.0	2.5	2.3

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator Module Coordinator HOD CSE (DS)

CO-PO-PSO MAPPING

Course Name: Basic Elements of Engineering Technology | **Regulation: R20**
Year & Sem: I – I | **Branch: CSE (DS)**
Course Coordinator Name: M. Sravanthi | **Course Code: C107**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C107.1	Describe the computing hardware and network protocols.
C107.2	Explore the principles of IOT and its architecture.
C107.3	Outline the components and working principles of robot.
C107.4	Illustrate 3D printing and its applications.
C107.5	Develop the solution for various Engineering applications.

CO-PO MAPPING:

CO#	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO 11	PO12
C107.1	-	2	2	2	2	-	-	-	-	-	2	
C107.2	2	2	2	2	3	-	-	-	3	2	2	
C107.3	2	2	2	2	-	-	-	-	-	-	-	
C107.4	2	2	3	3	3	-	-	-	2	2	-	
C107.5	-	2	3	3	3	-	-	3	3	3	3	
Average	2.0	2.0	2.4	2.4	2.75	-	-	3.0	2.67	2.33	2.33	

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C107.1	2	-	2
C107.2	2	-	-
C107.3	2	-	2
C107.4	-	3	-
C107.5	-	3	3
Average	2.0	3.0	2.3

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator | Module Coordinator | HOD CSE (DS)

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Ordinary Differential Equation and Vector Calculus **Regulation: R20**
Year & Sem: I – II **Branch: CSE (DS)**
Course Coordinator Name: K Rajinikanth **Course Code: C108**

Course Outcomes:

At the end of the course student will be able to

CO#	Course Outcome
C108.1	Demonstrate First Order Differential Equations and its applications.
C108.2	Solve higher order differential equations for real world problems.
C108.3	Evaluate the multiple integrals for different applications.
C108.4	Illustrate vector differentiation.
C108.5	Apply Vector Integration and their conversion.

CO-PO MAPPING:

CO#	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO 11	PO12
C108.1	3	2	2	2		-	-	-	-	-	-	-
C108.2	3	2	3	3	2	-	-	-	-	-	2	2
C108.3	3	2	2	3	3	-	-	-	-	-	2	2
C108.4	3	2	2	2		-	-	-	-	-	-	-
C108.5	2	2	2	2	-	-	-	-	-	-	-	-
Average	2.8	2	2.20	2.4	2.5	-	-	-	-	-	2	2

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C108.1	2	-	2
C108.2	2	3	2
C108.3	2	-	-
C108.4	2	2	-
C108.5	2	1	3
Average	**2.0**	**2**	**2.3**

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING
Course Name: Engineering Chemistry **Regulation: R20**
Year & Sem: I – II **Branch: CSE (DS)**
Course Coordinator Name: K. Saritha **Course Code: C109**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C109.1	Describe the atomic, molecular and complex compound structures.
C109.2	Analyze different water treatment methodologies.
C109.3	Demonstrate the principles and concepts of electro chemistry and corrosion.
C109.4	Illustrate stereochemistry and reaction mechanisms.
C109.5	Summarize the Spectroscopic techniques and its applications.

CO-PO MAPPING:

CO#	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO 11	PO12
C109.1	3	2	2	2	-	-	-	-	-	-	-	-
C109.2	2	3	2	2	2	-	-	-	-	-	2	-
C109.3	2	2	2	3	2	2	-	-	-	-	-	-
C109.4	2	2	2	3	2	-	-	-	-	-	-	-
C109.5	2	2	2	2	2	-	-	-	-	-	-	-
Average	2.2	2.2	2	2.4	2	2	-	-	-	-	2	-

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C109.1	2	-	2
C109.2	3	3	2
C109.3	2	-	2
C109.4	2	2	2
C109.5	2	-	-
Average	2.2	2.5	2

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Programming for Problem solving | **Regulation: R20**
Year & Sem: I – II | **Branch: CSE (DS)**
Course Coordinator Name: K. Rajinikanth | **Course Code: C110**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C110.1	Illustrate algorithms and flowcharts for solving problems.
C110.2	Demonstrate arrays, pointers, strings and structures.
C110.3	Explore file handling techniques.
C110.4	Analyze various functions and dynamic memory allocation.
C110.5	Summarize various sorting and searching algorithms.

CO-PO MAPPING:

CO#	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO 11	PO12
C110.1	3	2	3	3	3	-	-	-	-	-	-	2
C110.2	2	2	3	3	3	-	-	-	-	-	-	2
C110.3	2	2	2	3	2	-	-	-	-	-	-	2
C110.4	2	3	2	3	2	-	-	-	-	-	-	2
C110.5	2	2	3	2	2	-	-	-	-	-	-	2
Average	2.2	2.2	2.60	2.8	2.40	-	-	-	-	-	-	2

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C110.1	3	2	2
C110.2	3	2	-
C110.3	3	-	2
C110.4	3	-	2
C110.5	3	2	-
Average	3.0	2.0	2.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator | Module Coordinator | HOD CSE (DS)

CO-PO-PSO MAPPING

Course Name: English | **Regulation :R20**
Year & Sem: I – II | **Branch: CSE (DS)**
Course Coordinator Name: K. Ranjith Kumar | **Course Code: C111**

Course Outcomes:

At the end of the course student will be able to

CO#	Course Outcome
C111.1	Generate ideas and create effective sentence structures in spoken and written forms
C111.2	Comprehend passages and texts critically and respond appropriately.
C111.3	Select specific approaches to study and retain information.
C111.4	Interpret technical content using theoretical and practical components of English language
C111.5	Communicate effectively in formal and informal contexts

CO-PO MAPPING:

CO#	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO 11	PO12
C111.1	2	-	2	-	-	-	-	2	3	-	3	2
C111.2	2	-	-	2	-	-	-	2	3	-	-	2
C111.3	2	-	-	-	-	-	-	2	2	-	-	2
C111.4	2	-	-	3	-	-	-	3	3	-	-	2
C111.5	2	-	-	-	-	-	-	3	3	2	3	2
Average	2	-	2	2.5	-	-	-	2.4	2.8	2	3.0	2

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C111.1	2	3	3
C111.2	2	-	3
C111.3	2	2	3
C111.4	2	3	3
C111.5	2	-	3
Average	**2.0**	**2.66**	**3.0**

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Engineering Workshop | **Regulation: R20**
Year & Sem: I – II | **Branch: CSE (DS)**
Course Coordinator Name: D. Sravani | **Course Code: C112**
Course Outcomes:

At the end of the course students will be able to

CO#	Course Outcome
C112.1	Create the different patterns with desired shape and size by using wood.
C112.2	Assemble different components to create a product by fitting operations
C112.3	Synthesize the material into product using smithy methods.
C112.4	Demonstrate casting process using molten metal.
C112.5	Explore the welding and plumbing process.

CO-PO MAPPING:

CO#	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO 11	PO1 2
C112.1	2		-		2	-	-	2			-	-
C112.2	2		2		2	-	-	3			-	3
C112.3	2		2		2	-	-	-			-	-
C112.4	2		2		2	-	-	2			-	-
C112.5	2		2		2	-	-	2	2		-	-
Average	2		2		2.0	-	-	2.25	2.0		-	3.0

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C112.1	2	2	2
C112.2	2	2	
C112.3	2	2	
C112.4	2	-	2
C112.5	2	-	-
Average	2.0	2.0	2

Note: 1-Low, 2-Moderate, 3-High

D. Sravani
Course Coordinator

Module Coordinator

HOD CSE (DS)

Department of CSE [Data Science]

CO-PO-PSO MAPPING
Course Name: Engineering Chemistry Lab **Regulation: R20**
Year & Sem: I – II **Branch: CSE (DS)**
Course Coordinator Name: K. Saritha **Course Code: C113**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C113.1	Determine hardness and chloride content in water.
C113.2	Estimate reactions from concentration and time relationships.
C113.3	Calculate Rf values of organic molecules using TLC techniques
C113.4	Illustration of conductometry, potentiometry and colorimetry.
C113.5	Analyze surface tension and viscosity of solvents.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C113.1	2	2	3	2	2		-	-	-	-	3	
C113.2	2	2	2	3	2			-	-	-	-	
C113.3	2	2	3	3	2			-	-	-	-	
C113.4	2	2	2	3	2			-	2	-	-	
C113.5	2	3	2	2	2			-	-	-	-	
Average	2.0	2.2	2.40	2.6	2.0			-	2.0	-	3.0	

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C113.1	2	2	3
C113.2	2	2	-
C113.3	2	2	-
C113.4	2	2	3
C113.5	2	3	-
Average	2.0	2.2	3.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: English Language and communication skills Lab **Regulation: R20**
Year & Sem: I – II **Branch: CSE (DS)**
Course Coordinator Name: K. Ranjith Kumar **Course Code: C114**
Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C114.1	Demonstrate accents through audio- visual experience and practice.
C114.2	Apply Pronounce English sounds according to standard pronunciation (RP of England).
C114.3	Express fluently and clearly in English.
C114.4	Revise their speech by Neutralizing the accent.
C114.5	Practice presentations and discussions effectively and confidently.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C114.1	1	-	-	-	-	-	-	2	3	-	-	2
C114.2	2	-	-	-	-	-	-	2	3	-	-	2
C114.3	2	-	-	-	-	-	-	2	3	-	-	2
C114.4	2	-	-	-	-	-	-	2	3	-	-	3
C114.5	2	-	-	-	-	-	-	2	3	-	-	3
Average	1.8	-	-	-	-	-	-	2	3	-	-	2.4

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C114.1	2	-	3
C114.2	2	3	3
C114.3	2	-	3
C114.4	-	2	3
C114.5	2	-	3
Average	2	2.5	3.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Programming for Problem Solving Lab | **Regulation: R20**
Year & Sem: I – II | **Branch: CSE (DS)**
Course Coordinator Name: K. Rajinikanth | **Course Code: C115**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C115.1	Solve the problems through programming.
C115.2	Demonstrate arrays, pointers and functions for different types of problems.
C115.3	Illustrate the file operations.
C115.4	Explore various String manipulation techniques.
C115.5	Implement various sorting and searching techniques.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C115.1	3	3	3	3	3	-	-	-	3	2	2	
C115.2	2	2	3	3	3	-	-	3	3	-	3	
C115.3	2	2	3	3	3	-	-	-	-	-	2	
C115.4	2	2	2	2	3	-	-	-	-	-	2	
C115.5	2	2	3	3	3	-	-	-	-	2	3	
Average	2.2	2.2	2.8	2.8	3.0	-	-	3.0	3.0	2.0	2.4	

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C115.1	3	2	-
C115.2	2	2	2
C115.3	2	2	-
C115.4	2	2	-
C115.5	2	3	2
Average	2.2	2.2	2.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Design Analysis and Algorithm | **Regulation: R20**
Year & Sem: II – I | **Branch: CSE (DS)**
Course Coordinator Name: B. Sangamitra | **Course Code: C201**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C201.1	Analyze the algorithms with respect to space and time.
C201.2	Design algorithms using divide and conquer, greedy approach.
C201.3	Apply dynamic programming strategy.
C201.4	Implement backtracking and branch and bound techniques.
C201.5	Explore NP-Hard and NP-complete problems using non-deterministic algorithms.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C201.1	2	3	2	-	-	-	-	-	-	-	-	-
C201.2	2	3	3	-	-	-	-	-	-	-	-	-
C201.3	3	3	3	-	-	-	-	-	-	-	-	-
C201.4	2	2	3	3	3	-	-	-	-	-	-	-
C201.5	2	3	3	3	3	-	-	-	-	-	-	-
Average	**2.2**	**2.8**	**2.8**	**3.0**	**3.0**	-	-	-	-	-	-	-

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C201.1	3	-	-
C201.2	-	3	-
C201.3	3	-	2
C201.4	-	3	2
C201.5	-	3	-
Average	3.0	3.0	2.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator | Module Coordinator | HOD CSE (DS)

Department of CSE [Data Science]

CO-PO-PSO MAPPING
Course Name: Data Structures using C **Regulation: R20**
Year & Sem: II – I **Branch: CSE (DS)**
Course Coordinator Name: Dr. M. Kishore Kumar **Course Code: C202**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C202.1	Describe basic data structures.
C202.2	Analyze the hash table Representations.
C202.3	Implement searching for trees
C202.4	Apply sorting on the information
C202.5	Design pattern matching on a problem

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	P 2
C202.1	3	2	2	2	-	-	-	-	-	-	-	2
C202.2	2	3	2	2	-	-	-	-	-	-	-	2
C202.3	2	2	3	3	3	-	-	-	-	-	-	2
C202.4	3	2	2	2	-	-	-	-	-	-	2	2
C202.5	2	2	3	3	3	-	-	-	-	-	2	2
Average	**2.4**	**2.2**	**2.4**	**2.4**	**3.0**	-	-	--	-	-	2	2

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C202.1	3	-	2
C202.2	3	-	-
C202.3	2	3	2
C202.4	3	-	-
C202.5	2	3	-
Average	2.6	3.0	2

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING
Course Name: OOPS Through Java **Regulation: R20**
Year & Sem: II – I **Branch: CSE (DS)**
Course Coordinator Name: S. Raghavendra **Course Code: C203**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C203.1	Solve real world problems using OOP techniques.
C203.2	Apply the packages and interfaces, streams in I/O.
C203.3	Implement exception handling and multithreaded applications with synchronization.
C203.4	Develop the application using collection framework.
C203.5	Design GUI based applications using applets and swings.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C203.1	3	3	3	3	3	-	-	-	-	-	2	2
C203.2	3	3	3	2	3	-	-	-	-	-	-	1
C203.3	2	2	3	3	3	-	-	-	-	-	2	2
C203.4	2	2	3	3	3	-	-	-	-	-	2	
C203.5	2	3	3	3	3	-	-	-	-	-	2	2
Average	2.4	2.6	3.0	2.8	3.0	-	-	-	-	-	2	1.8

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C203.1	3	-	3
C203.2	3	-	-
C203.3	-	-	-
C203.4	-	3	2
C203.5	-	3	2
Average	3.0	3.0	2.33

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING
Course Name: Theory of Computation **Regulation: R20**
Year & Sem: II – I **Branch: CSE (DS)**
Course Coordinator Name: Bookya Ramesh **Course Code: C204**
Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C204.1	Describe abstract missions and their languages.
C204.2	Design the finite state mechanics using regular expressions
C204.3	Implement context-free grammar for formal languages
C204.4	Apply normalization to context-free grammar.
C204.5	Distinguish between decidability and un-decidability problems

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C204.1	3	2	2	-	-	-	-	-	-	-	-	-
C204.2	2	2	3	3	3	-	-	-	-	-	2	-
C204.3	2	2	3	3	3	-	-	-	-	-	2	-
C204.4	3	2	2	2	2	-	-	-	-	-	-	-
C204.5	2	2	2	2	2	-	-	-	-	-	-	-
Average	2.4	2.0	2.4	2.5	2.5	-	-	-	-	-	2	-

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C204.1	3	-	3
C204.2	2	3	-
C204.3	2	3	2
C204.4	2	2	2
C204.5	2	-	2
Average	2.2	2.66	2.25

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

CO-PO-PSO MAPPING

Course Name: Programming with Python
Year & Sem: II – I
Course Coordinator Name: B. Ramji
Course Outcomes:

Regulation: R20
Branch: CSE (DS)
Course Code: C205

At the end of the course students will be able to

CO#	Course Outcome
C205.1	Demonstrate proficiency in handling Strings and arrays
C205.2	Apply Python Programs using core data structures like Lists, Dictionaries and use
C205.3	Conduct experiments on file handling, exception handling, and modules
C205.4	Interpret the concepts of Object-Oriented Programming as used in Python
C205.5	Examine Python syntax and semantics, flow control.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C205.1	3	3	3	3	3	-	-	-	-	-	-	2
C205.2	3	3	3	3	3	-	-	-	-	-	-	2
C205.3	3	3	3	3	3	-	-	-	-	-	2	2
C205.4	3	2	3	3	3	-	-	-	-	-	-	2
C205.5	2	2	3	3	3	-	-	-	-	-	2	2
Average	2.8	2.6	3.0	3.0	3.0	-	-	-	-	-	2.0	2

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C205.1	3	-	-
C205.2	2	2	-
C205.3	2	2	3
C205.4	2	2	-
C205.5	2	3	3
Average	2.2	2.25	3.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Data Structure using C Lab | **Regulation: R20**
Year & Sem: II – I | **Branch: CSE (DS)**
Course Coordinator Name: Dr. M. Kishore Kumar | **Course Code: C206**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C206.1	Demonstrate the linked list operations.
C206.2	Implement stack operations and queue operations.
C206.3	Apply sorting and searching techniques
C206.4	Illustrate Tree traversal techniques.
C206.5	Visualize Graph traversals

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	12
C206.1	2	2	3	2	2	-	-	3	2		3	2
C206.2	2	2	3	3	3	-	-	2	-	3	3	2
C206.3	3	3	3	3	3	3	-	2	-		3	2
C206.4	2	2	3	3	3	-	-	2	-	3	3	2
C206.5	-	-	-	-	3	-	-	2	-	3	3	2
Average	**2.25**	**2.25**	**3.0**	**2.75**	**2.8**	**3**	**-**	**2**	**2.0**	**3**	**3**	**2**

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C206.1	-	3	-
C206.2	-	3	3
C206.3	3	-	-
C206.4	-	3	3
C206.5	-	-	-
Average	3.0	3.0	3.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING
Course Name: Python Lab
Year & Sem: II – I
Course Coordinator Name: B. Ramji

Regulation: R20
Branch: CSE (DS)
Course Code: C207

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C207.1	Practice the basic concepts of python programming.
C207.2	Analyze various data structures.
C207.3	Design modular programming concepts.
C207.4	Explore file and error handling techniques.
C207.5	Implement object-oriented concepts.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C207.1	3	-	-	-	-	-	-	3	2	-	2	2
C207.2	-	3	-	-	-	-	-	2	-	-	-	2
C207.3	-	-	3	3	-	-	-	3	-	-	-	2
C207.4	-	-	-	3	3	-	-	2	2	-	2	2
C207.5	-	-	3	3	3	-	3	3	2	-	2	2
Average	3.0	3.0	3.0	3.0	3.0	-	3.0	2.5	2.0	-	2.0	2

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C207.1	-	-	2
C207.2	3	-	-
C207.3	-	3	-
C207.4	3	-	-
C207.5	-	3	2
Average	3.0	3.0	2.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING
Course Name: OOPS Through Java Lab | **Regulation: R20**
Year & Sem: II – I | **Branch: CSE (DS)**
Course Coordinator Name: S. Raghavendra | **Course Code: C208**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C208.1	Solve real-world problems using java collection framework.
C208.2	Apply the sorting and file handling techniques.
C208.3	Implement trouble shooting and GUI programs using Swings.
C208.4	Illustrate exception handling and multithreaded applications.
C208.5	Design applications using Java Applets

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C208.1	3	3	3	3	3	-	-	3	3	3	3	1
C208.2	3	2	2	2	3	2	-	-	-	-		1
C208.3	2	2	3	3	3	-	2	3	-	2		1
C208.4	2	2	3	3	3	-	-	2	3	-		1
C208.5	2	2	3	3	3	-	-	3	3	-		1
Average	2.4	2.2	2.8	2.75	3	2	2	2.5	3	2.5	3	1

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C208.1	3	-	3
C208.2	3	-	-
C208.3	-	-	-
C208.4	-	3	2
C208.5	-	3	2
Average	3.0	3.0	2.3

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Database Management Systems | **Regulation: R20**
Year & Sem: II – II | **Branch: CSE (DS)**
Course Coordinator Name: Sanjib Kumar Nayak | **Course Code: C209**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C209.1	Analyze the logical design concepts of the database.
C209.2	Design the physical model of a database and its operations.
C209.3	Apply the SQL queries for efficient database management.
C209.4	Implement transaction processing and concurrency control.
C209.5	Examine different indexing mechanisms and database storage access.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C209.1	3	3	-	-	-	-	-	-	-	-	-	1
C209.2	-	-	-	3	-	-	-	-	-	-	2	1
C209.3	3	3	3	3	-	-	-	-	-	-	2	
C209.4	-	-	3	3	3	-	-	-	-	-	2	1
C209.5	-	-	-	3	3	-	-	-	-	-	-	1
Average	3.0	3.0	3.0	3.0	3.0	-	-	-	-	-	2	1

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C209.1	3	-	-
C209.2	-	3	-
C209.3	3	-	-
C209.4	-	3	2
C209.5	-	3	-
Average	**3.0**	**3.0**	**2.0**

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING
Course Name: Analog and Digital Electronics
Year & Sem: II – II
Course Coordinator Name: G. Sravanthi

Regulation: R20
Branch: CSE (DS)
Course Code: C210

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C210.1	Describe the utilization of components and its characteristics.
C210.2	Analyze the construction and functionalities of Field Effect Transistor
C210.3	Apply postulates of Boolean algebra to the digital circuit functions
C210.4	Design and analyze combinational circuits
C210.5	Implement the sequential logic circuits.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C210.1	3	-	-	-	-	-	-	-	-	-	-	1
C210.2	-	3	-	-	-	-	-	-	-	-	-	1
C210.3	-	-	3	3	3	-	-	2		2	2	1
C210.4	-	-	3	3	3	-	-	2		2	2	1
C210.5	-	-	3	3	3	-	-	2		2	2	1
Average	3.0	3.0	3.0	3.0	3.0	-	-	2		2	2	1

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C210.1	3	-	2
C210.2	3	-	-
C210.3	3	3	-
C210.4	-	3	-
C210.5	-	-	2
Average	3.0	3.0	2.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Computer Oriented Statistical Methods | **Regulation: R20**
Year & Sem: II – II | **Branch: CSE (DS)**
Course Coordinator Name: G. Mahadevi | **Course Code: C211**

Course Outcomes:

At the end of the course students will be able to

CO#	Course Outcome
C211.1	Describe the theory of probability.
C211.2	Testing the hypothesis and make inferences using sampling theory.
C211.3	Apply the probability and its distributions to the data.
C211.4	Solve algebraic equations using Numerical methods.
C211.5	Hypothesize the differential equations using Numerical methods

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C211.1	3	3	-	3	-	-	-	-	-	-	-	
C211.2	3	3	3	3	-	-	-	-	-	-	-	
C211.3	3	3	3	-	-	-	-	-	-	-	-	
C211.4	3	3	3	3	-	-	-	-	-	-	-	
C211.5	3	3	-	-	-	-	-	-	-	-	-	
Average	3	3	3	3	-	-	-	-	-	-	-	

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C211.1	-	-	3
C211.2	3	3	-
C211.3	3	-	3
C211.4	3	2	-
C211.5	3	2	-
Average	3	2.33	3

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Operating Systems | **Regulation: R20**
Year & Sem: II – II | **Branch: CSE (DS)**
Course Coordinator Name: E. Sushma | **Course Code: C212**

Course Outcomes:

At the end of the course students will be able to

CO#	Course Outcome
C212.1	Describe the operating system concepts
C212.2	Analyze the CPU scheduling algorithms
C212.3	Demonstrate Deadlocks and Processes Synchronization.
C212.4	Illustrate Memory Management Techniques
C212.5	Apply files system interface and operations.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C212.1	3	2	2	2	2	-	-	-	-	-	-	2
C212.2	2	3	2	3	2	-	-	-	-	-	-	2
C212.3	2	2	3	3	3	-	-	-	-	-	-	2
C212.4	2	2	3	3	3	-	-	-	-	-	-	2
C212.5	3	3	2	2	2	-	-	-	-	-	-	2
Average	2.4	2.4	2.4	2.6	2.4	-	-	-	-	-	-	2

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C212.1	3	-	-
C212.2	3	-	-
C212.3	2	3	2
C212.4	2	3	2
C212.5	3	-	-
Average	2.6	3.0	2.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING
Course Name: Computer Organization
Year & Sem: II – II
Course Coordinator Name: A. Lakshman

Regulation: R20
Branch: CSE (DS)
Course Code: C213

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C213.1	Describe basic computer organization and architecture.
C213.2	Analyze the basics of instruction sets and their functionality.
C213.3	Evaluate arithmetical operations through central processing unit.
C213.4	Demonstrate the functional units of the computer.
C213.5	Explore the parallel processing mechanisms.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C213.1	3	3	-	-	-	-	-	-	-	-	-	1
C213.2	3	3	3	3	-	-	-	-	-	-	-	1
C213.3	-	3	3	3	3	-	-	-	-	-	-	
C213.4	3	3	3	3	3	-	-	-	-	-	-	1
C213.5	3	3	3	3	3	-	-	-	-	-	-	1
Average	3.0	3.0	3.0	3.0	3.0	-	-	-	-	-	-	1

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C213.1	3	-	-
C213.2	3	-	-
C213.3	-	3	2
C213.4	-	3	2
C213.5	3	3	-
Average	3.0	3.0	2.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING
Course Name: Operating Systems Lab
Year & Sem: II – II
Course Coordinator Name: E. Sushma

Regulation: R20
Branch: CSE (DS)
Course Code: C214

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C214.1	Demonstrate CPU scheduling algorithms.
C214.2	Explore I/O system calls.
C214.3	Simulate Banker's Algorithm for deadlock.
C214.4	Implement the Producer-Consumer Problem.
C214.5	Illustrate IPC mechanisms and memory management techniques.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C214.1	3	3	2	3	3		-	3		-	-	1
C214.2	3	3	2	3	2	-	-	2		-	-	1
C214.3	3	3	3	2	3	-	2	2		2	3	1
C214.4	3	3	3	3	3	-	-	3		3	3	1
C214.5	3	3	2	3	3	-	-	3		3	3	1
Average	3.0	3.0	2.4	2.8	2.8	-	2.0	2.6		2.67	3	1

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C214.1	2	3	-
C214.2	3	-	-
C214.3	-	3	-
C214.4	-	3	2
C214.5	-	2	2
Average	2.5	2.8	2.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Database Management System Lab | **Regulation: R20**
Year & Sem: II – II | **Branch: CSE (DS)**
Course Coordinator Name: Sanjib Kumar Nayak | **Course Code: C215**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C215.1	Demonstrate the database design using E-R diagrams.
C215.2	Design the relational model using normalization.
C215.3	Apply SQL queries for data manipulation.
C215.4	Implement Procedural language.
C215.5	Illustrate various Triggers and Cursors for database.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C215.1	-	3	-	3	3	-	-	3	3	-	-	1
C215.2	-	-	3	-	-	-	2	3	-	-	2	1
C215.3	3	3	-	-	-	-	-	3	-	-	2	1
C215.4	-	-	3	3	3	-	2	3	-	-	2	1
C215.5	-	-	3	3	3	-	-	3	3	-	-	1
Average	3.0	3.0	3.0	3.0	3.0	-	2.0	3.0	3.0	-	2	1

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C215.1	3	-	-
C215.2	-	3	-
C215.3	3	-	-
C215.4	-	3	2
C215.5	-	3	2
Average	3.0	3.0	2.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Analog and Digital Electronics Lab | **Regulation: R20**
Year & Sem: II – II | **Branch: CSE (DS)**
Course Coordinator Name: G. Sravanthi | **Course Code: C216**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C216.1	Describe the characteristics of UJT.
C216.2	Analyze the characteristics of Diode, FET and JFET.
C216.3	Implement the Boolean expressions using Gates.
C216.4	Design Adder and Subtractor
C216.5	Analyze Combinational and sequential circuits

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C216.1	3	-	-	-	-	-	-	-	-	-	-	
C216.2	-	3	-	-	-	-	-	-	-	-	-	
C216.3	-	-	3	3	3	-	-	2		2	2	
C216.4	-	-	3	3	3	-	-	2		2	2	
C216.5	-	-	3	3	3	-	-	2		2	2	
Average	3.0	3.0	3.0	3.0	3.0	-	-	2		2	2	

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C216.1	3	-	-
C216.2	3	-	-
C216.3	-	3	2
C216.4	-	3	-
C216.5	-	3	2
Average	3.0	3.0	2.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator | Module Coordinator | HOD CSE (DS)

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Data Mining | **Regulation: R20**
Year & Sem: III – I | **Branch: CSE (DS)**
Course Coordinator Name: Dr.A.Mahender | **Course Code: C301**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C301.1	Differentiates types of data mining and primitives of data mining.
C301.2	Extract interesting patterns from large amounts of data.
C301.3	Discover the classification of data mining in various fields.
C301.4	Implement clustering applications
C301.5	Analyze and extract insights from continuous data streams, enabling real time decision making.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C301.1	3	2	2	2	2	-	-	-	-	-	-	
C301.2	3	3	2	2	2	-	-	-	-	-	2	
C301.3	3	3	3	3	3	-	-	-	-	-	3	
C301.4	2	2	3	3	3	-	-	-	-	-	-	
C301.5	2	3	2	2	2	-	-	-	-	-	-	
Average	2.6	2.6	2.4	2.4	2.4	-	-	-	-	-	2.5	

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C301.1	3	-	-
C301.2	3	-	3
C301.3	3	3	3
C301.4	2	3	-
C301.5	2	-	-
Average	2.6	3.0	3.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Computer Networks **Regulation: R20**
Year & Sem: III – I **Branch: CSE (DS)**
Course Coordinator Name: V. Sandya **Course Code: C302**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C302.1	Describe the basic concepts of reference models.
C302.2	Apply sliding window and multiple access protocols.
C302.3	Design routing algorithms and congestion control techniques.
C302.4	Analyze the transport layer services and protocols.
C302.5	Illustrate application layer protocols.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C302.1	3	2	2	2	-	-	-	-	-	-	-	1
C302.2	3	2	2	3	-	-	-	-	-	-	-	1
C302.3	-	2	3	3	2	-	-	-	-	-	-	1
C302.4	-	3	2	3	2	-	-	-	-	-	-	1
C302.5	2	2	3	3	3	-	-	-	-	-	-	1
Average	2.66	2.2	2.4	2.8	2.33	-	-	-	-	-	-	1

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C302.1	3	-	2
C302.2	3	-	-
C302.3	-	3	2
C302.4	3	2	-
C302.5	-	3	-
Average	3.0	2.66	2.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Web Technologies
Year & Sem: III – I
Course Coordinator Name: Dr. B. Mohan Babu
Course Outcomes:

Regulation: R20
Branch: CSE (DS)
Course Code: C303

At the end of the course students will be able to

CO#	Course Outcome
C303.1	Apply server-side scripting with PHP language.
C303.2	Demonstrate parsing XML Data with Java.
C303.3	Develop Server-side programs with Java Servlets.
C303.4	Implement JSP pages using Cookies and Session tracking.
C303.5	Design client-side scripting, validation of forms and AJAX programming

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C303.1	3	3	3	2	2	-	-	-	-	-	2	2
C303.2	2	2	3	3	3	-	-	-	-	-	-	
C303.3	2	2	3	3	3	-	-	-	-	-	2	2
C303.4	2	2	3	3	3	-	-	-	-	-		
C303.5	2	2	3	2	2	-	-	-	-	-	-	
Average	2.2	2.2	3.0	2.6	2.6	-	-	-	-	-	2	2

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C303.1	3	-	-
C303.2	2	3	-
C303.3	2	3	3
C303.4	2	3	3
C303.5	2	2	2
Average	2.2	2.75	2.66

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator Module Coordinator HOD CSE (DS)

Department of CSE [Data Science]

CO-PO-PSO MAPPING
Course Name: DATA ANALYTICS
Year & Sem: III – I
Course Coordinator Name: Laxman B
Course Outcomes:

Regulation: R20
Branch: CSE (DS)
Course Code: C304

At the end of the course students will be able to

CO#	Course Outcome
C304.1	Apply data management strategies to handle noise, outliers, missing values, and duplicate data for effective analysis.
C304.2	Demonstrate proficiency in analytics tools, data modelling techniques, and missing data imputations for solving business problems.
C304.3	Construct and evaluate regression and logistic regression models for predictive
C304.4	analytics in various domains.
C304.5	Implement segmentation methods, decision trees, pruning techniques, and time series forecasting models for business insights.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C304.1	2	3	2	2	2	-	-	-	-	-	-	2
C304.2	2	3	2	2	2	-	-	-	-	-	-	2
C304.3	2	3	3	2	2	-	-	-	-	-	-	2
C304.4	2	3	2	2	3	-	-	-	-	-	-	2
C304.5	2	3	2	3	3	-	-	-	-	3	2	2
Average	2	3	2.2	2.2	2.4	-	-	-	-	3	2	

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C304.1	3	3	-
C304.2	2	-	3
C304.3	3	-	2
C304.4	-	3	-
C304.5	2	2	3
Average	2.5	2.6	2.66

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING
Course Name: Computer Graphics | **Regulation: R20**
Year & Sem: III – I | **Branch: CSE (DS)**
Course Coordinator Name: Dr. B. Shankar naik | **Course Code: C305**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C305.1	Enumerate the applications of computer graphics
C305.2	Design 2D Geometric Transformations and 2D viewing functions
C305.3	Construct 3D object representation using surfaces
C305.4	Apply the geometric projections for 3D objects
C305.5	Analyze animation Sequence and visible surface detection Methods.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	P 2
C305.1	3	2	2	2	-	-	-	-	-	-	-	-
C305.2	2	3	3	2	2	-	-	-	-	-	-	-
C305.3	2	2	2	2	-	-	-	-	-	-	-	-
C305.4	2	3	3	2	3	-	-	-	-	-	-	-
C305.5	2	2	2	-	-	-	-	-	-	-	-	-
Average	**2.91**	**2.91**	**2.91**	**2.91**	**2.91**	-	-	-	-	-	-	-

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C305.1	3	-	-
C305.2	3	2	-
C305.3	-	-	-
C305.4	3	3	-
C305.5	2	-	-
Average	2.91	2.91	-

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Data Mining LAB
Year & Sem: III – I
Course Coordinator Name: Dr.A.Mahendar

Regulation: R20
Branch: CSE (DS)
Course Code: C306

Course Outcomes:

At the end of the course students will be able to

CO#	Course Outcome
C306.1	Experiment on data mining tools.
C306.2	Apply data mining algorithms.
C306.3	Analyze and pre-process data.
C306.4	Implement Decision Trees for cross-validation.
C306.5	Develop data mining models.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C306.1	3	2	3	3	3	-	-	2	2	-	3	
C306.2	3	3	3	3	3	-	-	2	3	-	3	
C306.3	2	3	3	3	3	-	-	-	2	-	-	
C306.4	2	2	3	3	3	-	2	2	3	-	-	
C306.5	2	2	3	3	3	-	2	-	3	-	3	
Average	2.4	2.4	3.0	3.0	3.0	-	2.0	2.0	2.6	-	3.0	

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C306.1	2	3	-
C306.2	3	3	2
C306.3	3	2	-
C306.4	2	3	-
C306.5	2	3	3
Average	2.4	2.8	2.5

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Networks & Web Technologies Lab | **Regulation: R20**
Year & Sem: III – I | **Branch: CSE (DS)**
Course Coordinator Name: Dr. B. Mohan Babu | **Course Code: C307**

Course Outcomes:

At the end of the course students will be able to

CO#	Course Outcome
C307.1	Implement data link layer protocols.
C307.2	Illustrate routing and congestion control techniques in a network.
C307.3	Design and develop web applications.
C307.4	Develop server-side scripting.
C307.5	Implement PHP Concepts in HTML

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C307.1	2	2	3	3	3	-	-	2	-	-	-	1
C307.2	3	2	3	3	3	-	-	2	2	-	-	1
C307.3	2	2	3	3	3	-	2	3	-	-	2	1
C307.4	-	-	3	3	3	-	2	3	-	-	2	1
C307.5	3	3	3	3	3	-	-	2	2	-	2	1
Average	2.5	2.25	3.0	3.0	3.0	-	2.0	2.5	2	-	2.0	1

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C307.1	-	3	3
C307.2	3	3	-
C307.3	-	3	3
C307.4	-	3	-
C307.5	3	3	-
Average	3.0	3.0	3.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator | Module Coordinator | HOD CSE (DS)

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: R PROGRAMMING | **Regulation: R20**
Year & Sem: III – I | **Branch: CSE (DS)**
Course Coordinator Name: K. Jhansi Rani | **Course Code: C308**

Course Outcomes:

At the end of the course students will be able to

CO#	Course Outcome
C308.1	Apply R programming basics to solve simple computational problems.
C308.2	Manipulate data structures in R for problem solving.
C308.3	Perform data handling and cleaning operations from various formats.
C308.4	Implement data visualization and statistical analysis to interpret datasets.
C308.5	Design and execute R scripts for advanced tasks.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C308.1	3	2	2	3	2	-	-	-	-	-	-	1
C308.2	3	3	2	3	3	-	-	-	-	-	-	1
C308.3	3	3	3	3	3	-	-	-	-	-	-	1
C308.4	3	3	3	3	3	-	-	-	-	-	-	1
C308.5	3	3	3	3	3	-	-	-	-	-	-	1
Average	3	2.8	2.6	3	2.8	-	-	-	-	-	-	1

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C308.1	2	3	-
C308.2	3	2	-
C308.3	3	-	3
C308.4	-	3	-
C308.5	3	2	3
Average	2.8	2.5	3

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Data Science | **Regulation: R20**
Year & Sem: III – II | **Branch: CSE (DS)**
Course Coordinator Name: K. Jhansi Rani | **Course Code: C309**

Course Outcomes:

At the end of the course students will be able to

CO#	Course Outcome
C309.1	Apply NumPy operations to process multidimensional arrays for data analysis.
C309.2	Demonstrate proficiency in Panda's operations.
C309.3	Implement techniques for data loading and storage across formats.
C309.4	Analyze and transform datasets using data wrangling methods.
C309.5	Design and present effective data visualizations using matplotlib and pandas.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C309.1	3	2	2	3	2	-	-	-	-	-	-	2
C309.2	3	3	2	3	2	-	-	-	-	-	-	2
C309.3	2	2	2	3	2	-	-	-	-	-	-	2
C309.4	3	3	2	3	3	-	-	-	-	-	-	2
C309.5	2	2	3	3	3	-	-	-	-	-	-	2
Average	2.5	2.5	2.2	3	2.4	-	-	-	-	-	-	2

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C309.1	3	-	-
C309.2	-	2	-
C309.3	3	2	3
C309.4	2	3	-
C309.5	3	-	2
Average	2.75	2.4	2.5

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: COMPILER DESIGN
Year & Sem: III – II
Course Coordinator Name: M. Anusha

Regulation: R20
Branch: CSE (DS)
Course Code: C310

Course Outcomes:

At the end of the course students will be able to

CO#	Course Outcome
C310.1	Compute tokens and regular expressions for lexical analysis.
C310.2	Implement top-down and bottom-up parsers
C310.3	Construct intermediate code for procedures
C310.4	Optimize the code generation
C310.5	Analyze the data flow

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C310.1	2	2	3	3	3	-	-	-	-	-	-	
C310.2	2	2	3	3	3	-	-	-	-	-	-	
C310.3	2	2	3	3	3	-	-	-	-	-	-	
C310.4	2	2	3	3	3	-	-	-	-	-	-	
C310.5	2	3	2	2	2	-	-	-	-	-	-	
Average	2.0	2.2	2.8	2.8	2.8	-	-	-	-	-	-	

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C310.1	2	2	3
C310.2	2	2	-
C310.3	2	2	3
C310.4	2	-	-
C310.5	2	-	-
Average	2.0	2.0	3

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Software Engineering | **Regulation: R20**
Year & Sem: III – II | **Branch: CSE (DS)**
Course Coordinator Name: V. Prema Tulasi | **Course Code: C311**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C311.1	Compose end-user requirements into the system.
C311.2	Identify and apply the process model based on software requirements.
C311.3	Build the design of a systematic model
C311.4	Construct testing strategies and generate a report
C311.5	Quantify the metrics for process and products.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C311.1	3	3	3	2	2	-	-	-	-	-	-	1
C311.2	2	3	3	2	2	-	-	-	-	-	2	1
C311.3	2	2	3	3	3	-	-	-	-	-	2	1
C311.4	2	2	3	3	3	-	-	-	-	-	-	1
C311.5	2	2	3	3	3	-	-	-	-	-	-	1
Average	2.2	2.4	3	2.6	2.6	-	-	-	-	-	2.0	

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C311.1	3	3	-
C311.2	3	3	-
C311.3	2	3	3
C311.4	2	3	3
C311.5	2	3	2
Average	2.4	3.0	2.66

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator | Module Coordinator | HOD CSE (DS)

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Software Testing Methodologies | **Regulation: R20**
Year & Sem: III – II | **Branch: CSE (DS)**
Course Coordinator Name: J. Rekha | **Course Code: C312**

Course Outcomes:

At the end of the course students will be able to

CO#	Course Outcome
C312.1	Compare and contrast the various testing strategies.
C312.2	Demonstrate data flow and domain testing strategies.
C312.3	Describe anomalies and build decision table, kv charts.
C312.4	Analyze the graph-based testing metrics with its applications.
C312.5	Implement test cases using WinRunner tool.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C312.1	3	3	2	2		-	-	-	3	-	-	3
C312.2	3	3	3	3	3	-	-	-	3	-	-	3
C312.3	3	2	2	2	2	-	-	-	3	-	3	-
C312.4	2	3	2	3	3	-	-	-	3	-	3	-
C312.5	-	-	3	3	3	-	-	-		-	2	2
Average	2.8	2.75	2.4	2.6	2.75	-	-	-	3	-	2.67	2.7

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C312.1	3	-	-
C312.2	-	3	2
C312.3	2	3	-
C312.4	3	2	-
C312.5	-	3	2
Average	2.66	2.75	2.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator | Module Coordinator | HOD CSE (DS)

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Operations Research | **Regulation: R20**
Year & Sem: III – II | **Branch: CSE (DS)**
Course Coordinator Name: D. Maniha | **Course Code: C313**

Course Outcomes:

At the end of the course students will be able to

CO#	Course Outcome
C313.1	Understand the basic concepts, scope, and applications of Operations Research in decision-making and problem-solving for real-world systems.
C313.2	Formulate various types of optimization problems — such as linear, integer, transportation, and assignment models — into mathematical models.
C313.3	Analyze and solve decision-making problems involving uncertainty and risk using tools such as decision trees, game theory, and queuing models.
C313.4	Evaluate and optimize resource utilization using network models like CPM (Critical Path Method) and PERT (Program Evaluation and Review Technique).
C313.5	Interpret and present the results of Operations Research models to support managerial and strategic decision-making effectively.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C313.1	3	2	2	2	1	-	-	-	-	-	-	1
C313.2	3	3	2	3	2	-	-	-	-	-	-	1
C313.3	3	3	3	3	3	-	-	-	-	-	-	1
C313.4	3	3	3	3	3	-	-	-	-	-	-	1
C313.5	3	3	3	3	3	-	-	-	-	-		1
Average	3	2.75	2.6	2.8	2.4	-	-	-	-	-		1

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C313.1	3	2	2
C313.2	-	3	-
C313.3	2	-	2
C313.4	3	2	-
C313.5	3	3	-
Average	2.75	2.6	2

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

CO-PO-PSO MAPPING

Course Name: Data Science Lab **Regulation: R20**
Year & Sem: III – II **Branch: CSE (DS)**
Course Coordinator Name: K. Jhansi Rani **Course Code: C314**

Course Outcomes:

At the end of the course students will be able to

CO#	Course Outcome
C314.1	Apply NumPy operations to handle multidimensional arrays.
C314.2	Manipulate datasets using pandas for data analysis tasks.
C314.3	Import and process data from multiple file formats and sources.
C314.4	Implement preprocessing techniques to prepare real-world datasets for machine learning.
C314.5	Design and generate effective visualizations using matplotlib to interpret data.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C314.1	3	2	2	3	2	-	-	-	-	-	-	1
C314.2	3	3	2	3	2	-	-	-	-	-	-	1
C314.3	2	2	2	3	2	-	-	-	-	-	-	1
C314.4	3	3	2	3	3	-	-	-	-	-	-	1
C314.5	2	2	3	3	3	-	-	-	-	2	2	1
Average	2.6	2.5	2.2	3	2.4	-	-	-	-	2.1	2	1

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C314.1	3	2	1
C314.2	3	3	-
C314.3	3	3	2
C314.4	2	3	-
C314.5	2	2	2
Average	2.6	2.6	1.7

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Advanced Communication Skills Lab **Regulation: R20**
Year & Sem: III – II **Branch: CSE (DS)**
Course Coordinator Name: Ranjith Kumar **Course Code: C315**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C315.1	Interpret the vocabulary to improve the fluency in English
C315.2	Illustrate the ideas to use of communication skills
C315.3	Develop proficiency in academic reading and writing.
C315.4	Apply innovative presentation styles.
C315.5	Use advanced communication technologies.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C315.1	2	-	-	-	-	-	-	2	3	-	-	1
C315.2	2	-	-	-	-	-	2	3	3	-	-	1
C315.3	2	-	-	-	-	-	-	3	3	-	3	1
C315.4	2	-	-	-	-	-	2	3	3	-	3	1
C315.5	2	-	-	-	-	-	-	3	3	-	3	1
Average	2.0	-	-	-	-	-	2.0	2.8	3.0	-	3.0	1

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C315.1	2	3	-
C315.2	2	-	2
C315.3	-	-	-
C315.4	3	2	3
C315.5	3	-	2
Average	2.5	2.5	2.3

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Software Testing Methodologies Lab | **Regulation: R20**
Year & Sem: III – I | **Branch: CSE (DS)**
Course Coordinator Name: J. Rekha | **Course Code: C316**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C316.1	Identify recording in context sensitive mode and analog mode.
C316.2	Demonstrate the GUI, Bitmap and Database checkpoints.
C316.3	Analyze Data driven test through flat files and excel test.
C316.4	Recognize Batch testing without and with parameter passing.
C316.5	Develop the test case for calculator application.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C316.1	3	3	2	2	3	-	-	-	-	-	-	
C316.2	2	2	3	3	3	-	2	2	3	-		3
C316.3	2	3	2	2	3	-	-	2	-	-	-	
C316.4	3	3	2	2	3	-	-	-	-	3	3	
C316.5	-	-	3	3	3	-	2	3	3	3	3	
Average	2.5	2.75	2.4	2.4	3.0	-	2.0	2.33	3.0	3	3	3

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C316.1	3	-	-
C316.2	-	3	2
C316.3	3	-	-
C316.4	3	-	-
C316.5	-	3	2
Average	3.0	3.0	2.0

Note: 1-Low, 2-Moderate, 3-High

M. Rekha
Course Coordinator

Module Coordinator

HOD CSE (DS)

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: BEFA **Regulation: R20**
Year & Sem: IV – I **Branch: CSE (DS)**
Course Coordinator Name: Dr. Ramesh Naik **Course Code: C401**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C401.1	Describe the various forms of Business and its impact on economy.
C401.2	Comprehend the demand and supply.
C401.3	Explore the usage of marketing and pricing of a product
C401.4	Analyze financial statements and reports.
C401.5	Use financial ratios and metrics to evaluate business performance.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C401.1	2	-	-	-	-	3	-	-	-	3	-	2
C401.2	2	-	-	-	-	3	-	-	2	3	-	2
C401.3	2	-	-	-	-	3	-	3	2	3	2	2
C401.4	2	-	-	-	-	3	2	2	-	3	-	
C401.5	2	-	-	-	-	3	-	2	-	3	2	2
Average	2.0	-	-	-	-	3.0	2.0	2.33	2.0	3.0	2.0	2

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C401.1	2	3	-
C401.2	3	-	-
C401.3	2	2	2
C401.4	3	1	-
C401.5	3	-	2
Average	2.6	2.0	2.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Machine Learning | **Regulation: R20**
Year & Sem: IV – I | **Branch: CSE (DS)**
Course Coordinator Name: Syed Nuraja | **Course Code: C402**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C402.1	Describe the concept of computational intelligence
C402.2	Demonstrate artificial neural networks and their usage.
C402.3	Implement machine learning algorithms
C402.4	Analyze instant based learning algorithms by set rules.
C402.5	Evaluate Analytical and Inductive learning algorithms

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C402.1	3	2	2	2	2	-	-	-	-	-	-	1
C402.2	2	2	3	3	3	-	-	-	-	-	3	1
C402.3	2	2	3	3	3	-	-	-	-	-	3	2
C402.4	2	3	2	3	2	-	-	-	-	-	-	1
C402.5	2	2	3	3	2	-	-	-	-	-	-	1
Average	2.2	2.2	2.6	2.8	2.4	-	-	-	-	-	3.0	1

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C402.1	3	-	-
C402.2	3	3	3
C402.3	2	3	3
C402.4	2	-	-
C402.5	2	3	-
Average	2.4	3.0	3.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Cloud Computing | **Regulation: R20**
Year & Sem: IV – I | **Branch: CSE (DS)**
Course Coordinator Name: K. Sudha Pavani | **Course Code: C403**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C403.1	Describe the cloud computing paradigms.
C403.2	Explore various service delivery models of a cloud computing architecture.
C403.3	Demonstrate cloud infrastructure management and migration tools.
C403.4	Apply the cloud services.
C403.5	Analyze different cloud service providers.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C403.1	3	3	-	-	-	-	-	-	-	-	-	1
C403.2	3	3	3	3	3	-	-	-	-	-	2	1
C403.3	3	3	3	3	3	-	-	-	-	-	2	1
C403.4	3	3	3	3	3	-	-	-	-	-	-	1
C403.5	3	3	3	3	3	-	-	-	-	-	-	1
Average	3.0	3.0	3.0	3.0	3.0	-	-	-	-	-	2	1

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C403.1	3	-	2
C403.2	3	-	-
C403.3	-	3	2
C403.4	3	-	-
C403.5	3	-	-
Average	3.0	3.0	2.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING
Course Name: Deep Learning **Regulation: R20**
Year & Sem: IV – I **Branch: CSE (DS)**
Course Coordinator Name: V. Tejaswini **Course Code: C404**
Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C404.1	Apply feedforward architectures with backpropagation to model and solve non-linear learning problems.
C404.2	Analyze and implement regularization techniques to control overfitting.
C404.3	Evaluate and compare optimization algorithms for training deep models efficiently.
C404.4	Implement convolutional neural networks using convolution, pooling, and efficient algorithms for structured data and image tasks.
C404.5	Design and develop deep learning solutions by integrating architectures, regularization, optimization, and CNNs for applications in vision, speech, a NLP.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C404.1	3	2	2	3	2							1
C404.2	3	3	2	3	3							1
C404.3	3	3	3	3	3							1
C404.4	3	3	2	3	3							1
C404.5	3	3	3	3	3							1
Average	3	2.8	2.4	3	2.8							1

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C404.1	3	2	-
C404.2	3	3	-
C404.3	-	2	2
C404.4	3	-	-
C404.5	2	3	3
Average	2.75	2.5	2.6

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Cyber Security | **Regulation: R20**
Year & Sem: IV – I | **Branch: CSE (DS)**
Course Coordinator Name: V. Sandya | **Course Code: C405**
Course Outcomes:

At the end of the course students will be able to

CO#	Course Outcome
C405.1	Describe the cyber security fundamentals.
C405.2	Implement cyber security policies and procedures.
C405.3	Explore cybercrime in the Mobile devices.
C405.4	Demonstrate cybercrime and its implications
C405.5	Analyze the privacy issues for present and future.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C405.1	3	3	2	-	-	-	-	-	-	-	-	2
C405.2	-	2	3	3	3	-	3	-	-	-	2	2
C405.3	3	3	3	3	3	-	-	-	-	-	3	2
C405.4	2	3	3	3	3	-	-	-	-	-	3	
C405.5	2	3	3	3	3	-	3	-	-	-	3	2
Average	2.5	2.8	2.8	3.0	3.0	-	3.0	-	-	-	2.75	2

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C405.1	3	-	-
C405.2	-	2	2
C405.3	3		-
C405.4	2	3	2
C405.5	2	-	-
Average	2.5	2.5	2.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Machine Learning Lab **Regulation: R20**
Year & Sem: IV – I **Branch: CSE (DS)**
Course Coordinator Name: Syed Nuraja **Course Code: C4**
Course Outcomes:

At the end of the course students will be able to

CO#	Course Outcome
C406.1	Describe the mathematical and statistical prospectives of Machine learning algorithms through python programming.
C406.2	Implement Machine learning algorithms.
C406.3	Use machine learning libraries and frameworks.
C406.4	Apply classification techniques for real world problems.
C406.5	Analyze and interpret machine learning models

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C406.1	3	3	2	-	-	-	-	2	-	-	-	1
C406.2	2	2	3	3	3	-	-	3	-	-	3	1
C406.3	3	3	3	3	3	-	-	2	-	-	-	1
C406.4	3	3	3	3	3	-	2	3	2	-	3	1
C406.5	2	3	3	3	3	-	2	3	3	-	3	1
Average	2.6	2.8	2.8	3.0	3.0	-	2.0	2.6	2.5	-	3.0	1

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C406.1	3	-	-
C406.2	-	3	3
C406.3	2	-	-
C406.4	3	3	3
C406.5	2	3	-
Average	2.5	3.0	3.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING
Course Name: IOMP
Year & Sem: IV-I
Course Coordinator Name: Shafana Bakshi

Regulation:R20
Branch: CSE (DS)
Course Code: C407

Course Outcomes:
At the end of the course student will be able to

CO#	Course Outcome
C407.1	Identify and explain the problem clearly, generate creative ideas to solve it, and analyze the problem critically to develop effective solutions.
C407.2	Apply appropriate methods, tools, and technologies to design and implement practical and functional solutions
C407.3	Analyze project results, interpret findings, and evaluate outcomes to suggest evidence-based improvements
C407.4	Evaluate contributions to achieve project goals through project managen principles
C407.5	Demonstrate professional communication and ethical behavior through proper project documentation and presentation

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C407.1	3	3	2	2	2	2	1	1	2	1	2	2
C407.2	3	3	2	2	2	2	1	1	2	1	2	2
C407.3	3	3	2	2	2	2	1	1	2	1	2	2
C407.4	2	3	2	2	2	2	1	1	2	1	2	2
C407.5	2	3	2	2	2	2	1	1	2	1	2	3
Average	2.6	3	2	2	2	2	1	1	2	1	2	2.2

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C407.1	3	2	-
C407.2	3	3	-
C407.3	3	3	3
C407.4	-	3	3
C407.5	-	2	3
Average	3	2.6	3

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING
Course Name: Seminar
Year & Sem: IV – I
Course Coordinator Name: V. Tejaswini'
Course Outcomes:

Regulation: R20
Branch: CSE (DS)
Course Code: C408

At the end of the course students will be able to

CO#	Course Outcome
C408.1	Understand and explain the technical topic by identifying key concepts, objectives, and relevance to engineering problems.
C408.2	Apply appropriate research methodology and technical tools to analyze the seminar topic effectively.
C408.3	Explain clear and structured presentations, supported by effective visuals and proper documentation.
C408.4	Demonstrate innovation and critical thinking while presenting advanced ideas and engaging in lifelong learning.
C408.5	Defend the seminar content confidently during viva-voce and submit a well-organized technical report

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	P 2
C408.1	3	3	2	2	–	2	–	–	2	–	–	2
C408.2	3	3	3	3	2	–	–	–	–	–	2	2
C408.3	–	–	–	–		–		3	3	–	–	2
C408.4	2	3	3	2	2	–	3	–	–		3	2
C408.5	3	2	2	–	2	–	–	–	3	2	2	2
Average	2.75	2.75	2.5	2.33	2.0	2.0	3.0	3.0	2.66	2.0	2.33	2

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C408.1	3	3	2
C408.2	3	-	2
C408.3	2	3	-
C408.4	2	-	3
C408.5	3	2	2
Average	2.6	2.66	2.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Project Stage – I | **Regulation: R20**
Year & Sem: IV – I | **Branch: CSE (DS)**
Course Coordinator Name: M. Anusha | **Course Code: C409**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C409.1	Develop a clear and concise problem statement and define achievable project objectives that are well-aligned with the identified problem.
C409.2	Review and analyze relevant literature to identify research gaps, and develop an effective project design grounded in engineering principles.
C409.3	Demonstrate effectively research findings through a structured presentation and a well- organized project report.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C409.1	2	3	2	1	-	2	1	2	2	2	1	1
C409.2	3	3	3	3	2	-	1	2	1	1	2	1
C409.3	2	2	1	1	1	-	1	3	3	2	2	1
Average	2.33	2.66	2.0	1.66	1.5	2.0	1.0	2.33	2.0	1.66	1.66	1

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C409.1	3	2	2
C409.2	3	2	2
C409.3	2	3	3
Average	2.67	2.33	2.33

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

CO-PO-PSO MAPPING

Course Name: Organizational Behavior | **Regulation: R20**
Year & Sem: IV – II | **Branch: CSE (DS)**
Course Coordinator Name: B. Kanaka Laxmi | **Course Code: C410**

Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C410.1	Describe the environmental and organizational behavior.
C410.2	Develop the personality and process attributes.
C410.3	Apply decision making at individual and team levels
C410.4	Explore power and politics
C410.5	Analyze the performance and work practices.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C410.1	3	2	2	2	-	3	-	-	-	-	2	
C410.2	2	2	3	2	-	3	-	-		-	2	
C410.3	2	2	2	3	-	3	2	3	2	3	-	
C410.4	2	2	3	2	-	3	2	3	2	-	-	
C410.5	2	3	2	2	-	3	-	2	2	2	2	
Average	2.2	2.2	2.4	2.2	-	3.0	2.0	2.66	2.0	2.5	2	

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C410.1	3	-	-
C410.2	-	2	3
C410.3	2	-	-
C410.4	-	2	3
C410.5	-	-	-
Average	2.5	2	3.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING
Course Name: Human Computer Interaction
Year & Sem: IV – II
Course Coordinator Name: Y. Ashok Kumar
Course Outcomes:

Regulation: R20
Branch: CSE (DS)
Course Code: C411

At the end of the course students will be able to

CO#	Course Outcome
C411.1	Explore HCI principles for interaction design.
C411.2	Design process of human-computer interaction.
C411.3	Evaluate user interfaces.
C411.4	Develop user centric design solutions.
C411.5	Apply HCI principles to virtual and augmented reality interfaces.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C411.1	3	3	2	3	3	-	-	-	-	-	2	
C411.2	2	2	3	3	3	-	-	-	-	-	-	
C411.3	2	2	2	3	3	-	-	-	-	-	-	
C411.4	2	2	3	3	3	-	-	-	-	-	-	
C411.5	3	3	2	3	3	-	-	-	-	-	2	
Average	2.4	2.4	2.4	3.0	3.0	-	-	-	-	-	2	

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C411.1	3	-	-
C411.2	-	3	2
C411.3	-	3	-
C411.4	-	3	-
C411.5	3	2	2
Average	3.0	2.75	2.0

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Data Visualization Techniques | **Regulation: R20**
Year & Sem: IV – II | **Branch: CSE (DS)**
Course Coordinator Name: N. Soujanya | **Course Code: C412**
Course Outcomes:

At the end of the course students will be able to

CO#	Course Outcome
C412.1	Apply data preprocessing and foundational concepts to design scatter plots and basic visualizations for different data types.
C412.2	Analyze visual variables, taxonomies, and perceptual models to evaluate the effectiveness of visualization designs.
C412.3	Implement visualization techniques for spatial, geospatial, multivariate, hierarchical, and network data.
C412.4	Design interactive visualizations using interaction operators, operands, spaces, and animation techniques.
C412.5	Evaluate visualization systems considering issues of cognition, perception, system design, hardware, and application requirements.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C412.1	**3**	**2**	**2**	**3**	**2**	-	-	-	-	-	-	**1**
C412.2	**3**	**3**	**2**	**3**	**3**	-	-	-	-	-	-	**1**
C412.3	3	3	3	3	3	-	-	-	-	-	-	**1**
C412.4	3	3	3	3	3	-	-	-	-	-	-	**1**
C412.5	**3**	**3**	**3**	**3**	**3**	-	-	-	-	-	-	**1**
Average	**3**	**2.8**	**2.6**	**3**	**2.8**	-	-	-	-	-	-	**1**

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C412.1	2	3	2
C412.2	3	3	3
C412.3	3	3	3
C412.4	3	3	3
C412.5	3	3	3
Average	2.8	3	2.8

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Project Stage – II | **Regulation: R20**
Year & Sem: IV – II | **Branch: CSE (DS)**
Course Coordinator Name: M. Anusha | **Course Code: C413**

Course Outcomes:

At the end of the course students will be able to

CO#	Course Outcome
C413.1	Demonstrate progress in implementing the project by effectively selecting and applying appropriate engineering tools, techniques, and practices in line with project requirements.
C413.2	Apply systematic testing strategies and validation methods to identify issues and improve the functionality and performance of the project.
C413.3	Develop original ideas or innovative approaches in the design or implementation of the project.
C413.4	Describe the proposed system, interpret output/results and connect to defined objectives.
C413.5	Compose a well-structured project report that communicates technical content, results, and conclusions effectively.
C413.6	Analyze the social and environmental impacts through professional communication, collaboration, and ethical conduct.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C413.1	3	2	3	2	3	-	-	2	2	2	2	1
C413.2	2	3	2	3	2	-	-	2	-	2	2	1
C413.3	2	2	3	3	3	-	3	2	2	3	3	1
C413.4	2	2	2	2	2	-	-	2	2	2	2	1
C413.5	-	-	2	-	-	-	-	2	3	2	2	1
C413.6	-	1	-	-	-	3	3	3	3	2	2	1
Average	2.25	2.0	2.4	2.5	2.5	3.0	3.0	2.16	2.4	2.16	2.16	

Department of CSE [Data Science]

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C413.1	3	2	2
C413.2	3	2	2
C413.3	3	2	3
C413.4	2	3	2
C413.5	2	3	2
C413.6	2	3	3
Average	2.5	2.5	2.33

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator Module Coordinator HOD CSE (DS)

Department of CSE [Data Science]

CO-PO-PSO MAPPING

Course Name: Natural Language Processing **Regulation: R20**
Year & Sem: III – I **Branch: CSE (DS)**
Course Coordinator Name: G.V.Ashritha **Course Code: C305**
Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C305.1	Apply morphological models and document analysis methods to identify the structure of words and documents.
C305.2	Analyze syntactic structures using parsing algorithms and treebanks,
C305.3	addressing ambiguity and multilingual challenges.
C305.4	Implement semantic parsing techniques and word sense systems to derive meaning representations from natural language input.
C305.5	Evaluate predicate-argument structures and meaning representation systems for

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C305.1	3	3	2	2	2	-	-	-	-	-	-	1
C305.2	2	3	3	1	2	-	-	-	-	-	-	1
C305.3	1	3	3	2	2	-	-	-	-	-	-	1
C305.4	3	2	3	2	2	-	-	-	-	-	-	1
C305.5	2	3	3	3	2	-	-	-	-	-	-	1
Average	2.2	2.8	2.8	2	2	-	-	-	-	-	-	1

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C305.1	3	2	-
C305.2	2	3	-
C305.3	-	2	3
C305.4	3	-	-
C305.5	3	3	2
Average	2.75	2.5	2.5

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator Module Coordinator HOD CSE (DS)

Department of CSE [Data Science]

CO-PO-PSO MAPPING
Course Name: AI&ML **Regulation: R20**
Year & Sem: III – II **Branch: CSE (DS)**
Course Coordinator Name: k.Kishore Kumar **Course Code: C313**
Course Outcomes:
At the end of the course students will be able to

CO#	Course Outcome
C313.1	Formulate an efficient problem space for a problem expressed in natural language.
C313.2	Select a search algorithm for a problem and estimate its time and space complexities.
C313.3	Representing knowledge using the appropriate technique for a given problem.
C313.4	Apply AI techniques to solve problems of game playing and machine learning.
C313.5	Act on uncertain problem solving.

CO-PO MAPPING:

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
C313.1	3	3	2	2	2	-	-	-	-	-	-	2
C313.2	3	3	2	3	2	-	-	-	-	-	-	2
C313.3	3	2	2	2	3	-	-	-	-	-	-	2
C313.4	3	3	3	3	2	-	-	-	-	-	-	2
C313.5	3	2	3	3	3	-	-	-	-	-	-	2
Average	3	2.6	2.4	2.6	2.4	-	-	-	-	-	-	2

CO-PSO MAPPING:

CO#	PSO 1	PSO 2	PSO 3
C313.1	3	3	3
C313.2	3	2	3
C313.3	2	3	2
C313.4	3	2	2
C313.5	3	3	3
Average	2.8	2.6	2.6

Note: 1-Low, 2-Moderate, 3-High

Course Coordinator **Module Coordinator** **HOD CSE (DS)**