



**KRISHNA CHAITANYA DEGREE COLLEGE (A),
NELLORE.
(AFFILIATED TO V.S. UNIVERSITY)**



**MINUTES OF THE MEETING OF THE BOARD OF STUDIES
(DEPARTMENT OF COMPUTER SCIENCE - PG)**

The first Board of Studies (BoS) meeting in the Department of Computer Science (PG) was held on 18-11-2025 at 02:30 PM in the Board Room under the Chairmanship of the BoS in Computer Science (PG) for the preparation of Course Structure, Syllabus and Model Question Papers for the Academic Year 2025-26.

The following members were present in the meeting.

1. Dr. M. Sreedevi – Chairman.
2. Prof. N. Geethanjali – Member (University Nominee).
3. Dr. N. Krishna Kumar – Member (Subject Expert from Outside the Parent University & Nominated by Academic Council).
4. Dr. N. Srinadh Reddy – Member (Subject Expert from Outside the Parent University & Nominated by Academic Council).
5. Sri MamjanShawali. Shaik – Member (Faculty of the Department).
6. Sri S. Naveen Kumar – Member (Faculty of the Department).
7. Smt P. Reshma – Member (Faculty of the Department).
8. Ms. Sandhya Veluru – Member (Representative from Industry).
9. Sri E. Purushotham – Member (Alumni).

Members Absent:

- Nil -

At the opening of the meeting of the BoS, Sri MamjanShawali Shaik, Member of BoS welcomed and introduced the Chairperson and the other members of BoS. The Chairperson of BoS requested the members of BoS for the approval of Course Structure, Syllabus and Model Question Papers for the Academic Year 2025-26.

Agenda

1. To finalize the I and II semester M.Sc.(Computer Science with Artificial Intelligence) R-25 Course Structure and First Semester Syllabus.
2. Approval of Open Online Course offered by other Departments (MOOCs/Open Online Elective)
3. Approval of Model Question Papers.
4. Approval of the Examination panel members.
5. Any other proposal with the permission of the Chair.

Discussions and Modifications:

Semester	Title of the course	Title of the Course	Modifications
I	Core Course-1	Introduction to Artificial Intelligence & Data Science	No Changes were made.
	Core Course-2	A) Data Structures Using C	No Changes were made.
		B) Operating System	No Changes were made.
	Core Course-3	A) Computer Networks	No Changes were made.
		B) Mathematical and Statistical Foundation	In Unit-3 the following topics were added 1. 2.3.
	Practical -1 (Related to CC 2 & 3)	Core Course- 2& 3	Suggested to design suitable 10 programs for each practical paper. And the programs were designed.
	Skill Oriented Course-1	A) Cyber Security	No Changes were made.
		B) Object Oriented Programming Using Java	No Changes were made.
	Skill Oriented Course -2	A) Database Management System	Suggested to shift the reference book to standard text book
		B) Python Programming	➤ Suggested to Add another text book ➤ Suggested to change reference book.
	Practical -2 (Related to SOC 1 & 2)	Skill Oriented Course- 1& 2	Suggested to design suitable 10 programs for each practical paper. And the programs were designed.
	Open Online Tran disciplinary Course - 1	MOOCs/Open Online Elective	No Changes were made.
	Indian Knowledge Systems - 1	a) Indian History & Culture b) Yoga & Meditation	No Changes were made.

Semester	Title of the course	Title of the Course	Modifications
II	Core Course - 4	Artificial Intelligence	No Changes were made.

	Core Course – 5	A) Cloud computing	No Changes were made.
		B) Design and analysis of algorithms	No Changes were made.
	Core Course – 6	A) Data mining and data warehousing	No Changes were made.
		B) Java Full stack Development	No Changes were made.
	Practical –3 (Related to CC 5 & 6)	Core Course- 5 & 6	No Changes were made.
	Skill Oriented Course –3	A) Principles of Data Science	No Changes were made.
		B) Internet of things	No Changes were made.
	Skill Oriented Course –4	A) Deep learning	No Changes were made.
		B) Software Engineering	No Changes were made.
	Practical –4 (Related to SOC 3 & 4)	Skill Oriented Course- 3 & 4	No Changes were made.
	MООCS/ Open Online Elective	MООCS/Open Online Transdisciplinary Course – 2	No Changes were made.
	Indian Knowledge Systems – 2	c) Sanskrit and classical Languages d) Ayurveda	No Changes were made.

Resolutions:

1. After careful review and discussion, the board discussed and prepared the Course Structure (for Semesters I & II) and the Syllabus (for I semester) for M.Sc.(Computer Science with Artificial Intelligence) R25.
2. The board discussed and prepared the blue print and model question papers (for I & II semesters) for M.Sc (Computer Science with Artificial Intelligence) R25.
3. It is resolved the following with regard to the distribution of internal and external marks.

100 Marks Paper

- ❖ Semester End Examination (SEE) : 70 Marks.
- ❖ Internal Assessment : 30 Marks.

75 Marks Paper

- ❖ Semester End Examination (SEE) : 50 Marks.
- ❖ Internal Assessment : 25 Marks.

4. It is resolved and approved the list of panel of examiners.

5. Resolved to suggest that the scheme of valuation should be given by the paper setter for uniform evaluation. If the paper setter fails to supply the scheme of valuation, the chairman of BoS / BoS Member should take the responsibility to prepare the scheme of valuation for uniform evaluation.

Members Present (Online / Offline)

S.No	Cadre in BOS	Name	Mode of attendance	Signature
1.	Chair Person	Dr.M.Sreedevi, Associate Professor, Dept. of Computer Science,S.V.University, Tirupati.	Online	M.Sreedevi
2.	Member	Prof.N.Geethanjali, Professor, Dept. of Computer Science & Technology, Sri Krishnadevaraya University, Anantapur	Online	N.Geethanjali
3.	Member	Sri Sk. Mamjanshawali, Dept. of Computer Science, Krishna Chaitanya Degree College, Nellore	Offline	Sri Sk. Mamjanshawali
4.	Member	Sri S. Naveen Kumar, Dept. of Computer Science, Krishna Chaitanya Degree College, Nellore	Offline	S. Naveen Kumar
5.	Member	Smt. P. Reshma, Dept. of Computer Science, Krishna Chaitanya Degree College, Nellore	Offline	P. Reshma
6.	Member	Dr. N. Krishna Kumar, Associate Professor, Dept. of Computer Applications, University Institute of Computer Science & Applications,Guru Nanak University, Khanapur, Hyderabad.	Online	N. Krishna Kumar
7.	Member	Dr. N. Srinadh Reddy, Vice-Principal & Associate Professor, Dept. of Computer Science & Engg.,PBR VITS, Kavali, Nellore (Dt).	Online	N. Srinadh Reddy
8.	Member	Ms.Sandhya Veluru, Director & CIO,uynite, Bangalore.	Online	Ms.Sandhya Veluru
9.	Member	Sri.E.Purushotham, Team Leader, Accenture, Bangalore.	Online	E. Purushotham



KRISHNA CHAITANYA
DEGREE COLLEGE

(Autonomous)



**ACADEMIC REGULATIONS
COURSE STRUCTURE
AND
DETAILED SYLLABUS**

For

**M.Sc (Computer Science With
Artificial Intelligence)**

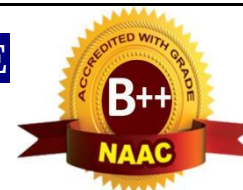
(w.e.f. 2025-2026)



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S.University, Nellore)



SEMESTER – I									
S.No	Course Category	Code	Title of the course	Courses	H/W	C	SEE	IA	Total Marks
1	Core Course	R25CAI 101	Core Course - 1	Introduction to Artificial Intelligence & Data Science	4	4	70	30	100
2	Core Course	R25CAI 102	Core Course – 2	A) Operating System B) Data Structures Using C	4	3	50	25	75
3	Core Course	R25CAI 103	Core Course - 3	A) Computer Networks B) Mathematical and Statistical Foundation	4	3	50	25	75
4	Practical	R25CAI 104	Practical -1 (Related to CC 2 & 3)	Core Course- 2& 3	6	2	35	15	50
5	Skill Oriented Course	R25CAI 105	Skill Oriented Course -1	A) Object Oriented Programming Using Java B) Cyber Security	4	3	50	25	75
6	Skill Oriented Course	R25CAI 106	Skill Oriented Course -2	A) Python Programming B) Database Management System	4	3	50	25	75
7	Practical	R25CAI 107	Practical -2 (Related to SOC 1 & 2)	Skill Oriented Course- 1& 2	6	2	35	15	50
8	Open Online Transdisciplinary Course	R25CAI 108	MOOCS/Open Online Elective	MOOCS/Open Online Transdisciplinary Course - 1	-	2	-	-	-
9	Audit Course	R25CAI 109	Indian Knowledge Systems – 1	a) Indian history & culture b) Yoga & meditation	4	0	0	0	0
Total					36	22	340	160	500

NOTE: Every student should submit the certificate related to MOOCS / Open online elective on or before the final year result without fail.

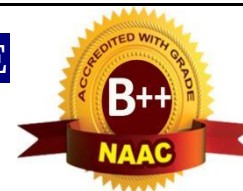
M.S. N. Geethanjali S. P.



KRISHNA CHAITNAYA DEGREE COLLEGE

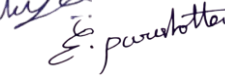
(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S. University, Nellore)



SEMESTER – II									
S.No	Course Category	Code	Title of the course	Courses	H/W	C	SEE	IA	Total Marks
1	Core Course	R25CAI 201	Core Course – 4	Artificial Intelligence	4	4	70	30	100
2	Core Course	R25CAI 202	Core Course – 5	A) Cloud computing B) Design and analysis of algorithms	4	3	50	25	75
3	Core Course	R25CAI 203	Core Course – 6	A) Data mining and data warehousing B) Full stack Development	4	3	50	25	75
4	Practical	R25CAI 204	Practical -3 (Related to CC 5 & 6)	Core Course- 5 & 6	6	2	35	15	50
5	Skill Oriented Course	R25CAI 205	Skill Oriented Course -3	A) Principles of Data Science B) Internet of things	4	3	50	25	75
6	Skill Oriented Course	R25CAI 206	Skill Oriented Course -4	A) Software Engineering B) Deep learning	4	3	50	25	75
7	Practical	R25CAI 207	Practical -4 (Related to SOC 3 & 4)	Skill Oriented Course- 3 & 4	6	2	35	15	50
8	Open Online Transdisciplinary Course	R25CAI 208	MOOCS/ Open Online Elective	MOOCS/Open Online Transdisciplinary Course – 2	-	2	-	-	-
9	Audit Course	R25CAI 209	Indian Knowledge Systems – 2	c) Sanskrit and classical Languages d) Ayurveda	4	0	0	0	0
Total					36	22	340	160	500

NOTE: Every student should submit the certificate related to MOOCS / Open online elective on or before the final year result without fail.

M.S.  N. Geethanjali  G. S.  S.  P.    V.  



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S.University, Nellore)



SEMESTER-1

MSCS 101: INTRODUCTION TO ARTIFICIAL INTELLIGENCE & DATA SCIENCE

Programme	MSC(CS With AI)	Semester	First		
Course Code	101	Course Name	INTRODUCTION TO ARTIFICIAL INTELLIGENCE & DATA SCIENCE		
Course category	CORE COURSE(CC)-1	Hour/Week	L	T	P
			4	0	0
		Credits	4		

Course Objectives:

1. Understand the Fundamentals of AI.
2. Apply Search Techniques to Problem Solving.
3. Represent Knowledge Logically and Perform Inference.
4. Understand the Foundations of Data Science.
5. Perform Data Collection, Cleaning, and Preprocessing.

UNIT-I

Introduction: what is AI? Foundations of AI, History of AI, characteristics of AI, Applications of AI, Intelligent Agents and Environment, problem solving Agents, problem formulation, search strategies.

UNIT-2

Knowledge and Reasoning: Knowledge-based Agents, Knowledge Representation, Reasoning and Logic, Propositional Logic, First-order Logic, inference in First order Logic, Forward and Backward chaining.

UNIT-3

Introduction to Data Science: what is Data Science? Scope, Big Data and Data Analytics vs Data Science, Data science life cycle, Applications of Data science, Roles: Data Scientist, Data Analyst, Data Engineer.

UNIT-4

Data Collection and Preprocessing: Types of Data: Structured, Semi-structured, Unstructured, Data Collection Techniques, Data Cleaning (Missing Data, Duplicates, Outliers), Data Transformation and Normalization. Feature Engineering.

Text Books:

1. An Introduction to Artificial Intelligence & Data Science by Mr. Ajay Sudhir Ladkat
2. Stuart Russel, Peter Norving, "Artificial Intelligence: A modern Approach", 2nd Edition, Pearson Education, 2007.

M.S. N. Geethanjali, Prof. S. V. Uma Sandhya, Dr. Divya, Prof. P. S. Prashanthan



M.S. $\hookrightarrow$ N. Gethampala $\hookrightarrow$ S. ~~nam~~ P. Q. W. V. Uma Sankhya. ~~Thiruv~~ $\hookrightarrow$ E. parashottam



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S. University, Nellore)



Software Overview, Viruses, Worms, and Bots, Rootkits.

UNIT - 4

Kernel Organization: Using Kernel Services, Daemons, Starting the Kernel, Control in the Machine, Modules and Device Management, MODULE Organization, MODULE Installation and Removal, Process and Resource Management, Running Process Manager, Creating a new Task, IPC and Synchronization, The Scheduler, Memory Manager, The Virtual Address Space, The Page Fault Handler, File Management. The windows NT/2000/XP kernel: Introduction, The NT kernel, Objects, Threads, Multiplication Synchronization, Traps, Interrupts and Exceptions.

Text Books:

1. William Stallings: Operating Systems: Internals and Design Principles, 6th Edition. Prentice Hall.
2. Gary Nutt: Operating Systems, 3rd Edition, Pearson, 2014.

Reference books:

1. Silberschatz, Galvin, Gagne: Operating System Concepts, 8th Edition, Wiley, 2008
2. Andrew S. Tanenbaum, Albert S. Woodhull: Operating Systems, Design and Implementation, 3rd Edition, Prentice Hall, 2006.
3. Pradeep K Sinha: Distribute Operating Systems, Concept and Design, PHI, 2007

Course Outcomes : After completion of the course student able to

	Course Outcome Description	Knowledge Level
CO1	Demonstrate the Mutual exclusion, Deadlock detection of operating system.	K1
CO2	Learn the various resource management techniques for operating systems.	K2
CO3	Identify the different features of real time and mobile operating system.	K4
CO4	Modify existing open source kernels in terms of functionality or features used.	K6

K1- Remembering, K2- Understanding, K3- Applying, K4- Analyzing, K5- Evaluating, K6- Creating

COURSE AND PROGRAMME OUTCOMES MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	-	-	-	-	-	1	-	3
CO2	3	-	-	-	-	-	-	-	-	-	-	2	3
CO3	-	3	2	-	-	-	-	-	-	-	-	1	-
CO4	-	3	-	-	-	2	-	-	-	-	2	-	-

1-Low, 2-Medium, 3-High

M.S. N. Geethanjali, Prof. S. V. Uma Sandhya, Dr. Divya, Prof. E. Parashottam

M.S. $\rightarrow$ N. Geethanjali. Prof S. ~~Vasanth~~ P. Anand V. Uma Sundara
Dindane G. E. parashottam

M.S. ✓ N. Gethampala ✓ P. ✓ V. Uma Sankar
D. ✓ E. parashottam

Reference Books

M.S. ✓ N. Gethampala ✓ P. ✓ V. Uma Sankar ✓
D. ✓ E. parashottam



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S.University, Nellore)



MSCS 103 B: MATHEMATICAL AND STATISTICAL FOUNDATION

Programme	MSC(CS With AI)	Semester	First		
Course Code	103	Course Name	MATHEMATICAL AND STATISTICAL FOUNDATION		
Course category	CORE COURSE(CC)-3 B (Elective)	Hour/Week	L	T	P
			4	0	0
		Credits	4		

Course Objectives:

1. Understand the mathematical fundamental courses like Data mining, Network protocols, security, Software engineering, Computer that is prerequisites for variety of analysis of Web traffic, Computer security, Software engineering, distributed systems bioinformatics, Computer architecture, operating systems, Machine learning.
2. Develop the understanding of the mathematical and logical basis to many modern techniques in computer science technology like machine learning, programming language design, and concurrency.
3. Study various sampling and classification problems.

Course Outcomes:

- Make use of mathematical logic to solve problems
- Analyze the concepts and perform the operations related to sets,
- Identify basic counting techniques to solve combinatorial problems.
- Evaluate solutions by using recurrence relations.

UNIT -1:

Basic Probability and Random Variables: Random Experiments, Sample Spaces Events, the concept of Probability the Axioms of probability, Some important Theorems on probability assignment of Probabilities, Conditional Probability Theorems on conditional Probability, Independent Events, Bayes Theorem or Rule.

UNIT -2:

Tests of Hypothesis and Significance: Statistical Decisions Statistical Hypotheses, Null Hypotheses Tests of Hypotheses and Significance Type I and Type II Error Level of Significance Tests involving the Normal Distribution One- Tailed and Two-Tailed Tests, The Chi- Square Test for Goodness of Fit.

UNIT -3:

Algebraic Structures and Number Theory: Algebraic Systems, Examples, General Properties, Semi Group and Monoids, Homomorphism of semi groups and Monoids, Group, Subgroup, Abelian Group,

M.S. N. Geethanjali, Prof. S. P. V. Uma Sandhya, Dr. Divya, Prof. E. parashottam

M.S. $\rightarrow$ N. Geethanjali. $\rightarrow$ ~~Prof~~ S. ~~nam~~ P. $\rightarrow$ Q. $\rightarrow$ R. $\rightarrow$ V. Uma Sankar. $\rightarrow$ S. $\rightarrow$ E. parashottam



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S. University, Nellore)



MSCS 105 A: OBJECT ORIENTED PROGRAMMING WITH JAVA

Programme	MSC(CS With AI)	Semester	First		
Course Code	104	Course Name	OBJECT ORIENTED PROGRAMMING WITH JAVA		
Course category	SKILL ORIENTED COURSE(SOC)-1 B (Elective)	Hour/Week	L	T	P
			4	0	0
		Credits	4		

Course Objective:

To understand evolution of Java, Java Working Principles and to solve java problems using Object Oriented Programming concepts.

UNIT – I

Introduction to Java – Features, JVM, Parts of Java, First step towards Java Programming.

Fundamentals of OOP : Introduction, Object Oriented paradigm, Basic Concepts of OOP and Data Types, Literals, Operators in Java, Control Statements, Input and Output

UNIT – II

Arrays – Types of Arrays, Three Dimensional Arrays, arrayname.length, Command Line Arguments, Strings, StringBuffer and StringBuilder–Creating StringBuffer Objects, StringBuffer Class Methods, StringBuilder Class, StringBuilder Class Methods, Introduction to OOPs - Problems in Procedure Oriented Approach, features of OOP system

UNIT – III

Classes and Objects – Object Creation, Initializing the Instance Variables, Access Specifiers, Constructors, Methods in Java, Relationship between Objects, Inheritance, Polymorphism, Type Casting, Abstract Classes, Interfaces

UNIT – IV

Packages, Exception Handling, Wrapper Classes, Streams and Files, Threads, applets, Graphics Programming using AWT

TEXT BOOK

1. Core JAVA An Integrated Approach by Dr. R. Nageswara Rao, Dreamtech Publication, 2014 Edition.

Reference Books:

1. Herbert Schildt, “Java: The Complete Reference”, 12th Edition, Tata McGraw-Hill, 2022.
 2. Java Core Concepts And Applications by Trilochan Tarai, Wiley India, 2019.
- Cay S. Horstmann, Gary Cornell, “Core Java”, Volume I-Fundamentals, 9th Edition, Pearson

M.S. N. Geethanjali, Prof. S. Ramesh, Dr. V. UmaSundhara, Dr. Divya, Prof. E. parashottam

M.S. ✓ N. Gethampala ✓ P. ✓ V. Uma Sankar ✓
D. ✓ E. parashottam

M.S. $\rightarrow$ N. Geethanjali. Exp 5. ~~now~~ P. Q. W. ~~Di~~ V. Uma Sankar. ~~any~~ E. parashottam

M.S. ✓ N. Gethampala ✓ P. ✓ V. Uma Sankar ✓
D. ✓ E. parashottam



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S. University, Nellore)



MSCS 106 A: PYTHON PROGRAMMING

Programme	MSC(CS With AI)	Semester	First		
Course Code	105	Course Name	PYTHON PROGRAMMING		
Course category	SKILL ORIENTED COURSE(SOC)-2 B (Elective)	Hour/Week	L	T	P
			4	0	0
		Credits	4		

Course Objectives:

1. Introduce the foundational concepts of Python programming including its syntax, IDEs, and control structures.
2. Develop proficiency in modular programming using functions, lambda expressions, recursion, and Python's built-in modules and packages.
3. Explore core data structures like strings, lists, tuples, and dictionaries for effective data manipulation.
4. Teach exception handling mechanisms and the use of regular expressions for pattern matching and text processing.
5. Enable students to interact with files and databases using Python to build real-world applications involving persistent storage and data retrieval.

UNIT – I

Introduction to Python: introduction to python, Features of Python Language, installing Python, Python virtual machine(PVM) Environment Setup, python syntax, running a python script

Data Types: Numeric data types: int, float, complex, string data type, python variables, Expressions, comment statements.

Operators-Arithmetic operators, Assignment operators, Comparison operators, Logical operators, Identity operators, Membership operators, Bitwise operators

Standard I/O Operations, python casting

UNIT-II

Control statements- Conditional branching: if, if-else, nested if, if-elif-else statements, Iterative statements: while loop, for loop, nested loops, pass statement, continue statement, break statement, and else statement used with loops, Programming using Python conditional

M.S. N. Geethanjali, S. P. V. Uma Sandhya, P. Divya, G. P. Prashanth



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S.University, Nellore)



and loops block

Strings and Regular expressions: Introduction to strings, String operations, Built-in string methods and functions, comparing strings, Functions in regular expression.

Functions: Introduction, function definition, creating a function, Function Calling, declaration and defining functions, variable scope and lifetime, built-in functions

UNIT – III

Sequences: Lists : Creating lists, accessing values in lists, list operations, **Tuples :** Creating Tuples, accessing values in Tuples, Tuple operations, **Sets :** Creating a set, accessing values in Set, Set operations, and **Dictionaries:** Creating a dictionary, Accessing values in Dictionary, Dictionary operations

Object Oriented Programming: Classes and Objects, Class method and self argument, The __Init Method, Class Variables and Object Variables, The__Del__Method, Public and Private Data Members Private Methods

UNIT - IV

Inheritance and polymorphism: Inheriting Classes in Python, Polymorphism and Method Overriding, Types of Inheritance

Exception Handling: Introduction, Handling exceptions, multiple except blocks and multiple exceptions, finally block.

Text Books:

1. "Reema Thareja", Python Programming using problem solving approach, First Edition, Oxford higher Education.

Reference Books:

1. Bhasin, Harsh, Textbook of Computer Science with Python XI, New Age International (P) Ltd., Publishers
2. Kenneth A. Lambert, Fundamentals of Python
3. James Payne, Beginning Python using Python 2.6 and Python 3
4. Charles Dierach, Introduction to Computer Science using Python

M.S. *N. Geethanjali* *Prof S. ...* *V. UmaSundhara* *Dr. ...* *Dr. ...* *Dr. ...*

M.S. ✓ N. Gethampala ✓ P. ✓ V. Uma Sankar ✓
D. ✓ E. parashottam

M.S. ✓ N. Gethampala ✓ S. ✓ name ✓ P. ✓ Qw ✓ V. Uma Sankhya ✓
Diksha ✓ E. parvatham

M.S. ✓ N. Gethampala ✓ P. ✓ V. Uma Sankar ✓
D. ✓ E. parashottam



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S.University, Nellore)



Programme	M.Sc. Computer Science With AI	Semester	First	
Course Code	CC-102A P	Course Name	Operating Systems Lab	
Course Category	Practical	Hours/Week	L	P
			0	4
		Credits	2	

List of Programmes

- Write a C Program to Simulate the following CPU Scheduling algorithms
 - Round Robin
 - SJF
 - FCFS
 - Priority
- Write a C Program to Simulate all file allocation strategies.
 - Sequential
 - Indexed
 - Linked
- Write a C Program to simulate MVT and MFT
- Write a C Program to simulate all File organization techniques.
 - Single level directory
 - Two level
 - Hierarchical
 - DAG
- Write a C Program to simulate Bankers Algorithm for Dead Lock Avoidance.
- Write a C Program to simulate Bankers Algorithm for Dead Lock Prevention
- Write a C Program to simulate Bankers Algorithm Dead Lock Prevention.
- Write a C program to simulate all Page replacement algorithms.
 - FIFO
 - LRU
 - LFU
- Write a C program to Simulate Paging Techniques of memory management.
- Write a C program to simulate the following contiguous memory allocation Techniques
 - Worst fit
 - Best fit
 - First fit

Course Outcomes : After completion of the course student able to write programs

	Course Outcome Description	Knowledge Level
CO1	Understand the syntaxes for queries, procedures and functions	K2
CO2	Apply queries, procedures and functions for a need	K3
CO3	Analyze effectiveness of different normal forms implementation	K4
CO4	Design a commercial relational database system	K6

K1- Remembering, K2- Understanding, K3- Applying, K4- Analyzing, K5- Evaluating, K6- Creating

M.S. *N. Geethanjali* *Prof. S. ...* *V. Uma Sankar* *Dr. ...* *Dr. ...* *Dr. ...* *Dr. ...*

M.S. $\hookrightarrow$ N. Gethampala $\hookrightarrow$ S. ~~nam~~ P. Q. W. V. Uma Sankhya. ~~Thiruv~~ $\hookrightarrow$ E. parashottam



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S. University, Nellore)



Programme	M.Sc. Computer Science With AI	Semester	First	
Course Code	CC-103A P	Course Name	Computer networks Lab	
Course Category	Practical	Hours/Week	L	P
			0	4
		Credits	2	

List of Programmes

1. Study of network devices (Router, Switch, Hub, etc.) in detail and connect the computers in Local Area Network.
2. Write a program to implement the data link layer framing methods such as
 - a) character stuffing
 - b) bit stuffing
3. Write a program to implement data link layer framing method checksum.
4. Write a program for Hamming Code generation for error detection and correction.
5. Write a program for congestion control using leaky bucket algorithm.
6. Write a UDP client-server program to send a message from client to server and display the received message at the server side.
7. Write a program to implement Dijkstra's algorithm to compute shortest path through a graph.
8. Write the steps to Packet capture and analysis using Wireshark
9. DHCP server configuration
10. DNS server configuration

Course Outcomes : After completion of the course student able to write programs

	Course Outcome Description	Knowledge Level
CO1	Understand the client and server configuration	K2
CO2	Understanding socket programming	K3
CO3	How to get the IP configuration and ping	K4
CO4	Configuring the network	K6

K1- Remembering, K2- Understanding, K3- Applying, K4- Analyzing, K5- Evaluating, K6- Creating

M.S. *N. Geethanjali* *Prof S. ...* *V. Uma Sankar* *...* *...* *...*



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S.University, Nellore)



COURSE AND PROGRAMME OUTCOMES MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1	3	2	-	-	-	-	-	-	-	-	3	3	3
CO2	3	-	-	-	2	-	-	-	-	-	3	3	3
CO3	3	-	2	-	-	-	-	-	-	-	3	2	3
CO4	3	-	-	2	-	-	-	-	-	-	3	3	3
1-Low, 2-Medium, 3-High													

M.S. *N. Geethanjali* *Prof. S. ...* *Dr. V. Uma Sankar* *Dr. ...* *Dr. ...* *Dr. ...*



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S.University, Nellore)



Programme	M.Sc. Computer Science With AI	Semester	First	
Course Code	S0C-105A P	Course Name	Java Programming Lab	
Course Category	Practical (Elective Foundation)	Hours/Week	L	P
			0	4
		Credits	2	

List of Programmes

1. Write a Java Program which performs sorting of group of integer values using bubble sort technique.
2. Write a Java Program which accepts elements of a matrix and displaying its transpose.
3. Write a Java Program in which we take a 3D array which consists of department wise student marks. There are 3 departments and in each department, there are 2 students and each student has marks in 3 subjects. We want to calculate total marks of each student.
4. Write a Java Program for testing a string whether it is a palindrome or not.
5. Write a Java Program to illustrate constructors.
6. Write a Java Program to illustrate overloading & overriding methods in Java.
7. Write a Java Program to illustrate the implementation of multiple inheritance using interfaces in Java.
8. Write a Java Program which tells the use of try, catch and finally block.
9. Write a Java Program where the Consumer thread checks whether the data production is over or not every 10 milliseconds.
10. Write Java Program to creates an applet with some background color and foreground color with a message. The message string is stored in message and is displayed in paint()method.

Course Outcomes : After completion of the course student able to write programs

	Course Outcome Description	Knowledge Level
CO1	Able to analyze Object oriented design principles and proper program structuring using Java	K4
CO2	Understand the concept of packages, polymorphism, interface, and inheritance.	K2
CO3	Implement error handling techniques using exception handling and develop programs using class and inputs from keyboard.	K3,K6
CO4	Develop Multithreaded and event driven using AWT and Swing components.	K6

K1- Remembering, K2- Understanding, K3- Applying, K4- Analyzing, K5- Evaluating, K6- Creating

M.S. *N. Geethanjali* *S. ...* *V. Uma Sankhya* *...* *...*



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S.University, Nellore)



COURSE AND PROGRAMME OUTCOMES MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO
O1	3	3	3	-	-	-	2	-	-	-	3	3	3
O2	3	3	3	-	-	-	2	-	-	-	3	3	3
O3	3	2	3	-	-	-	2	-	-	-	3	3	3
O4	3	2	3	-	-	-	2	-	-	-	3	3	3

Low, 2-Medium, 3-High

M.S.  N. Geethanjali  S.  P.  Q.  V. Uma Sankhya  G.  P.  S. 



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S.University, Nellore)



Programme	M.Sc. Computer Science With AI	Semester	First	
Course Code	SOC-105B P	Course Name	CYBER SECURITY LAB	
Course Category	Practical (Elective Foundation)	Hours/Week	L	P
			0	4
		Credits	2	

List of Programmes

1. Introduction to Kali Linux and Cybersecurity Tools.
2. Information Gathering using Nmap and WHOIS
3. Network Traffic Analysis using Wireshark
4. Footprinting and Scanning
5. Password Cracking using John the Ripper
6. Web Application Testing using DVWA or OWASP Juice Shop
7. Cross Site Scripting (XSS) Attack Simulation
8. Vulnerability Scanning using Nessus or OpenVAS
9. Man-in-the-Middle (MITM) Attack using Ettercap
10. Creating and Detecting a Reverse Shell using Netcat

Course Outcomes : After completion of the course student able to write programs

	Course Outcome Description	Knowledge Level
CO1	Able to analyse security tools	K4
CO2	Understand the concept of network traffic and analysis	K2
CO3	Develop Web Application Testing using DNS spoofing and session hijacking	K3,K6
CO4	Creating and Detecting a Reverse Shell using Netcat	K6

K1- Remembering, K2- Understanding, K3- Applying, K4- Analyzing, K5- Evaluating, K6- Creating

M.S. *N. Geethanjali* *Prof S.* *Prof P.* *Prof V. Uma Sandhya* *Prof G. Parvathamma*



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S. University, Nellore)



Programme	M.Sc. Computer Science With AI	Semester	First	
Course Code	SOC-106A P	Course Name	Python Programming Lab	
Course Category	Practical (Elective Foundation)	Hours/Week	L	P
			0	4
		Credits	2	

List of Programmes

1. Write a program to perform various string operations
2. Write a program to implement user defined functions
3. Write a program to perform various operations on Lists and Directories.
4. Write a program to implement the following array operations
 - a. Creating Array
 - b. Inserting elements
 - c. Searching for an element
 - d. Deleting an elements
 - e. Updating an element
5. Write a program to create **Person** and **Student** classes for reading, displaying details by implement inheritance between the classes
6. Write a program in python to Find simple interest
7. Write a program in python to Find compound interest
8. Write a program in python to Check Armstrong Number
9. Write a program in python to Check whether a number is Prime or not
10. Write a program in python for Sum of squares of first n natural numbers

Course Outcomes : After completion of the course student able to write programs

	Course Outcome Description	Knowledge Level
CO1	Able to understand control structures and use python data types	K2
CO2	Impart knowledge on object oriented skills in python.	K1
CO3	Implement error handling techniques using exception handling	K3
CO4	Explore the utility of strings and functions in modular programming using python	K4

K1- Remembering, K2- Understanding, K3- Applying, K4- Analyzing, K5- Evaluating, K6- Creating

M.S. *N. Geethanjali* *Prof S. ...* *Dr. V. Uma Sankar* *Dr. ...* *Dr. ...*

M.S. ✓ N. Gethampala ✓ P. ✓ V. Uma Sankar ✓
D. ✓ E. parashottam



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S.University, Nellore)



Programme	M.Sc. Computer Science With AI	Semester	First	
Course Code	SOC-106B P	Course Name	Database Management Lab	
Course Category	Practical (Elective Foundation)	Hours/Week	L	P
			0	4
		Credits	2	

List of Programmes

1. Create a table with constraints in SQL
2. Create a view in SQL
3. Combine multiple tables using Joins in SQL
4. Program for Finding Armstrong number using PL/SQL
5. Program for String palindrome using PL/SQL
6. Program for Generating Fibonacci using PL/SQL
7. Program for finding factorial of a number by using procedure using PL/SQL
8. Program for Book program using parameterized cursor using PL/SQL
9. Program for Exception handling program using PL/SQL
10. Program for Database trigger for avoiding manipulations on Sunday using PL/SQL

Course Outcomes : After completion of the course student able to write programs

	Course Outcome Description	Knowledge Level
CO1	Able to understand Command and queries	K2
CO2	Impart knowledge on SQL	K1
CO3	Implement functions and procedures in PL/SQL	K3
CO4	Explore the utility of cursors and triggers	K4

K1- Remembering, K2- Understanding, K3- Applying, K4- Analyzing, K5- Evaluating, K6- Creating

M.S. *N. Geethanjali* *Prof S. ...* *Dr. V. Uma Sankar* *Dr. ...* *Dr. ...* *Dr. ...*

M.S. ✓ N. Gethampala ✓ P. ✓ V. Uma Sankar
D. ✓ E. parashottam



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S. University, Nellore)



SEMESTER-2

MSCS 201: ARTIFICIAL INTELLIGENCE

Programme	MSC(CS With AI)	Semester	Secound		
Course Code	201	Course Name	ARTIFICIAL INTELLIGENCE		
Course category	CORE COURSE(CC)-4	Hour/Week	L	T	P
			4	0	0
		Credits	4		

Course Objectives

The objectives of this course are to:

1. Introduce the fundamental concepts, scope, and applications of Artificial Intelligence.
2. Provide knowledge of intelligent agents and basic knowledge representation techniques.
3. Develop understanding of reasoning methods, expert systems, and fuzzy logic concepts.
4. Familiarize students with basic Machine Learning approaches and learning models.
5. Explain neural network fundamentals and modern AI application areas such as NLP.

UNIT – I

Introduction to Artificial Intelligence & Knowledge Representation Basics

Definition and scope of Artificial Intelligence, **Intelligent agents**: concept, types, and environments. Introduction to knowledge representation, Types of knowledge, Propositional logic, Predicate (logic basics), Inference rules.

UNIT – II

Reasoning and Expert Systems & fuzzy logic

Reasoning in AI, Forward chaining, backward chaining, **Expert systems**: Structure, Working, Applications. **Fuzzy logic concepts**: Crisp sets vs fuzzy sets, Membership functions, Fuzzy rules.

UNIT – III

Machine Learning Fundamentals

Introduction to Machine Learning: Definition, Applications of Machine learning in real life, Learning vs programming, **Types of learning**: Supervised learning, Unsupervised learning, Reinforcement learning. Simple learning models.

UNIT – IV

Neural Networks and AI Applications

Neural networks: basic concepts, artificial neuron model, Introduction to Deep Learning, Natural Language Processing (overview), Real-world applications of AI.

TEXT BOOKS

1. **Stuart Russell and Peter Norvig**, *Artificial Intelligence: A Modern Approach*, Pearson Education.
2. **Elaine Rich, Kevin Knight, and Shivashankar B. Nair**, *Artificial Intelligence*, Tata McGraw-Hill.

REFERENCE BOOKS

1. **George J. Klir and Bo Yuan**, *Fuzzy Sets and Fuzzy Logic: Theory and Applications*, Prentice Hall.
2. **Ethem Alpaydin**, *Introduction to Machine Learning*, MIT Press.

M.S. N. Geethanjali, Prof. S. P. V. UmaSundhara, Dr. Divya, Prof. P. S. Prashantham

M.S. ^W N. Gethampala ³⁰⁰ S. ¹⁰⁰ P. ¹⁰⁰ Q. ¹⁰⁰ R. ¹⁰⁰ S. ¹⁰⁰ T. ¹⁰⁰ U. ¹⁰⁰ V. ¹⁰⁰ W. ¹⁰⁰ X. ¹⁰⁰ Y. ¹⁰⁰ Z. ¹⁰⁰

M.S. ✓ N. Gethampala ✓ P. ✓ V. Uma Sankar ✓
D. ✓ E. parashottam

M.S. $\rightarrow$ N. Gethampala $\rightarrow$ S. ~~nam~~ P. Q. W. V. Uma Sankhya. ~~Thiruv~~ $\rightarrow$ E. parashottam

M.S. ✓ N. Gethampala ✓ P. ✓ V. Uma Sankar ✓
D. ✓ E. parashottam



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S. University, Nellore)



MSCS 203 A: DATA MINING AND DATA WAREHOUSING

Programme	MSC(CS With AI)	Semester	Secound		
Course Code	203	Course Name	DATA MINING AND DATA WAREHOUSING		
Course category	CORE COURSE(CC)-6 A (Elective)	Hour/Week	L	T	P
			4	0	0
		Credits	4		

Course Objectives:

- To conceptualize data mining and the need for pre-processing and to analyze the mining techniques for realistic data.
- To characterize the kinds of patterns that can be discovered by association rule mining.
- To implement classification and clustering techniques on large datasets.
- To identify business applications and trends of data mining.
- To get exposed to the concepts of data warehousing architecture and implementation.

Unit-1

Introduction to data mining and Data Preprocessing: Fundamentals of data mining, Data Mining Functionalities, Classification of Data Mining systems, Data Mining Task Primitives, Major issues in Data Mining.

Data Preprocessing: Need for Preprocessing the Data, Data Cleaning, Data Integration and Transformation, Data Reduction.

Association Rule Mining: Introduction, Frequent Item Set Generation, Association Rule Mining, Association Rule Generation; APRIORI Algorithm, the Partition Algorithms, FP-Growth Algorithm, Closed Frequent Item Set.

Unit-2

Data Warehousing: Definition of data warehouse, Operational Database Systems versus Data Warehouses, A Multidimensional Data Model, Data warehouse architecture, ETL Process, Difference between OLAP and OLTP.

OLAP models: ROLAP and MOLAP, OLAP operations, OLAP queries & Tools.

Schemas for Multidimensional Databases: Define Schemas - Star, snowflake and fact constellations, indexing.

Unit-3

Classification and Prediction

Classification versus Prediction, Classification by Decision Tree, Measures for Selecting the Best Split, Bayesian Classification, Rule Based Classification, Classification by Back Propagation, Support Vector Machines, KNN, Prediction, Accuracy and Error Measures, Evaluating the Accuracy of a Classifier or Predictor, Ensemble Methods.

Unit-4

Clustering: Cluster Analysis, Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods: Partitioning Methods, Hierarchical Methods, Density Based Methods, Grid Based Methods, Outlier Analysis.

TEXT BOOKS:

1. DATA WAREHOUSING & DATA MINING- Dr. B. Shadaksharappa, Mr. P. Ramkumar, Dr. T.N. Prabakar, 2022

2. Data Mining-Concepts and Techniques - Jiawei Han & Michel Kamber. Morten Publisher 2nd

M.S. *N. Geethanjali* *Prof S. ...* *Dr. V. Uma Sundhara* *Dr. ...* *Dr. ...* *Dr. ...* *Dr. ...*



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S.University, Nellore)



MSCS 203 B: FULL STACK DEVELOPMENT

Programme	MSC(CS With AI)	Semester	Secound		
Course Code	203	Course Name	FULL STACK DEVELOPMENT		
Course category	CORE COURSE(CC)- 6 B (Elective)	Hour/Week	L	T	P
			4	0	0
		Credits	4		

Course Objectives:

1. To become knowledgeable about the most recent web development technologies.
2. Idea for creating two tier and three tier architectural web applications.
3. Design and Analyze real time web applications.
4. Constructing suitable client and server side applications.
5. To learn core concept of both front end and back end programming.

UNIT -1:

Introduction & Frontend Basics

Meaning of Full Stack Development, Web application architecture, Client–Server model, Basics of Internet and HTTP **HTML:** Page structure, forms, tables, **CSS:** Styling, layouts, responsive design

Introduction to JavaScript: Variables, functions, events.

UNIT -2:

Frontend Development

Advanced JavaScript basics, DOM manipulation, Introduction to React.js, Components, Props and State, Single Page Applications (SPA), Form handling and validation

UNIT -3:

Backend Development

Introduction to Backend and Server, Node.js basics, Express.js framework, Routing and middleware, Restful APIs, Handling GET and POST requests, Basic authentication concepts

UNIT-4:

Database, Integration & Deployment

Database fundamentals ,SQL concepts using MySQL ,CRUD operations ,Introduction to MongoDB, Connecting backend with database ,Connecting frontend with backend ,Git and GitHub basics, Introduction to deployment and hosting.

TEXT BOOKS:

1. Web Design with HTML, CSS, JavaScript and JQuery Set Book by Jon Duckett
- ProfessionalJavaScript for Web Developers Book by Nicholas C. Zakas

Reference Books:

1. Learning PHP, MySQL, JavaScript, CSS & HTML5: A Step-byStep Guide to CreatingDynamic Websites by Robin Nixon
2. Full Stack JavaScript: Learn Backbone.js, Node.js and MongoDB.

Copyright © 2015 BYAZAT MARDAN

M.S. N. Geethanjali, Prof. S. V. UmaSundhara, Dr. Divya, Prof. P. S. Prashantham

M.S. ✓ N. Gethampala ✓ P. ✓ V. Uma Sankar ✓
D. ✓ E. parashottam



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S.University, Nellore)



MSCS 205 A: PRINCIPLES OF DATA SCIENCE

Programme	MSC(CS With AI)	Semester	Secound		
Course Code	205	Course Name	PRINCIPLES OF DATA SCIENCE		
Course category	SKILL ORIENTED COURSE(SOC)-3 A (Elective)	Hour/Week	L	T	P
			4	0	0
		Credits	4		

Course Objective:

- Students will develop relevant **programming** abilities.
- Students will demonstrate proficiency with statistical **analysis of data**.
- Students will develop the ability to build and assess data-based **models**.
- Students will execute statistical analyses with professional statistical **software**.
- Students will demonstrate skill in **data management**.
- Students will apply data science concepts and methods to **solve** problems in real-world contexts and will **communicate** these solutions effectively

UNIT-I

Introduction to Data Science: Definition, benefits and uses of data science and big data.

Facets of Data: Structured data, unstructured data, natural language, machine generated data, network data, audio, images and video streaming data.

Data science process: overview of data science process, defining the goal, Retrieving data, data preparation, data exploration, build the models, cleaning and transforming data, presentation and automation.

UNIT-II

DATA: Definition, characteristics of data, classification of digital data.

The Data Science Fundamentals: Distributed file system, data integration frame work, machine learning framework, system deployment, security.

Data mining and Data Preprocessing: Introduction data mining, Data Mining Functionalities, Classification of Data Mining systems, Need for Preprocessing the Data, Data Cleaning

UNIT-III

BIG DATA: Definition, Evolution of big data and its importance, four V's in big data, Big data analytics, Big data applications, big data designing data architecture, Big data Vs Little data.

Machine Learning: Definition, Applications of machine learning in data science, Types of Machine Learning (Degree) - supervised learning, semi supervised learning, un-supervised learning

UNIT-IV

Data Visualization: Definition, importance of data visualization in data science, Exploratory Data analysis -confronting new data set, visualization tools, proper scaling and labeling, effective use of color and shading, the power of repetition.

Chart Types: Tabular data, dot and line plots, scatter plots, bar plots and pie charts.

Text Books:

1. Introducing Data Science by Davy Cielen , Arno D.B.Meysman and Mohamed Ali, Published by Manning
2. Steven S.Skiena, The Data Science Design Manual, Published by Springer.Nature.

M.S. N. Geethanjali, Prof. S. V. UmaSundhara, Dr. Divya, Prof. E. parashottam



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S.University, Nellore)



Reference Books:

1. Cathy O'Neil and Rachel Schutt. Doing Data Science, Straight Talk from The Frontline.O'Reilly.
2. Jure Leskovek, AnandRajaraman and Jeffrey D.Ullman. Mining of Massive Datasets.v2.1, Cambridge University Press.

Course Outcomes : After completion of the course student able to

	Course Outcome Description	Knowledge Level
CO1	Explain various data types, and data formats , and identify and appropriately acknowledge sources of various types of data	K1
CO2	Gain an ability to apply mathematical and statistical methods in data science applications	K2
CO3	Demonstrate proficiency in using appropriate tools and technology to collect, process, transform, summarize, and visualize data.	K4
CO4	Apply various machine learning algorithms in data-based decision-making applications , and draw accurate and useful conclusions through data analysis	K6

K1- Remembering, K2- Understanding, K3- Applying, K4- Analyzing, K5- Evaluating, K6- Creating

COURSE AND PROGRAMME OUTCOMES MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1	3	-	3	-	-	-	-	-	-	-	-	-	-
CO2	2	-	2	-	-	-	-	-	-	-	2	-	2
CO3	-	2	2	-	-	-	-	-	-	-	2	-	2
CO4	-	3	2	-	-	-	-	-	-	-	2	-	-

1-Low, 2-Medium, 3-High

M.S. N. Geethanjali, Prof. S. V. Uma Sankar, Dr. Divya, Dr. P. S. Prashanthan



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S. University, Nellore)



MSCS 205 B: INTERNET OF THINGS

Programme	MSC(CS With AI)	Semester	Secound		
Course Code	205	Course Name	INTERNET OF THINGS		
Course category	SKILL ORIENTED COURSE(SOC)-3 B (Elective)	Hour/Week	L	T	P
			4	0	0
		Credits	4		

Course objectives:

1. Understand the Fundamentals of IoT and Its Applications
2. Gain Proficiency in Sensors, Actuators, and IoT Development Tools
3. Master IoT Communication Protocols and Networkin.
4. Design and Implement IoT Solutions

UNIT I

Fundamentals of IoT: Introduction, Definitions & Characteristics of IoT, IoT Architectures, Physical & Logical Design of IoT, Enabling Technologies in IoT, History of IoT, About Things in IoT.

Domain Specific IoT: Home Automation, Smart Cities, Energy, Retail Management, Logistics, Agriculture, Health and Lifestyle, Industrial IoT, Legal challenges, IoT design Ethics, IoT in Environmental Protection.

UNIT II

Sensors Networks : Definition, Types of Sensors, Types of Actuators, Examples and Working, IoT Development Boards: Arduino IDE and Board Types, RaspberriPi Development Kit, RFID Principles and components.

UNIT III

Wireless Technologies for IoT: WPAN Technologies for IoT: IEEE 802.15.4, Zigbee, HART, NFC, Z-Wave, BLE, Bacnet, Modbus. IP Based Protocols for IoT IPv6, 6LowPAN, LoRA

UNIT IV

Arduino Simulation Environment: Arduino Uno Architecture, Setting up the IDE, Writing Arduino Software, Arduino Libraries, Basics of Embedded C programming for Arduino, Interfacing LED.

Sensor & Actuators with Arduino: Overview of Sensors working, Analog and Digital Sensors, Interfacing of Temperature, Humidity, Motion.

Text book:

1. Internet of Things - A Hands-on Approach, ArshdeepBahga and Vijay Madiseti, Universities Press, 2015, ISBN: 9788173719547
2. Daniel Minoli, — "Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications", ISBN: 978-1-118-47347-4, Willy Publications

REFERENCE BOOK:

1. Pethuru Raj and Anupama C. Raman, "The Internet of Things: Enabling Technologies, Platforms, and Use Cases", CRC Press

M.S. N. Geethanjali, Prof. S. V. UmaSundhara, Dr. Divya, Prof. P. S. Parashottam

M.S. ✓ N. Gethampala ✓ P. ✓ V. Uma Sankar ✓
D. ✓ E. parashottam



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S. University, Nellore)



MSCS 206 A: SOFTWARE ENGINEERING

Programme	MSC(CS With AI)	Semester	Secound		
Course Code	206	Course Name	SOFTWARE ENGINEERING		
Course category	SKILL ORIENTED COURSE(SOC)-4 A (Elective)	Hour/Week	L	T	P
			4	0	0
		Credits	4		

COURSE OBJECTIVES:

- Discuss and Analyses how to develop software requirements specifications for a given problem.
- To understand Software development as a process
- To implement various software designs, data flow diagram models.
- various testing techniques including white box testing black box testing regression testing
- To have hands on experience in developing a software project by using various software engineering principles and methods in each of the phases of software development.

UNIT -1

SOFTWARE AND SOFTWARE Engineering: The evolving role of software, changing nature of software, software application domain, unique nature of web application,

SOFTWARE Process: product and process, software engineering practice, software myths.

PROCESS MODELS: Generic process model, Prescriptive process model, specialized process model, Unified process model, Personal and team process models, product and process, Reverse Engineering.

UNIT-2

SOFTWARE REQUIREMENTS: Functional and non-functional requirements, user requirements, system requirements, interface specification, the software requirements document.

REQUIREMENTS ENGINEERING PROCESS: Feasibility studies, requirements elicitation and analysis, requirements validation, requirements management.

SYSTEM MODELS: Context models, behavioral models, data models, object models, structured methods.

UNIT -3

DESIGN ENGINEERING: Design process and design quality, design concepts, the design model.

CREATING AN ARCHITECTURAL DESIGN: Software architecture, data design, architectural styles and patterns, architectural design, conceptual model of UML, basic structural modelling, class diagrams, sequence diagrams, collaboration diagrams, use case diagrams, component diagrams.

UNIT – 4

PRODUCT METRICS: Software quality, metrics for analysis model, metrics for design model, metrics for source code, metrics for testing, metrics for maintenance.

M.S. N. Geethanjali, Prof. S. P. V. UmaSundhara, Dr. Divya, Prof. E. parashottam

M.S. ✓ N. Geethanjali ✓ P. Anand ✓ V. Uma Sankar ✓
S. Narayan P. Divya E. parashottam



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S.University, Nellore)



MSCS 206 B: DEEP LEARNING

Programme	MSC(CS With AI)	Semester	Secound		
Course Code	206	Course Name	DEEP LEARNING		
Course category	SKILL ORIENTED COURSE(SOC)-4 B (Elective)	Hour/Week	L	T	P
			4	0	0
		Credits	4		

Course Objectives

1. Introduce students to the fundamentals and scope of Deep Learning.
2. Explain neural network concepts, activation functions, and training methods.
3. Teach advanced deep learning architectures like CNN, RNN, LSTM, and Auto encoders.
4. Familiarize students with practical tools, optimization techniques, and real-world applications.

UNIT – I

Introduction to Deep Learning:

Definition and scope of Deep Learning, Difference between AI, Machine Learning, and Deep Learning, History and evolution of Deep Learning, Applications of Deep Learning (Computer Vision, NLP, Speech Recognition, Healthcare)

UNIT – II

Neural Networks Basics:

Artificial Neuron model, Activation functions (Sigmoid, ReLU, Tanh), Feed forward neural networks (FNN), Training neural networks: Back propagation and Gradient Descent

UNIT – III

Advanced Deep Learning Models:

Convolution Neural Networks (CNN): Basics, architecture, applications, Recurrent Neural Networks (RNN): Basics, sequence modeling, Long Short-Term Memory Networks (LSTM): Concepts and uses, Autoencoders: Concept and applications

UNIT – IV

Deep Learning Tools, Techniques & Applications:

Deep Learning frameworks: Tensor Flow, PyTorch (overview), Optimization techniques: Learning rate, Dropout, Batch Normalization, Real-world applications: Image recognition, NLP, Chatbots, Recommendation Systems, Challenges and future trends in Deep Learning

TEXT BOOKS:

1. Ian Goodfellow, Yoshua Bengio, Aaron Courville – *Deep Learning*, MIT Press
2. Francois Chollet – *Deep Learning with Python*, Manning Publications

REFERENCE BOOKS:

1. Michael Nielsen – *Neural Networks and Deep Learning*, Determination Press
2. Charu Aggarwal – *Neural Networks and Deep Learning: A Textbook*, Springer
3. Sebastian Raschka – *Python Deep Learning*, Packt Publishing

Course Outcomes : After completion of the course student able to

	Course Outcome Description	Knowledge Level
CO1	Understand the basics and scope of Deep Learning and differentiate it from AI and Machine Learning.	K1

M.S. N. Geethanjali, Prof. S. V. Uma Sundhara, Dr. Divya, Prof. E. Parvathamma

M.S. ✓ N. Gethampala ✓ P. ✓ V. Uma Sankar ✓
D. ✓ E. parashottam



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S.University, Nellore)



Programme	M.Sc. Computer Science With AI	Semester	Secound	
Course Code	CC-202A P	Course Name	CLOUD COMPUTING LAB	
Course Category	Practical	Hours/Week	L	P
			0	4
		Credits	2	

List of Programmes

1. Working and Implementation of Infrastructure as a service.
2. Implementation of Software as a Service.
3. Working and Implementation of Platform as a service
4. Implementation of Storage as a Service.
5. Implementation of Virtualization in Cloud Computing to Learn Virtualization Basics, Benefits of Virtualization in Cloud using Open-Source Operating
6. Installing OS on a Virtual Machine Monitor.
7. Offline/Online Migration of Virtual OS
8. Deployment and Configuration options in Amazon (AWS).
9. Deployment and Configuration options in Microsoft Azure.
10. Assignment to install and configure Google App Engine

Course Outcomes : After completion of the course student able to write programs

	Course Outcome Description	Knowledge Level
CO1	Describe various cloud computing platforms and service providers.	K2
CO2	Illustrate the significance of various types of virtualization.	K3
CO3	Identify the architecture, delivery models and industrial platforms for cloud computing based applications.	K4
CO4	Analyze the role of security aspects in cloud computing, Demonstrate cloud applications in various fields using suitable cloud platforms.	K6

K1- Remembering, K2- Understanding, K3- Applying, K4- Analyzing, K5- Evaluating, K6- Creating

M.S. *N. Geethanjali* *Prof S. ...* *Dr. V. Uma Sankar* *Dr. ...* *Dr. ...* *Dr. ...*

M.S. ✓ N. Gethampala ✓ P. ✓ V. Uma Sankar
D. ✓ E. parashottam

M.S. ✓ N. Geethanjali ✓ P. Anand ✓ V. Uma Sankar ✓
S. Narayan P. Divya E. parashottam

M.S. ✓ N. Gethampala ✓ P. ✓ V. Uma Sankar ✓
D. ✓ E. parashottam



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S.University, Nellore)



Programme	M.Sc. Computer Science With AI	Semester	Secound	
Course Code	CC-203A P	Course Name	DATAMINING AND DATAWAREHOUSING LAB	
Course Category	Practical	Hours/Week	L	P
			0	4
		Credits	2	

List of Programmes

1. Installation of WEKA Tool.
2. Creating new Arff File.
3. Demonstration of Association rule process on dataset using apriori algorithm.
4. Demonstration of Association rule process on dataset using FP- Growth algorithm.
5. Implementation of Decision Tree Induction.
6. Classification of data using Bayesian Classification.
7. Classification of data using Support Vector Machines.
8. Demonstration of clustering the data using Partitioning method.
9. Demonstration of clustering the data using Hierarchical method.
10. Demonstration of Outlier Detection using DBSCAN.

Course Outcomes : After completion of the course student able to write programs

	Course Outcome Description	Knowledge Level
CO1	Ability to add mining algorithms as a component to the existing tools	K2
CO2	Demonstrate the classification in large data sets	K3
CO3	Demonstrate the clustering in large data sets	K4
CO4	Ability to apply mining techniques for realistic data.	K6

K1- Remembering, K2- Understanding, K3- Applying, K4- Analyzing, K5- Evaluating, K6- Creating

M.S. *N. Geethanjali* *Prof S. ...* *Dr. V. Uma Sankar* *Dr. ...* *Dr. ...* *Dr. ...*

M.S. ✓ N. Gethampala ✓ P. ✓ V. Uma Sankar ✓
D. ✓ E. parashottam



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S. University, Nellore)



Programme	M.Sc. Computer Science With AI	Semester	Secound	
Course Code	S0C-203B P	Course Name	FULL STACK DEVELOPMENT LAB	
Course Category	Practical (Elective Foundation)	Hours/Week	L	P
			0	4
		Credits	2	

List of Programmes

- Personal Portfolio Website:**
Build a responsive personal portfolio website using HTML, CSS, and JavaScript that showcases your bio, skills, and projects.
- To-Do List App:**
Create a To-Do List application using JavaScript or React.js where users can add, edit, delete tasks, and save them in local storage or backend.
- Simple Calculator:**
Develop a web-based calculator that performs addition, subtraction, multiplication, and division using JavaScript.
- Movie Review App (Full Stack):**
Build a full stack application using React for frontend and Node.js/Express for backend that allows users to submit, view, and delete movie reviews.
- User Authentication System:**
Implement a signup/login system with Node.js and Express, including basic authentication and password validation.
- Contact Form with Email Notification:**
Create a contact form that sends submission details to an email using Node.js (Nodemailer) and validate the form inputs.
- Weather App Using API:**
Build a weather application that fetches live weather data from OpenWeatherMap API and displays it on the frontend.
- Real-Time Chat Application:**
Create a chat app using Node.js and Socket.io that allows multiple users to chat in real time.
- Blog Post Management System:**
Build a blog application with Node.js/Express and MongoDB where users can create, read, update, and delete blog posts.
- Deploy Your Full Stack App Online:**
Deploy any of your full stack applications on platforms like Netlify, Vercel, or Heroku and connect it to a GitHub repository for version control.

Course Outcomes : After completion of the course student able to write programs

	Course Outcome Description	Knowledge Level
CO1	Usage of various front and back end Tools.	K4
CO2	They can understand and create applications on their own.	K2
CO3	Demonstrate and Designing of Websites can be carried out.	K3,K6

M.S. N. Geethanjali, Prof. S. ... V. Uma Sankar, ...

M.S. ✓ N. Gethampala ✓ P. ✓ V. Uma Sankar ✓
D. ✓ E. parashottam



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S.University, Nellore)



Programme	M.Sc. Computer Science With AI	Semester	Secound	
Course Code	SOC-205A P	Course Name	PRINCIPLES OF DATASCIENCE LAB	
Course Category	Practical (Elective Foundation)	Hours/Week	L	P
			0	4
		Credits	2	

List of Programmes

1. Download, install and explore the features of NumPy, SciPy, Jupyter, Statsmodels and Pandas packages.
2. Working with Numpy arrays
3. Working with Pandas data frames
4. Reading data from text files, Excel and the web and exploring various commands for doing descriptive analytics on the Iris data set.
5. Use the diabetes data set from UCI and Pima Indians Diabetes data set for performing the following:
 - a. Univariate analysis: Frequency, Mean, Median, Mode, Variance, Standard Deviation, Skewness and Kurtosis.
 - b. Bivariate analysis: Linear and logistic regression modeling
 - c. Multiple Regression analysis
 - d. Also compare the results of the above analysis for the two data sets.
6. Apply and explore various plotting functions on UCI data sets.
 - a. Normal curves
 - b. Density and contour plots
 - c. Correlation and scatter plots
 - d. Histograms
 - e. Three dimensional plotting
7. Visualizing Geographic Data with Basemap

Course Outcomes : After completion of the course student able to write programs

	Course Outcome Description	Knowledge Level
CO1	Write, test, and debug simple Python programs.	K4
CO2	Develop different type of Arrays and Matrix Functions by importing NumPy.	K2
CO3	Visualize data using graphs by importing Matplotlib.	K3,K6
CO4	Handle and transform data by importing any CSV file to Pandas DataFrame.	K6

K1- Remembering, K2- Understanding, K3- Applying, K4- Analyzing, K5- Evaluating, K6- Creating

M.S. *N. Geethanjali* *Prof S. ...* *V. Uma Sundhara* *Dr. ...* *Dr. ...* *Dr. ...* *Dr. ...*



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S.University, Nellore)



Programme	M.Sc. Computer Science With AI	Semester	Secound	
Course Code	SOC-205B P	Course Name	INTERNET OF THINGS LAB	
Course Category	Practical (Elective Foundation)	Hours/Week	L	P
			0	4
		Credits	2	

List of Programmes

1. To study various IoT protocols – 6LowPAN, IPv4/IPv6, Wifi, Bluetooth, MQTT.
2. IoT Application Development Using sensors and actuators (temperature sensor, light sensor, infrared sensor)
3. To study Raspberry Pi development board and to implement LED blinking applications.
4. To develop an application to send and receive data with Arduino using HTTP request
5. To develop an application that measures the room temperature and posts the temperature value on the cloud platform.
6. To develop an application that measures the moisture of soil and post the sensed data over Google Firebase cloud platform.
7. To develop an application for measuring the distance using ultrasonic sensor and post distance value on Google Cloud IoT platform.

Course Outcomes : After completion of the course student able to write programs

	Course Outcome Description	Knowledge Level
CO1	Connect Arduino board with internet	K2
CO2	Demonstrate the working of simple IoT task of LED Control.	K1
CO3	Apply IoT concept in simple real life applications.	K3
CO4	Implement IoT based home automation system.	K4

K1- Remembering, K2- Understanding, K3- Applying, K4- Analyzing, K5- Evaluating, K6- Creating

M.S. *N. Geethanjali* *Prof S. ...* *V. Uma Sankar* *Dr. ...* *Dr. ...* *Dr. ...*



KRISHNA CHAITNAYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S.University, Nellore)



Programme	M.Sc. Computer Science With AI	Semester	Secound	
Course Code	SOC-206A P	Course Name	SOFTWARE ENGINEERING LAB	
Course Category	Practical (Elective Foundation)	Hours/Week	L	P
			0	4
		Credits	2	

List of Programmes

1. Development of problem statements.
2. Preparation of Software Requirement Specification Document, Design Documents and Testing Phase related documents.
3. Preparation of Software Configuration Management and Risk Management related documents.
4. Study and usage of any Design phase CASE tool.
5. Performing the Design by using any Design phase CASE tools.
6. Develop test cases for unit testing and integration testing.
7. Develop test cases for various white box and black box testing techniques.

Course Outcomes : After completion of the course student able to write programs

	Course Outcome Description	Knowledge Level
CO1	Analyse and specify software requirements for a given problem	K2
CO2	Design software using UML and other modelling tools, adhering to software engineering principles	K1
CO3	Implement software components using modern development tools and practices.	K3
CO4	Develop and execute test cases to validate software functionality and performance.	K4
K1- Remembering, K2- Understanding, K3- Applying, K4- Analyzing, K5- Evaluating, K6- Creating		

M.S. *N. Geethanjali* *Prof S. ...* *Dr. V. Uma Sankar* *Dr. ...* *Dr. ...* *Dr. ...*



KRISHNA CHAITANYA DEGREE COLLEGE

(AUTONOMOUS)

(Recognized by UGC under 2(f), Accredited by NAAC, Affiliated to V.S.University, Nellore)



COURSE AND PROGRAMME OUTCOMES MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1	3	3	3	2	-	-	-	-	-	-	-	-	2
CO2	3	2	2	3	-	-	-	-	-	-	-	2	3
CO3	3	2	2	3	-	-	-	-	-	-	2	-	-
CO4	3	2	3	2	-	-	-	-	-	-	-	-	2
1-Low, 2-Medium, 3-High													

M.S. *N. Geethanjali* *Prof S. ...* *Dr. ...* *V. Uma Sankar* *Dr. ...* *E. ...*