NIRMA UNIVERSITY

Institute of Technology

M Tech Computer Science and Engineering (Data Science)

Semester – I

L	T	P	C
3	0	2	4

Course Code	3CS1109
Course Title	Complexity Theory and Algorithms

Course Learning Outcomes (CLOs):

At the end of the course, students will be able to -

1. comprehend time & space complexity and formal aspects of algorithms
2. identify appropriate data structures and methodologies for efficient algorithm design
3. design and implement efficient algorithms using various approaches

L	T	P	C
3	0	2	4

Course Code	3CS1112
Course Name	Advanced Database Systems

Course Learning Outcomes (CLO):

At the end of the course, students will be able to –

1. assess various storage and retrieval methods through appropriate indexing
2. design and analyze efficiency of algorithms for database operations
3. comprehend contemporary database architectures and its relevant issues

L	T	P	C
3	0	2	4

Course Code	3CS1111
Course Name	Applied Machine Learning

Course Learning Outcomes (CLOs):

At the end of the course, students will be able to –

1. comprehend statistical methods as basis of machine learning domain
2. apply and evaluate variety of machine learning algorithms
3. implement machine learning techniques to solve problems in interdisciplinary domains

L	T	P	C
3	0	2	4

Course Code	3CS4101
Course Title	Introduction to Scalable Systems

Course Learning Outcomes (CLOs):

At the end of the course, students will be able to –

1. comprehendthe distributed computing models for scalable systems
2. analyse the scalable systems in the context of various performance parameters
3. apply concepts of scalable systems in designing data intensive applications

L	T	P	C
3	0	0	3

Course Code	3CS1113
Course Name	Applied Mathematics for Computer Science

Course Learning Outcomes (CLOs):

At the end of the course, students will be able to –

1. comprehend the mathematical fundamentals related to sets, probability, statistics, linear algebra and mathematical optimization
2. apply the mathematical principles to solve wide range of problems in computer science
3. use the mathematical concepts as per the need of the application

L	T	P	C
1	0	0	0

Course Code	3SP1103
Course Title	Ethics for Data Science

Course Learning Outcomes (CLOs):

At the end of the course, students will be able to -

1. describe the principles of fairness, accountability and transparency in data science
2. realize the ethical considerations regarding research, privacy and control of information and big data
3. comprehend the contemporary practices in data handling

Semester – II

L	T	P	C
3	0	2	4

Course Code	3CS12D302
Course Name	Deep Learning and Applications

Course Learning Outcomes (CLOs):

At the end of the course, students will be able to

1. comprehend the strengths and weaknesses of deep networks
2. analyze suitability of different deep networks for variety of problems
3. design and implement deep networks for solving problems pertaining to computer science and interdisciplinary research

L	T	P	C
3	0	2	4

Course Code	3CS12D101
Course Name	Embedded System Security

Course Learning Outcomes (CLOs):

At the end of the course, students will be able to

1. comprehend the basics of embedded firmware, hardware and software vulnerabilities and their causes

2. identify the vulnerabilities related to embedded systems using state of the art tools and technologies

3. understand and apply countermeasures against the introduced attacks

L	T	P	C
3	0	2	4

Course Code	3CS12D102
Course Name	Wireless Networks

Course Learning Outcomes (CLOs):

At the end of the course, students will be able to

1. recognize design issues involved in different wireless networks
2. employ available technologies to satisfy various application requirements
3. analyze proposed technological solutions

L	T	P	C
2	0	2	3

Course Code	3CS12D201
Course Name	Blockchain Technology

Course Learning Outcomes (CLOs):

At the end of the course, students will be able to

1. comprehend the structure of a Blockchain networks
2. evaluate security issues relating to Blockchain and cryptocurrency

3. design and analyze the applications based on Blockchain technology

L	T	P	C
2	0	2	3

Course Code	3CS12D202
Course Title	Human Computer Interaction

Course Learning Outcomes (CLOs):

At the end of the course, students will be able to
1. evaluate user interfaces and detect usability problems by doing usability studies with human subjects
2. simulate how a user would understand and attempt to use an interface using an analytical method such as cognitive walkthrough
3. apply an appropriate interaction style for a given need
4. implement the HCI techniques to build multimodal GUI

L	T	P	C
2	0	2	3

Course Code	3CS22D202
Course Name	Quantum Computing

Course Learning Outcomes (CLOs):

At the end of the course, students will be able to
1. comprehend the principles of mathematics and physics of quantum computation
2. identify applications of quantum computing
3. apply various security measures for quantum communication

L	T	P	C
3	0	2	4

Course Code	3CS12D306
Course Title	Secured Software Design and Enterprise Computing

Course Learning Outcomes (CLOs):

At the end of the course, students will be able to
1. differentiate between various software vulnerabilities
2. identify software process vulnerabilities for an organization
3. monitor resources consumption in a software
4. interrelate security and software development process