SBRR Mahajana First Grade College (Autonomous), PG Wing
Pooja Bhagavat Memorial Mahajana Education Centre
KRS Road, Metagalli, Mysuru-570016

Master of Computer Application
Programme Structure
w.e.f. 2021-2022

List of Hard Core Courses

Sl. No.	Course Title	Credit Pattern			Credits	Course Code
		L	T	P		
1	Mathematical Foundations for Computer Applications	4	0	0	4	21BH01
2	Advanced Computer Networks	3	1	0	4	21BH02
3	Data Structures and Algorithms	2	1	1	4	21BH03
4	Operating System	3	1	0	4	21BH04
5	Software Engineering	3	1	0	4	21BH05
6	Object Oriented Programming with Java	3	0	1	4	21BH06
7	Python Programming	3	0	1	4	21BH07
8	Simulation and Modeling	3	0	1	4	21BH08
9	Major Project Work	0	2	6	8	21BH09

List of Soft Core Courses

Sl. No.	Course Title	Credit Pattern			Credits	Course Code
		L	T	P		
1	Data Communication and Networks	3	1	0	4	21BS01
2	Database Management System	3	0	1	4	21BS02
3	Cloud Computing	3	1	0	4	21BS03
4	System Analysis and Design	3	1	0	4	21BS04
5	Web Technologies	2	1	1	4	21BS05
6	Cryptography and Network Security	3	0	1	4	21BS06
7	Theory of Languages and Automata	3	0	1	4	21BS07
8	Probability and Statistics	3	1	0	4	21BS08
9	Fundamentals of Internet of Things	3	1	0	4	21BS09
10	Mobile Application Development with Android	3	0	1	4	21BS10
11	Linux Programming	3	0	1	4	21BS11
12	Information Retrieval	3	0	1	4	21BS12
13	Big Data Analytics	3	0	1	4	21BS13
14	Machine Learning	3	1	0	4	21BS15
15	Advanced Java	3	0	1	4	21BS16
16	Management Information Systems	3	1	0	4	21BS17
17	Business Intelligence	3	1	0	4	21BS18
18	Entrepreneurship Development	3	1	0	4	21BS19
19	Communication Skills	3	1	0	4	21BS20
20	Professional Ethics and Human Values	3	1	0	4	21BS21
21	Cyber security	3	1	0	4	21BS22

List of Open Elective Courses

Sl. No.	Course Title	Credit Pattern			Credits	Course Code
		L	T	P		
1	World Wide Web	2	2	0	4	21BOE1
2	E-Commerce	3	1	0	4	21BOE2
3	Office Automation	2	2	0	4	21BOE3

HC MATHEMATICAL FOUNDATIONS FOR COMPUTER APPLICATIONS 4:0:0

Outcomes:

- Develop an ability to implement various techniques of mathematical logic.
- Capability to apply the concepts of set theory.
- Ability to enhance the knowledge of algebraic structures towards computer applications.
- Ability to correlate the concepts of graph theory in computer applications.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	3	3	3	2	1	1	1	-	1	2
CO 2	3	3	3	2	1	1	-	-	1	2
CO 3	3	3	3	2	2	1	-	-	1	1
CO 4	3	3	3	3	2	1	1	3	1	2
Weighted Average	3	3	3	2.25	1.5	1	1	3	1	1.75

1: Low, 2: Moderate, 3: High

HC ADVANCED COMPUTER NETWORKS 3:1:0

Outcomes:

- To employ the mechanism of Reference models and TCP/IP.
- To understand the role of Transport Layer in computer networks.
- Employ the techniques of TCP/IP.
- Comprehend the internal working mechanism of IP Security.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	3	2	2	2	2	1	-	1	1	2
CO 2	3	2	2	2	2	1	1	1	1	2
CO 3	2	2	2	2	1	2	1	1	1	2
CO 4	3	3	3	2	2	2	1	1	2	2
Weighted Average	2.75	2.25	2.25	2	1.75	1.5	1	1	1.25	1.5

1: Low, 2: Moderate, 3: High

HC DATA STRUCTURES AND ALGORITHMS 2:1:1

Outcomes:

- Analyse algorithms and algorithm correctness.
- Summarize searching and sorting techniques.
- Describe stack, queue and linked list operation.
- Solve the problems by writing algorithms using fundamental data structures.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	2	3	3	2	1	--	--	-	1	3
CO 2	3	2	2	2	3	-	-	--	-	1
CO 3	3	2	2	2	2	-	-	-	-	1
CO 4	2	3	2	2	2	1	2	1	1	1
Weighted Average	2.5	2.5	2.25	2	2	1	2	1	1	1.5

1: Low, 2: Moderate, 3: High

HC OPERATING SYSTEM 3:1:0

Outcomes

- Understand the usage of the operating system components and its services.
- Employ the concepts of process management.
- Employ the concepts of Memory Management
- Apply the file handling concepts in OS perspective.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	2	1	-	-	--	-	3	2	1
CO 2	-	3	1	2	-	-	-	3	2	1
CO 3	-	3	1	2	-	-	-	3	2	1
CO 4	1	3	1	2	2	2	2	3	2	1
Weighted Average	1	2.75	1	2	2	2	2	3	2	1

1: Low, 2: Moderate, 3: High

HC SOFTWARE ENGINEERING 3:1:0

Outcomes

- Work in one or more significant application domains.
- Work as an individual and as part of a multidisciplinary team to develop and deliver quality software.
- Demonstrate an understanding of and apply current theories, models, and techniques that provide a basis for the software lifecycle.
- Demonstrate an ability to ensure Software Quality Assurance.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	3	1	2	2	2	1	2	1	3	2
CO 2	2	1	2	2	2	1	1	1	2	1
CO 3	2	2	3	2	3	1	1	1	2	1
CO 4	2	1	2	2	1	1	2	1	2	2
Weighted Average	2.25	1.25	2.25	2	2	1	1.5	1	2.25	1.5

1: Low, 2: Moderate, 3: High

HC OBJECT ORIENTED PROGRAMMING WITH JAVA 3:0:1

Outcomes:

- Use the syntax and semantics of java programming language and basic concepts of OOP.
- Apply the class fundamentals, arrays, inheritance and polymorphism to develop reusable programs.
- Apply the concepts of packages, interfaces and exception handling to develop efficient and error free codes.
- Build applications using the concepts of multithreading and files.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	3	2	2	1	1	1	-	-	-	-
CO 2	3	2	3	3	1	-	-	-	-	-
CO 3	3	3	3	3	1	-	-	-	-	-
CO 4	3	2	1	1	1	-	2	2	2	2
Weighted Average	3	2.25	2.25	2	1	1	2	2	2	2

1: Low, 2: Moderate, 3: High

HC PYTHON PROGRAMMING 3:0:1

Outcomes:

- Develop algorithmic solutions to simple computational problems.
- Read, write, execute by hand simple Python programs.
- Structure simple Python programs for solving problems.
- Decompose a Python program into functions.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	2	2	2	2	2	1	1	-	-	2
CO 2	2	2	2	2	2	1	1	-	-	1
CO 3	3	2	2	1	2	-	-	1	1	1
CO 4	3	2	2	2	2	-	-	-	-	1
Weighted Average	2.5	2	2	1.75	2	1	1	1	1	1.25

1: Low, 2: Moderate, 3: High

SC SIMULATION AND MODELING 3:0:1

Outcomes:

- Analyze the different Components of System and identify the Applications of Simulation.
- Implement different algorithms associated with generation of Random numbers and test for Random numbers.
- Implement different methods of generating the Random Variants.
- Analyze the different techniques in Verification and Validation of simulation models and the output analysis for different types of Simulations.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO1	2	1	1	1	1	1	-	1	2	2
CO2	3	3	3	3	3	-	-	1	1	1
CO3	2	2	2	2	2	-	-	-	1	1
CO4	2	2	2	1	2	-	2	-	1	1
Weighted Average	2.25	2	2	1.75	2	1	2	1	1.25	1.25

1: Low, 2: Moderate, 3: High

HC MAJOR PROJECT WORK 0:2:6

Outcomes:

- Implement algorithms or techniques that contribute to the software solution of the project using different tools.
- Analyse, interpret, test and validate experimental results.
- Develop research/technical report with enhanced writing/communication skills following ethical practices.

Course articulation matrix:

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	-	2	3	2	-	-	-	-	-	-
CO2	3	-	-	2	-	-	-	-	-	1
CO3	-	-	-	2	-	-	-	-	3	-
CO4	-	-	-	-	3	3	3	3	-	-
Weighted Average	3	2	3	2	3	3	3	3	3	1

1: Low, 2: Moderate, 3: High

SC DATA COMMUNICATION AND NETWORKS 3:1:0

Outcomes:

- Understand and implement various types of transmissions in wired and wireless communications
- Study and develop the various aspects of Data Link Layer protocols
- Understand Design & apply various routing protocols of the Networks Layer.
- Design applications using the protocols of Transport & application Layer.

Course articulation matrix:

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	-	-	3	-	-	-	-	2	-	2
CO2	-	-	3	-	-	-	-	2	-	1
CO3	3	2	-	3	-	2	-	2	-	3
CO4	3	2	-	3	3	-	3	2	3	3
Weighted Average	3	2	3	3	3	2	3	2	3	2.25

1: Low, 2: Moderate, 3: High

SC DATABASE MANAGEMENT SYSTEM 3:0:1

Outcomes:

- Employ the techniques of SQL in Relational database.
- Implement simple database system by utilizing Data models and schema.
- Employ normalization techniques to overcome Database anomalies.
- Implement various Techniques of Data Mining and Data Warehousing.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	3	2	2	1	3	1	-	1	-	2
CO 2	2	2	2	1	2	1	-	-	1	1
CO 3	3	3	2	-	3	2	-	2	1	1
CO 4	3	3	1	2	1	1	2	1	1	2
Weighted Average	2.75	2.5	1.75	1.33	2.25	1.25	2	1.33	1	1.5

1: Low, 2: Moderate, 3: High

SC CLOUD COMPUTING 3:1:0

Outcomes:

- Demonstrate the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications.
- Identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud.
- Identify the cloud services for the individuals
- Acquire the knowledge on the core issues of cloud computing such as security, privacy, and interoperability.
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Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO1	2	-	1	2	3	3	2	3	3	3
CO2	2	-	1	2	2	3	2	2	2	2
CO3	2	1	1	1	2	1	1	2	2	2
CO4	1	-	2	3	2	1	1	2	-	1
Weighted Average	1.75	1	1.25	2	2.25	2	1.5	2.25	2.33	2

1: Low, 2: Moderate, 3: High

SC SYSTEM ANALYSIS AND DESIGN 3:1:0

Outcomes:

- Gather data for analysis and specify the requirements of a system.
- Design system components and environments.
- Build general and detailed models that assist programmers in implementing a system.
- Design a user interface for data input and output, as well as controls to protect the system and its data.

Course articulation matrix:

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	3	-	-	-	-	-	3	-
CO2	3	-	3	-	-	-	-	3	3	-
CO3	3	-	3	-	-	-	-	3	3	3
CO4	3	-	3	-	-	-	-	3	3	3
Weighted Average	3	-	3	-	-	-	-	3	3	2

1: Low, 2: Moderate, 3: High

SC WEB TECHNOLOGIES 2:1:1

Outcomes:

- Develop an ability to implement HTML5 pages using fundamental tags.
- Able to develop style sheet using CSS for a given problem.
- Able to extend JavaScript to validate a form with event handler for a given problem.
- Able to develop a dynamic website with database backend.

Course articulation matrix:

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	2	3	2	2	2	-	2	2	1
CO2	3	3	3	3	3	2	-	2	2	1
CO3	3	3	3	3	3	2	-	2	2	2
CO4	3	3	3	3	3	3	3	2	3	3
Weighted Average	2.75	2.75	3	2.75	2.75	2.25	3	2	2.25	1.75

1: Low, 2: Moderate, 3: High

SC CRYPTOGRAPHY AND NETWORK SECURITY 3:0:1

Outcomes:

- Implement the principles and practices of cryptographic techniques.
- Build simple cryptosystems by applying encryption algorithms.
- Comprehend secure identity management (authentication), message authentication, and digital signature techniques.
- Employ the authentication protocol and web security methods.

Course articulation matrix:

1: Low, 2: Moderate, 3: High

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO1	3	3	3	3	3	2	-	1	2	3
CO2	3	3	3	3	3	2	-	1	2	3
CO3	3	2	3	3	3	2	1	1	2	3
CO4	3	2	3	3	3	3	1	1	2	3
Weighted Average	3	2.5	3	3	3	2.25	1	1	2	3

SC THEORY OF LANGUAGES AND AUTOMATA 3:0:1

Outcomes:

- Acquire a fundamental understanding of the core concepts in automata theory and formal languages.
- Design grammars and automata (recognizers) for different language classes.
- Identify formal language classes and prove language membership properties.
- Prove and disprove theorems establishing key properties of formal languages and automata.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO1	2	3	3	3	1	-	-	-	2	2
CO2	2	3	3	3	1	-	-	-	1	2
CO3	2	3	3	3	1	-	-	-	1	2
CO4	2	3	3	3	1	-	-	-	1	2
Weighted Average	2	3	3	3	1	-	-	-	1.25	2

1: Low, 2: Moderate, 3: High

SC PROBABILITY AND STATISTICS 3:1:0

Outcomes:

- Apply axioms and theorems to describe events and compute probabilities also identify the types of random variables and calculate relevant probabilities.
- Analyse the different Techniques in Continuous Probability Distribution.
- Describe an appropriate statistical model for the given data and compute population parameters using appropriate estimators.
- Describe the Tests of Hypotheses, Types of errors, test for Significance, regression and curve fitting

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO1	2	3	3	2	3	1	-	-	2	2
CO2	2	3	3	3	3	-	-	-	2	2
CO3	2	3	3	3	3	1	-	-	1	2
CO4	2	3	3	3	3	-	-	-	2	2
Weighted Average	2	3	3	2.75	3	2	-	-	1.75	2

1: Low, 2: Moderate, 3: High

SC FUNDAMENTALS OF INTERNET OF THINGS 3:1:0

Outcomes:

- Interpret the impact of IoT networks in new architectural models.
- Compare and contrast the deployment of smart objects and technologies to connect them as network.
- Elaborate the need of IoT Access Technologies.
- Identify the application of IoT in Smart and Connected Cities and Public Safety.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	3	3	2	2	2	-	-	-	2	2
CO 2	2	2	2	2	2	-	-	-	2	2
CO 3	3	3	3	2	2	-	-	-	2	2
CO 4	2	3	2	1	2	-	1	1	2	2
Weighted Average	2.5	2.75	2.25	1.75	2	-	1	1	2	2

1: Low, 2: Moderate, 3: High

SC MOBILE APPLICATION DEVELOPMENT WITH ANDROID 3:0:1

Outcomes:

- Acquire knowledge on basics of mobile application development.
- Acquire knowledge on mobile application design patterns.
- Implement android application using android application environment.
- Students must independently develop android applications and publish them.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	3	2	3	3	2	2	-	2	3	3
CO 2	3	3	3	3	3	2	-	2	3	3
CO 3	3	3	2	3	3	2	-	2	3	3
CO 4	3	3	3	3	3	2	-	2	3	3
Weighted Average	3	2.75	2.75	3	2.75	2	-	2	3	3

1: Low, 2: Moderate, 3: High

SC LINUX PROGRAMMING 3:0:1

Outcomes:

- Work confidently in Linux environment with an understanding of the architecture and shell programming.
- Process data with sed/awk
- Ability to handle processes using process related system calls
- Ability to write communicating programs using different IPC mechanisms and Berkeley sockets.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	3	2	1	-	-	2	-	-	1	1
CO 2	3	2	1	-	-	-	-	-	1	1
CO 3	3	2	1	1	-	-	-	-	1	1
CO 4	3	2	1	1	-	-	-	-	1	1
Weighted Average	3	2	1	1	-	2	-	-	1	1

1: Low, 2: Moderate, 3: High

SC INFORMATION RETRIEVAL 3:0:1

Outcomes:

- Locate relevant information in large collections of data.
- Impart features of retrieval systems for Text data.
- Analyze the performance of retrieval systems using test collection.
- Implement different clustering algorithms.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	3	2	-	2	2	3	3	1	1
CO 2	-	3	3	2	2	-	-	-	1	1
CO 3	1	3	3	2	2	-	-	-	1	1
CO 4	1	3	3	2	2	-	-	3	1	1
Weighted Average	1	3	2.75	2	2	2	3	3	1	1

1: Low, 2: Moderate, 3: High

SC BIG DATA ANALYTICS 3:0:1

Outcomes:

- Understand the concept and challenges of big data and why existing technology is inadequate to analyse the big data.
- Develop an ability to collect, manage, store, query, and analyse various form of big data.
- Map the impact of big data for business decisions and strategy.
- Understand the significance of No SQL databases over RDBMS.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	2	2	1	-	1	-	-	-	1	1
CO 2	2	2	1	1	2	-	-	-	1	1
CO 3	3	3	3	2	3	1	-	3	3	2
CO 4	3	3	3	2	2	1	2	-	2	2
Weighted Average	2.5	2.5	2	1.66	2	1	2	3	1.75	1.5

1: Low, 2: Moderate, 3: High

SC MACHINE LEARNING 3:1:0

Outcomes:

- Understand the basic principles of machine learning techniques.
- Understand the supervised and unsupervised machine learning algorithms.
- Choose appropriate techniques for real time problems.
- Employ the concepts of Clustering and Kernel machines

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	3	2	1	1	3	3	-	1	1
CO 2	3	3	3	2	1	-	3	-	1	1
CO 3	3	3	3	2	1	-	-	-	1	1
CO 4	3	3	3	2	1	-	-	3	1	1
Weighted Average	25	3	2.75	1.75	1	3	3	3	1	1

1: Low, 2: Moderate, 3: High

SC ADVANCED JAVA 3:0:1

Outcomes:

- Develop component-based Java software using JavaBeans.
- Develop server-side programs in the form of servlets.
- Implement Entity Java bean in stateless and stateful environment.
- Employ the concepts of EJB and JAR files.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	3	2	-	1	3	-	-	-	-	2
CO 2	3	2	2	2	3	-	-	-	2	3
CO 3	3	3	3	2	3	-	-	-	2	3
CO 4	3	2	2	1	3	-	-	-	2	3
Weighted Average	3	2.25	1.75	1.5	3	-	-	-	1.5	2.75

1: Low, 2: Moderate, 3: High

SC MANAGEMENT INFORMATION SYSTEMS 3:1:0

Outcomes:

- Explain the role of IS in business.
- Ability to explain different enterprise management and functional management systems in business.
- Identify the applications of e-commerce and issues of e-commerce.
- Understand decision support systems.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	2	-	2	2	2	1	1	-	-	1
CO 2	1	-	2	2	3	2	1	-	-	-
CO 3	-	1	2	2	2	1	-	-	-	-
CO 4	1	-	1	1	1	2	1	-	-	1
Weighted Average	1	0.25	1.75	1.75	2	1.5	0.75	-	-	0.5

1: Low, 2: Moderate, 3: High

SC BUSINESS INTELLIGENCE 3:1:0

Outcomes:

- Acquire the knowledge on Business Intelligence and its methodologies.
- Comprehend and employ BI User models and OLAP in real time scenarios.
- Employ the lifecycle strategies on various BI capabilities.
- Employ various BI technologies and understand BI implementations in major companies.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	2	2	1	1	-	-	-	-	1	1
CO 2	3	2	1	2	-	-	-	-	1	1
CO 3	3	3	1	2	-	-	-	-	1	1
CO 4	3	3	1	1	-	-	-	-	1	1
Weighted Average	2.75	2.5	1	1.5	-	-	-	-	1	1

1: Low, 2: Moderate, 3: High

SC ENTREPRENEURSHIP DEVELOPMENT 3:1:0

Outcomes:

- Analyze the history and need for entrepreneurship
- Employ the functions of women and rural entrepreneurship
- Inculcating the behaviours of entrepreneurs
- Comprehend the need and importance of management

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	-	-	3	2	2	2	1	1	2	1
CO 2	-	-	-	-	2	2	1	1	-	-
CO 3	-	-	-	1	-	2	2	1	-	1
CO 4	3	3	-	2	1	1	1	1	-	2
Weighted Average	3	3	3	1.66	1.66	1.75	1.25	1	2	1.33

1: Low, 2: Moderate, 3: High

SC COMMUNICATION SKILLS 3:1:0

Outcomes:

- Understand and apply knowledge of human communication and language processes as they occur across various contexts from multiple perspectives.
- Understand and evaluate key theoretical approaches used in the interdisciplinary field of communication.
- Find, use, and evaluate primary academic writing associated with the communication discipline.
- Communicate effectively orally and in writing.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	-	-	-	-	2	-	3	3	2	3
CO 2	-	-	3	3	2	3	-	3	3	3
CO 3	-	3	3	-	2	2	-	3	3	3
CO 4	3	-	3	3	-	2	-	3	3	3
Weighted Average	3	3	3	3	2	2.33	3	3	2.75	3

1: Low, 2: Moderate, 3: High

SC PROFESSIONAL ETHICS AND HUMAN VALUES 3:1:0

Outcomes:

- Implement the aspects of Human Values.
- Interpret the ethics of engineering and its associated responsibilities.
- Employ the code of ethics in their profession.
- Display the awareness of Global issues in Ethics.

Course articulation matrix:

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	-	-	-	-	-	2	3	2	-	3
CO2	-	2	-	-	-	2	3	2	-	3
CO3	-	-	-	-	-	2	3	2	-	3
CO4	-	-	-	-	-	2	3	2	-	3
Weighted Average	-	2	-	-	-	2	3	2	-	3

1: Low, 2: Moderate, 3: High

SC CYBER SECURITY 3:1:0

Outcomes:

- Understand the concept of cybercrime and offenses.
- Analyze the tools and methods used in cyber security.
- Understand the need of cyber security organizations.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	2	-	-	2	2	2	1	1	1	2
CO 2	2	1	1	2	2	1	-	-	1	-
CO 3	-	-	1	2	-	2	-	-	1	2
Weighted Average	1.3	0.3	0.6	2	1.3	1.6	0.3	0.3	1	1.3

1: Low, 2: Moderate, 3: High

OE **WORLD WIDE WEB** **2:2:0**

Outcomes:

- Understand the working scheme of the Internet and World Wide Web.
- Understand fundamental tools and technologies used for web design.
- Comprehend the technologies for Hypertext Mark-up Language (HTML).
- Figure out the various security hazards on the internet and need of security measures.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	2	1	1	-	-	-	-	-	-	-
CO 2	2	1	1	-	-	-	-	-	-	-
CO 3	2	1	1	-	1	-	-	-	-	-
CO 4	2	2	2	-	1	1	-	-	-	-
Weighted Average	2	1.25	1.25	-	0.5	1	-	-	-	-

1: Low, 2: Moderate, 3: High

OE **E-COMMERCE** **3:1:0**

Outcomes:

- Analyse the impact of E-commerce on business models and strategy
- Describe Internet trading relationships including Business to Consumer, Business-to-Business, Intra-organizational structures.
- Assess electronic payment systems and its securities.
- Recognize and discuss global E-commerce issues.

Course articulation matrix:

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	1	-	2	2	2	2	1	-	2	2
CO2	2	-	2	2	2	1	1	-	1	1
CO3	2	-	1	1	2	1	1	-	1	1
CO4	2	-	2	2	2	1	1	-	1	2
Weighted Average	1.75	-	1.75	1.75	2	1.25	1	-	1.25	1.5

1: Low, 2: Moderate, 3: High

OE OFFICE AUTOMATION 2:2:0

Outcomes:

- Understand the basics of computer hardware and software.
- Prepare documents of different types.
- Ability to develop and use spreadsheets for tabulating and analysing for productivity.
- Prepare presentations.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO1	1	1	1	1	1	-	-	-	-	2
CO2	1	1	1	1	1	1	-	-	-	2
CO3	1	1	1	1	1	1	-	-	-	2
CO4	1	1	1	1	1	1	3	3	3	2
Weighted Average	1	1	1	1	1	1	3	3	3	2

1: Low, 2: Moderate, 3: High