



Indra Ganesan

COLLEGE OF ENGINEERING

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
Accredited by NAAC with 'B+' Grade, 2(f) & 12B Status Institution by UGC

IG Valley, Madurai Main Road, Manikandam, Tiruchirappalli - 620012

NAAC DOCUMENTS

QUALITY INDICATOR FRAME WORK

CRITERION – 2

TEACHING-LEARNING AND EVALUATION

SUBMITTED BY

IQAC

INTERNAL QUALITY ASSURANCE CELL
INDRA GANESAN COLLEGE OF ENGINEERING





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COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
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Criteria 2	Teaching-Learning and Evaluation	350
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Key Indicator-2.6 Student Performances and Learning Outcome (90)

2.6.1 Programme Outcomes (POs) and Course Outcomes (COs) for all programmes offered by the institution are stated and displayed on website

**DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND
DATA SCIENCE –REG 2021**

INDRA GANESAN COLLEGE OF ENGINEERING

IG Valley, Manikandam, Tiruchirappalli, Tamil Nadu – 620 012, India
(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai-25)

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

REGULATION -2021

COURSE OUTCOMES

SEM –III

AD3391 DATABASE DESIGN AND MANAGEMENT

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C203.1	Describe database development life cycle and conceptual modeling	1,2,3,4,9,10,11,12	1,2,3
C203.2	Create SQL for data definition, manipulation and querying a database	1,2,3,4,5,9,10,11,12	1,2,3
C203.3	Create relational database design using conceptual mapping and normalization.	1,2,3,4,5,9,10,11,12	1,2,3
C203.4	Create transaction concepts and serializability of schedules.	1,2,3,4,9,10,11,12	1,2,3
C203.5	Apply data model and querying in object-relational and No-SQL databases	1,2,3,4,5,9,10,11,12	1,2,3
C203.6	Describe transaction processing and concurrency control concepts.	1,2,3,4,5,9,10,11,12	1,2,3

Mapping of COs, C, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C203.1	3	2	1	1	-	-	-	-	3	1	2	1	1	3	3
C203.2	3	2	1	1	1	-	-	-	1	2	2	1	1	3	3
C203.3	3	2	1	1	1	-	-	-	2	3	1	2	1	2	2
C203.4	3	2	1	1	-	-	-	-	1	2	1	2	1	2	2
C203.5	3	2	1	1	1	-	-	-	1	3	1	1	1	1	1
C203.6	3	2	1	1	1	-	-	-	2	1	1	1	1	2	1
C203	3	2	1	1	1	-	-	-	2	3	2	2	1	2	2

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C204.1	Analyze the efficiency of recursive and non-recursive algorithms mathematically	1,2,3,4,5,9,10,11,12	1,2,3
C204.2	Analyze the efficiency of brute force, divide and conquer, decrease and conquer, Transform and conquer algorithmic techniques.	1,2,3,4,5,9,10,11,12	1,2,3
C204.3	Implement and analyze the problems using dynamic programming and greedy algorithmic techniques	1,2,3,4,5,7,9,10,11,12	1,2,3
C204.4	Solve the problems using iterative improvement techniques for optimization.	1,2,3,4,5,9,10,11,12	1,2,3
C204.5	Compute the limitations of algorithmic power and solve the problems using backtracking and branch and bound techniques..	1,2,3,4,5,9,10,11,12	1,2,3
C204.6	Apply important algorithmic design paradigms and methods of analysis.	1,2,3,4,5,9,10,11,12	1,2,3

Mapping of COs, C, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C204.1	3	2	1	1	1	-	-	-	3	1	2	1	1	3	3
C204.2	3	2	1	1	1	-	-	-	1	2	2	1	1	3	3
C204.3	3	2	1	1	1	-	-	-	2	3	1	2	1	2	2
C204.4	3	2	1	1	1	-	-	-	1	2	1	2	1	2	2
C204.5	3	2	1	1	1	-	-	-	1	3	1	1	1	1	1
C204.6	3	2	1	1	1	-	-	-	2	1	1	1	1	2	1
C204	3	2	1	1	1	-	-	-	2	3	2	2	1	2	2

AD3301 - DATA EXPLORATION AND VISUALIZATION

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C205.1	Identify the fundamentals of exploratory data analysis.	1,2,3,4,9,10,11,12	1,2,3
C205.2	Illustrate horizontal angle and vertical angle using different instruments	1,2,3,4,5,9,10,11,12	1,2,3
C205.3	Implement the data visualization using Matplotlib.	1,2,3,4,5,9,10,11,12	1,2,3
C205.4	Perform univariate data exploration and analysis	1,2,3,4,9,10,11,12	1,2,3
C205.5	Apply bivariate data exploration and analysis.	1,2,3,4,5,9,10,11,12	1,2,3
C205.6	Analyze and manipulate time series data	1,2,3,4,5,9,10,11,12	1,2,3

Mapping of COs, C, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C205.1	3	2	1	1	-	-	-	-	3	1	2	1	1	3	3

C205.2	3	2	1	1	1	-	-	-	1	2	2	1	1	3	3
C205.3	3	2	1	1	1	-	-	-	2	3	1	2	1	2	2
C205.4	3	2	1	1	-	-	-	-	1	2	1	2	1	2	2
C205.5	3	2	1	1	1	-	-	-	1	3	1	1	1	1	1
C205.6	3	2	1	1	1	-	-	-	2	1	1	1	1	2	1
C205	3	2	1	1	1	-	-	-	2	3	2	2	1	2	2

AL3391 - ARTIFICIAL INTELLIGENCE

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C206.1	Explain intelligent agent frameworks	1,2,3,4,9,10,11,12	1,2,3
C206.2	Apply problem solving techniques	1,2,3,4,5,9,10,11,12	1,2,3
C206.3	Apply game playing and CSP techniques	1,2,3,4,5,9,10,11,12	1,2,3
C206.4	Perform logical reasoning	1,2,3,4,9,10,11,12	1,2,3
C206.5	Perform probabilistic reasoning under uncertainty	1,2,3,4,5,9,10,11,12	1,2,3
C206.6	Design and evaluate intelligent expert models for perception and prediction from intelligent environment	1,2,3,4,5,9,10,11,12	1,2,3

Mapping of COs, C, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C206.1	3	2	1	1	-	-	-	-	3	1	2	1	1	3	3
C206.2	3	2	1	1	1	-	-	-	1	2	2	1	1	3	3
C206.3	3	2	1	1	1	-	-	-	2	3	1	2	1	2	2
C206.4	3	2	1	1	-	-	-	-	1	2	1	2	1	2	2
C206.5	3	2	1	1	1	-	-	-	1	3	1	1	1	1	1
C206.6	3	2	1	1	1	-	-	-	2	1	1	1	1	2	1
C206	3	2	1	1	1	-	-	-	2	3	2	2	1	2	2

AD3381 DATABASE DESIGN AND MANAGEMENT LABORATORY

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C207.1	Describe database development life cycle	1,2,3,4,9,10,11,12	1,2,3
C207.2	Design relational database using conceptual-to-relational mapping, Normalization	1,2,3,4,5,9,10,11,12	1,2,3
C207.3	Create relational database design using conceptual mapping and normalization.	1,2,3,4,5,9,10,11,12	1,2,3
C207.4	Apply SQL for creation, manipulation and retrieval of data.	1,2,3,4,9,10,11,12	1,2,3
C207.5	Develop a database applications for real-time problems	1,2,3,4,5,9,10,11,12	1,2,3
C207.6	Design and query object-relational databases.	1,2,3,4,5,9,10,11,12	1,2,3

Mapping of COs, C, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C207.1	3	2	1	1	-	-	-	-	3	1	2	1	1	3	3
C207.2	3	2	1	1	1	-	-	-	1	2	2	1	1	3	3
C207.3	3	2	1	1	1	-	-	-	2	3	1	2	1	2	2
C207.4	3	2	1	1	-	-	-	-	1	2	1	2	1	2	2
C207.5	3	2	1	1	1	-	-	-	1	3	1	1	1	1	1
C207.6	3	2	1	1	1	-	-	-	2	1	1	1	1	2	1
C207	3	2	1	1	1	-	-	-	2	3	2	2	1	2	2

AD3311 - ARTIFICIAL INTELLIGENCE LABORATORY

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C208.1	Design and implement search strategies	1,2,3,4,9,10,11,12	1,2,3
C208.2	Implement game playing and CSP techniques	1,2,3,4,5,9,10,11,12	1,2,3
C208.3	Develop logical reasoning systems	1,2,3,4,5,9,10,11,12	1,2,3
C208.4	Develop probabilistic reasoning systems	1,2,3,4,9,10,11,12	1,2,3
C208.5	Perform probabilistic reasoning under uncertainty	1,2,3,4,5,9,10,11,12	1,2,3
C208.6	Design and evaluate intelligent expert models for perception and prediction from intelligent environment	1,2,3,4,5,9,10,11,12	1,2,3

Mapping of COs, C, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C208.1	3	2	1	1	-	-	-	-	3	1	2	1	1	3	3
C208.2	3	2	1	1	1	-	-	-	1	2	2	1	1	3	3
C208.3	3	2	1	1	1	-	-	-	2	3	1	2	1	2	2
C208.4	3	2	1	1	-	-	-	-	1	2	1	2	1	2	2
C208.5	3	2	1	1	1	-	-	-	1	3	1	1	1	1	1
C208.6	3	2	1	1	1	-	-	-	2	1	1	1	1	2	1
C208	3	2	1	1	1	-	-	-	2	3	2	2	1	2	2

GE3361 - PROFESSIONAL DEVELOPMENT LABORATORY

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C208.1	Apply MS Word to create quality documents, by structuring and organizing content for their day to day technical and academic requirements	1,2,3,4,9,10,11,12	1,2,3
C208.2	Apply MS EXCEL to perform data operations and analytics, record, retrieve data as per requirements and visualize data for ease of understanding	1,2,3,4,5,9,10,11,12	1,2,3
C208.3	Apply MS PowerPoint to create high quality academic presentations by including common tables, charts, graphs, interlinking other elements, and using media objects	1,2,3,4,5,9,10,11,12	1,2,3
C208.4	Create and share quality presentations by using the features of MS	1,2,3,4,9,10,11,12	1,2,3
C208.5	Create in MS EXCEL for all data manipulation tasks including the common statistical, logical, mathematical	1,2,3,4,5,9,10,11,12	1,2,3
C208.6	Create in MS WORD to create quality technical documents, by using standard templates, widely acceptable styles and formats	1,2,3,4,5,9,10,11,12	1,2,3

Mapping of COs, C, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C208.1	3	2	1	1	-	-	-	-	3	1	2	1	1	3	3
C208.2	3	2	1	1	1	-	-	-	1	2	2	1	1	3	3
C208.3	3	2	1	1	1	-	-	-	2	3	1	2	1	2	2
C208.4	3	2	1	1	-	-	-	-	1	2	1	2	1	2	2
C208.5	3	2	1	1	1	-	-	-	1	3	1	1	1	1	1
C208.6	3	2	1	1	1	-	-	-	2	1	1	1	1	2	1
C208	3	2	1	1	1	-	-	-	2	3	2	2	1	2	2

AL3452 - OPERATING SYSTEMS

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C302.1	Analyze various scheduling algorithms and process synchronization.	1,2,3,4,9,10,11,12	1,2,3
C302.2	Explain deadlock, prevention and avoidance algorithms	1,2,3,4,5,9,10,11,12	1,2,3
C302.3	Compare and contrast various memory management schemes	1,2,3,4,5,9,10,11,12	1,2,3
C302.4	Explain the functionality of file systems I/O systems, and Virtualization	1,2,3,4,9,10,11,12	1,2,3
C302.5	Compare iOS and Android Operating Systems.	1,2,3,4,5,9,10,11,12	1,2,3
C302.6	Analyze various memory management schemes	1,2,3,4,5,9,10,11,12	1,2,3

Mapping of COs, C, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C302.1	3	2	1	1	-	-	-	-	3	1	2	1	1	3	3
C302.2	3	2	1	1	1	-	-	-	1	2	2	1	1	3	3
C302.3	3	2	1	1	1	-	-	-	2	3	1	2	1	2	2
C302.4	3	2	1	1	-	-	-	-	1	2	1	2	1	2	2
C302.5	3	2	1	1	1	-	-	-	1	3	1	1	1	1	1
C302.6	3	2	1	1	1	-	-	-	2	1	1	1	1	2	1
C302	3	2	1	1	1	-	-	-	2	3	2	2	1	2	2

AL3451 - MACHINE LEARNING

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C302.1	Explain the basic concepts of machine learning.	1,2,3,4,9,10,11,12	1,2,3
C302.2	Construct supervised learning models	1,2,3,4,5,9,10,11,12	1,2,3
C302.3	Construct unsupervised learning algorithms.	1,2,3,4,5,9,10,11,12	1,2,3
C302.4	Evaluate and compare different models	1,2,3,4,9,10,11,12	1,2,3
C302.5	Evaluate the algorithms based on corresponding metrics identified.	1,2,3,4,5,9,10,11,12	1,2,3
C302.6	Analyze and build unsupervised learning models	1,2,3,4,5,9,10,11,12	1,2,3

Mapping of COs, C, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C302.1	3	2	1	1	-	-	-	-	3	1	2	1	1	3	3
C302.2	3	2	1	1	1	-	-	-	1	2	2	1	1	3	3
C302.3	3	2	1	1	1	-	-	-	2	3	1	2	1	2	2
C302.4	3	2	1	1	-	-	-	-	1	2	1	2	1	2	2
C302.5	3	2	1	1	1	-	-	-	1	3	1	1	1	1	1
C302.6	3	2	1	1	1	-	-	-	2	1	1	1	1	2	1
C302	3	2	1	1	1	-	-	-	2	3	2	2	1	2	2

AD3491 - FUNDAMENTALS OF DATA SCIENCE AND ANALYTICS

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C403.1	Explain the data analytics pipeline	1,2,3,4,9,10,11,12	1,2,3
C403.2	Describe and visualize data	1,2,3,4,5,9,10,11,12	1,2,3
C403.3	Perform statistical inferences from data	1,2,3,4,5,9,10,11,12	1,2,3
C403.4	Analyze the variance in the data	1,2,3,4,9,10,11,12	1,2,3
C403.5	Build models for predictive analytics.	1,2,3,4,5,9,10,11,12	1,2,3
C403.6	Analysis and build predictive models from data	1,2,3,4,5,9,10,11,12	1,2,3

Mapping of COs, C, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C403.1	3	2	1	1	-	-	-	-	3	1	2	1	1	3	3
C403.2	3	2	1	1	1	-	-	-	1	2	2	1	1	3	3
C403.3	3	2	1	1	1	-	-	-	2	3	1	2	1	2	2
C403.4	3	2	1	1	-	-	-	-	1	2	1	2	1	2	2
C403.5	3	2	1	1	1	-	-	-	1	3	1	1	1	1	1
C403.6	3	2	1	1	1	-	-	-	2	1	1	1	1	2	1
C403	3	2	1	1	1	-	-	-	2	3	2	2	1	2	2

CS3591 - COMPUTER NETWORKS

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C404.1	Explain the basic layers and its functions in computer networks.	1,2,3,4,9,10,11,12	1,2,3
C404.2	Explain the basics of how data flows from one node to another	1,2,3,4,5,9,10,11,12	1,2,3
C404.3	Analyze routing algorithms.	1,2,3,4,5,9,10,11,12	1,2,3
C404.4	Describe protocols for various functions in the network	1,2,3,4,9,10,11,12	1,2,3
C404.5	Analyze the working of various application layer protocols.	1,2,3,4,5,9,10,11,12	1,2,3
C404.6	Explain the functions and protocols of the Transport layer	1,2,3,4,5,9,10,11,12	1,2,3

Mapping of COs, C, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C404.1	3	2	1	1	-	-	-	-	3	1	2	1	1	3	3
C404.2	3	2	1	1	1	-	-	-	1	2	2	1	1	3	3
C404.3	3	2	1	1	1	-	-	-	2	3	1	2	1	2	2
C404.4	3	2	1	1	-	-	-	-	1	2	1	2	1	2	2
C404.5	3	2	1	1	1	-	-	-	1	3	1	1	1	1	1
C404.6	3	2	1	1	1	-	-	-	2	1	1	1	1	2	1
C404	3	2	1	1	1	-	-	-	2	3	2	2	1	2	2

AD3411 - DATA SCIENCE AND ANALYTICS LABORATORY

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C405.1	Write python programs to handle data using Numpy and Pandas	1,2,3,4,9,10,11,12	1,2,3
C405.2	Perform descriptive analytics	1,2,3,4,5,9,10,11,12	1,2,3
C405.3	Perform data exploration using Matplotlib	1,2,3,4,5,9,10,11,12	1,2,3
C405.4	Perform inferential data analytics	1,2,3,4,9,10,11,12	1,2,3
C405.5	Build models of predictive analytics	1,2,3,4,5,9,10,11,12	1,2,3
C405.6	Perform data visualization using plots	1,2,3,4,5,9,10,11,12	1,2,3

Mapping of COs, C, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C403.1	3	2	1	1	-	-	-	-	3	1	2	1	1	3	3
C403.2	3	2	1	1	1	-	-	-	1	2	2	1	1	3	3
C403.3	3	2	1	1	1	-	-	-	2	3	1	2	1	2	2
C403.4	3	2	1	1	-	-	-	-	1	2	1	2	1	2	2
C403.5	3	2	1	1	1	-	-	-	1	3	1	1	1	1	1
C403.6	3	2	1	1	1	-	-	-	2	1	1	1	1	2	1
C405	3	2	1	1	1	-	-	-	2	3	2	2	1	2	2

AD3501 - DEEP LEARNING

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C501.1	Explain the basics in deep neural networks.	1,2,3,4,9,10,11,12	1,2,3
C501.2	Apply Convolution Neural Network for image processing	1,2,3,4,5,9,10,11,12	1,2,3
C501.3	Apply Recurrent Neural Network and its variants for text analysis.	1,2,3,4,5,9,10,11,12	1,2,3
C501.4	Apply model evaluation for various applications	1,2,3,4,9,10,11,12	1,2,3
C501.5	Apply autoencoders and generative models for suitable applications.	1,2,3,4,5,9,10,11,12	1,2,3
C501.6	Explain the evaluation metrics for deep learning models	1,2,3,4,5,9,10,11,12	1,2,3

Mapping of COs, C, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C501.1	3	2	1	1	-	-	-	-	3	1	2	1	1	3	3
C501.2	3	2	1	1	1	-	-	-	1	2	2	1	1	3	3
C501.3	3	2	1	1	1	-	-	-	2	3	1	2	1	2	2
C501.4	3	2	1	1	-	-	-	-	1	2	1	2	1	2	2
C501.5	3	2	1	1	1	-	-	-	1	3	1	1	1	1	1
C501.6	3	2	1	1	1	-	-	-	2	1	1	1	1	2	1
C501	3	2	1	1	1	-	-	-	2	3	2	2	1	2	2

CW3551 - Data and Information Security

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C502.1	Explain the basics of data and information security.	1,2,3,4,9,10,11,12	1,2,3
C502.2	Explain the legal, ethical and professional issues in information security	1,2,3,4,5,9,10,11,12	1,2,3
C502.3	Explain the various authentication schemes to simulate different applications.	1,2,3,4,5,9,10,11,12	1,2,3
C502.4	Explain the various security practices and system security standards	1,2,3,4,9,10,11,12	1,2,3
C502.5	Evaluate the Web security protocols for E-Commerce applications.	1,2,3,4,5,9,10,11,12	1,2,3
C502.6	Analyze the legal, ethical and professional issues in Information Security	1,2,3,4,5,9,10,11,12	1,2,3

Mapping of COs, C, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C502.1	3	2	1	1	-	-	-	-	1	3	1	2	1	1	3
C502.2	3	2	1	1	1	-	-	-	1	1	2	2	1	1	3
C502.3	3	2	1	1	1	-	-	-	1	2	3	1	2	1	2
C502.4	3	2	1	1	-	-	-	-	2	1	2	1	2	1	2
C502.5	3	2	1	1	1	-	-	-	3	1	3	1	1	1	1
C502.6	3	2	1	1	1	-	-	-	2	2	1	1	1	1	2
C502	3	2	1	1	1	-	-	-	2	2	3	2	2	1	2

CS3551 - Distributed Computing

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C503.1	Explain the foundations of distributed systems.	1,2,3,4,9,10,11,12	1,2,3
C503.2	Solve synchronization and state consistency problems	1,2,3,4,5,9,10,11,12	1,2,3
C503.3	Apply resource sharing techniques in distributed systems.	1,2,3,4,5,9,10,11,12	1,2,3
C503.4	Apply working model of consensus and reliability of distributed systems	1,2,3,4,9,10,11,12	1,2,3
C503.5	Explain the fundamentals of cloud computing.	1,2,3,4,5,9,10,11,12	1,2,3
C503.6	Describe distributed mutual exclusion and distributed deadlock detection techniques	1,2,3,4,5,9,10,11,12	1,2,3

Mapping of COs, C, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C503.1	3	2	1	1	-	-	-	-	3	1	2	1	1	3	3
C503.2	3	2	1	1	1	-	-	-	1	2	2	1	1	3	3
C503.3	3	2	1	1	1	-	-	-	2	3	1	2	1	2	2
C503.4	3	2	1	1	-	-	-	-	1	2	1	2	1	2	2
C503.5	3	2	1	1	1	-	-	-	1	3	1	1	1	1	1
C503.6	3	2	1	1	1	-	-	-	2	1	1	1	1	2	1
C503	3	2	1	1	1	-	-	-	2	3	2	2	1	2	2

CCS334 - BIG DATA ANALYTICS

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C504.1	Describe big data and use cases from selected business domains.	1,2,3,4,9,10,11,12	1,2,3
C504.2	Explain NoSQL big data management	1,2,3,4,5,9,10,11,12	1,2,3
C504.3	Install, configure, and run Hadoop and HDFS..	1,2,3,4,5,9,10,11,12	1,2,3
C504.4	Perform map-reduce analytics using Hadoop	1,2,3,4,9,10,11,12	1,2,3
C504.5	Apply Hadoop-related tools such as HBase, Cassandra, Pig, and Hive for big data analytics.	1,2,3,4,5,9,10,11,12	1,2,3
C504.6	Learn and use NoSQL big data management	1,2,3,4,5,9,10,11,12	1,2,3

Mapping of COs, C, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C504.1	3	2	1	1	-	-	-	-	3	1	2	1	1	3	3
C504.2	3	2	1	1	1	-	-	-	1	2	2	1	1	3	3
C504.3	3	2	1	1	1	-	-	-	2	3	1	2	1	2	2
C504.4	3	2	1	1	-	-	-	-	1	2	1	2	1	2	2
C504.5	3	2	1	1	1	-	-	-	1	3	1	1	1	1	1
C504.6	3	2	1	1	1	-	-	-	2	1	1	1	1	2	1
C504	3	2	1	1	1	-	-	-	2	3	2	2	1	2	2

CCS336 - CLOUD SERVICES MANAGEMENT

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C505.1	Exhibit cloud-design skills to build and automate business solutions using cloud technologies	1,2,3,4,9,10,11,12	1,2,3
C505.2	Possess Strong theoretical foundation leading to excellence and excitement towards adoption of cloud-based services	1,2,3,4,5,9,10,11,12	1,2,3
C505.3	Solve the real world problems using Cloud services and technologies	1,2,3,4,5,9,10,11,12	1,2,3
C505.4	Identify strategies to reduce risk and eliminate issues associated with adoption of cloud services	1,2,3,4,9,10,11,12	1,2,3
C505.5	Illustrate the benefits and drive the adoption of cloud-based services to solve real world problems.	1,2,3,4,5,9,10,11,12	1,2,3
C505.6	Compare and contrast cloud service management with traditional IT service management	1,2,3,4,5,9,10,11,12	1,2,3

Mapping of COs, C, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C505.1	3	2	1	1	-	-	-	-	3	1	2	1	1	3	3
C505.2	3	2	1	1	1	-	-	-	1	2	2	1	1	3	3
C505.3	3	2	1	1	1	-	-	-	2	3	1	2	1	2	2
C505.4	3	2	1	1	-	-	-	-	1	2	1	2	1	2	2
C505.5	3	2	1	1	1	-	-	-	1	3	1	1	1	1	1
C505.6	3	2	1	1	1	-	-	-	2	1	1	1	1	2	1
C505	3	2	1	1	1	-	-	-	2	3	2	2	1	2	2

CCS338 - COMPUTER VISION

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C506.1	Gain the knowledge, theories and methods in image processing and computer vision.	1,2,3,4,9,10,11,12	1,2,3
C506.2	Implement basic and some advanced image processing techniques in OpenCV.	1,2,3,4,5,9,10,11,12	1,2,3
C506.3	Apply 2D a feature-based based image alignment, segmentation and motion estimations	1,2,3,4,5,9,10,11,12	1,2,3
C506.4	Apply 3D image reconstruction techniques	1,2,3,4,9,10,11,12	1,2,3
C506.5	Design and develop innovative image processing and computer vision applications..	1,2,3,4,5,9,10,11,12	1,2,3
C50.6	Develop skills on 3D reconstruction	1,2,3,4,5,9,10,11,12	1,2,3

Mapping of COs, C, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C506.1	3	2	1	1	-	-	-	-	3	1	2	1	1	3	3
C506.2	3	2	1	1	1	-	-	-	1	2	2	1	1	3	3
C506.3	3	2	1	1	1	-	-	-	2	3	1	2	1	2	2
C506.4	3	2	1	1	-	-	-	-	1	2	1	2	1	2	2
C506.5	3	2	1	1	1	-	-	-	1	3	1	1	1	1	1
C506.6	3	2	1	1	1	-	-	-	2	1	1	1	1	2	1
C506	3	2	1	1	1	-	-	-	2	3	2	2	1	2	2

AD3511 - DEEP LEARNING LABORATORY

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C507.1	Apply deep neural network for simple problems	1,2,3,4,9,10,11,12	1,2,3
C507.2	Apply Convolution Neural Network for image processing	1,2,3,4,5,9,10,11,12	1,2,3
C507.3	Apply Recurrent Neural Network and its variants for text analysis	1,2,3,4,5,9,10,11,12	1,2,3
C507.4	Apply generative models for data augmentation	1,2,3,4,9,10,11,12	1,2,3
C507.5	Develop real-world solutions using suitable deep neural networks..	1,2,3,4,5,9,10,11,12	1,2,3
C507.6	Apply different deep learning architectures for solving problems	1,2,3,4,5,9,10,11,12	1,2,3

Mapping of COs, C, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C507.1	3	2	1	1	-	-	-	-	3	1	2	1	1	3	3
C507.2	3	2	1	1	1	-	-	-	1	2	2	1	1	3	3
C507.3	3	2	1	1	1	-	-	-	2	3	1	2	1	2	2
C507.4	3	2	1	1	-	-	-	-	1	2	1	2	1	2	2
C507.5	3	2	1	1	1	-	-	-	1	3	1	1	1	1	1
C507.6	3	2	1	1	1	-	-	-	2	1	1	1	1	2	1
C507	3	2	1	1	1	-	-	-	2	3	2	2	1	2	2

AD3512 - SUMMER INTERNSHIP

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C507.1	Industry Practices, Processes, Techniques, technology, automation and other core aspects of software industry	1,2,3,4,9,10,11,12	1,2,3
C507.2	Analyze, Design solutions to complex business problems	1,2,3,4,5,9,10,11,12	1,2,3
C507.3	Build and deploy solutions for target platform	1,2,3,4,5,9,10,11,12	1,2,3
C507.4	Preparation of Technical reports and presentation	1,2,3,4,9,10,11,12	1,2,3
C507.5	Develop technical, soft, team skills to cater to the needs of the industry	1,2,3,4,5,9,10,11,12	1,2,3
C507.6	Get connected with reputed industry/ laboratory/academia / research institute	1,2,3,4,5,9,10,11,12	1,2,3

Mapping of COs, C, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C507.1	3	2	1	1	-	-	-	-	3	1	2	1	1	3	3
C507.2	3	2	1	1	1	-	-	-	1	2	2	1	1	3	3
C507.3	3	2	1	1	1	-	-	-	2	3	1	2	1	2	2
C507.4	3	2	1	1	-	-	-	-	1	2	1	2	1	2	2
C507.5	3	2	1	1	1	-	-	-	1	3	1	1	1	1	1
C507.6	3	2	1	1	1	-	-	-	2	1	1	1	1	2	1
C507	3	2	1	1	1	-	-	-	2	3	2	2	1	2	2

CS3691 - EMBEDDED SYSTEMS AND IOT

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C601.1	Explain the architecture of embedded processors.	1,2,3,4,9,10,11,12	1,2,3
C601.2	Write embedded C programs.	1,2,3,4,5,9,10,11,12	1,2,3
C601.3	Design simple embedded applications	1,2,3,4,5,9,10,11,12	1,2,3
C601.4	Compare the communication models in IOT	1,2,3,4,9,10,11,12	1,2,3
C601.5	Design IoT applications using Arduino/Raspberry Pi /open platform	1,2,3,4,5,9,10,11,12	1,2,3
C601.6	Apply the concept of Internet of Things in real world scenario.	1,2,3,4,5,9,10,11,12	1,2,3

Mapping of COs, C, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C601.1	3	2	1	1	-	-	-	-	3	1	2	1	1	3	3
C601.2	3	2	1	1	1	-	-	-	1	2	2	1	1	3	3
C601.3	3	2	1	1	1	-	-	-	2	3	1	2	1	2	2
C601.4	3	2	1	1	-	-	-	-	1	2	1	2	1	2	2
C601.5	3	2	1	1	1	-	-	-	1	3	1	1	1	1	1
C601.6	3	2	1	1	1	-	-	-	2	1	1	1	1	2	1
C601	3	2	1	1	1	-	-	-	2	3	2	2	1	2	2