MALNAD COLLEGE OF ENGINEERING, HASSAN
(An Autonomous Institution Affiliated to VTU, Belagavi)

Autonomous Programme
Bachelor of Engineering

Department Of
INFORMATION SCIENCE AND ENGINEERING

SCHEME AND SYLLABUS
(2023 Admitted Batch)

Academic Year 2023-2024

VISION OF THE INSTITUTE

To be an institute of excellence in engineering education and research, producing socially responsible professionals.

MISSION OF THE INSTITUTE

• Create conducive environment for learning and research

• Establish industry and academia collaborations

• Ensure professional and ethical values in all institutional endeavors

VISION OF THE INFORMATION SCIENCE AND ENGINEERING DEPARTMENT

The department will be a premier centre focusing on knowledge dissemination and generation to address the emerging needs of information technology in diverse fields.

MISSION OF THE INFORMATION SCIENCE AND ENGINEERING DEPARTMENT

1. To make students competent to contribute towards the development of IT field.

2. Promote learning and practice of latest tools and technologies among students and prepare them for diverse career options.

3. Collaborate with industry and institutes of higher learning for Research and Development, innovations and continuing education.

4. Developing capacity of teachers in terms of their teaching and research abilities.

5. Develop software applications to solve engineering and societal problems.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

Graduates will:

PEO1: Be successful professionals in IT industry with good design, coding and testing skills, capable of assimilating new information and solve new problems.

PEO2: Communicate proficiently and collaborate successfully with peers, colleagues and organizations.

PEO3: Be ethical and responsible members of the computing profession and society.

PEO4: Acquire necessary skills for research, higher studies, entrepreneurship and continued learning to adopt and create new applications.

PROGRAM OUTCOMES (POs)

1. Engineering knowledge: Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to develop to the solution of complex engineering problems.

2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4)

3. Design/Development of solutions: Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5)

4. Conduct investigations of complex problems: Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8).

5. Modern tool usage: Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6)

6. The engineer and the world: Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, and WK7).

7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9)

9. Individual and collaborative team work: Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary settings.

10. Communication: Communicate effectively and inclusively within the community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences.

11. Project management and finance: Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.

12. Life-long learning: Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. (WK8)

PROGRAM SPECIFIC OUTCOMES (PSOs)

Upon graduation, students with a degree B.E. in Information Science & Engineering will be able to:

• Design and Develop efficient information systems for organizational needs.

• Ability to adopt software engineering principles and work with various standards of Computing Systems.

SCHEME OF EVALUATION (THEORY COURSES)

Assessment	Marks
CIE 1	10
CIE 2	10
CIE 3	10
Activities as decided by course faculty	20
SEE	50
Total	100

SCHEME OF EVALUATION (LABORATORY COURSES)

Assessment	Marks
Continuous Evaluation in every lab session by the Course Coordinator	10
Record Writing	20
SEE	50
Total	100

EXAMINATION DETAILS

Examination	Maximum Marks	Minimum marks to qualify
CIE	50	20
SEE	50	20

COURSE TYPES

Course Type	Abbreviation
Basic Science Course	BSC
Engineering Science Course	ESC
Emerging Technology Course	ETC
Programming Language Course	PLC
Professional Core Course	PCC
Integrated Professional Core Course	IPCC
Professional Core Course Laboratory	PCCL
Professional Elective Course	PEC
Open Elective Course	OEC
Project/Mini Project/Internship	PI
Humanities and Social Sciences, Management Course	HSMC
Ability Enhancement Course	AEC
Skill Enhancement Course	SEC
Universal Human Value Course	UHV
Non-credit Mandatory Course	MC

INFORMATION SCIENCE AND ENGINEERING — SEMESTER 3 — 2023

Sl. No	Course Category	Course Code	Course Title	L	T	P	Total	CIE	SEE	Total	Credits	Assign Faculty
1	OEC	23NYP	NSS,YOGA,PE	0	2	0	2	100	50	150	0	
2	PCC	23RIP	RESEARCH METHODOLOGY & INTELLECTUAL PROPERTY RIGHTS	3	0	0	3	50	50	100	3.0	
3	BSC	23IS503	Data structure and applications	3	2	1	6	50	50	100	4.0	faculty1

Elective/Enhancement Courses

Professional Elective Course (PEC)

Course Code	Course Title	Assign Faculty
java	java	faculty1

Open Elective Course (OEC)

Course Code	Course Title	Assign Faculty
23IS303	c++	faculty2

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Course Title	NSS,YOGA,PE		
Course Code	23NYP	(L-T-P)C	(0-2-0) 0
Exam	3 Hrs.	Hours/Week	2
SEE	50 Marks	Total Hours	0L+0P

Course Objectives

• Students will gain the basic knowledge of data communication and computer networks.

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

#	Course Outcomes	Mapping to PO's	Mapping to PSO's
1.	Explain the Ethernet Standard and Networking devices, Connecting devices and different protocols at the network, transport and application layers.		
2.	Apply suitable subnetting and IP addressing for a given Requirement, Switching techniques as per need.		
3.	Analyze different protocols at MAC sub-layer, Network and transport layers.		
4.	Design networks applying Internetworking concepts and appropriate IP addressing for a given problem		

Module-wise Breakdown

Module	Details	Hrs
1	Module 1	
2	Module 2	
3	Module 3	

Proposed Assessment Plan (for 50 marks of CIE):

Tool	Remarks	Marks
Internals	Three tests conducted for 20 marks each and reduced to 10 marks	30
AAT	Details of activities to be conducted■ 1) Demonstration using JFLAP tool – 5 marks■ 2) Problem solving test – 10 marks■ 3) Concept/problem presentation – 5 marks	20
	Total	50

Course Articulation Matrix

CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1														
CO2														
CO3														
CO4														

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Course Title	RESEARCH METHODOLOGY & INTELLECTUAL PROPERTY RIGHTS		
Course Code	23RIP	(L-T-P)C	(3-0-0) 3.0
Exam	3 Hrs.	Hours/Week	3
SEE	50 Marks	Total Hours	27L+0P

Course Objectives

• To give an overview of technical research activities and patenting methodology.

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

#	Course Outcomes	Mapping to PO's	Mapping to PSO's
1.	Carry out Literature Review and write technical paper	2,3,4,11,12	-
2.	Describe the fundamentals of patent laws and the patent drafting	4, 11,12	-
3.	Procedure.	4, 11,12	-
4.	Elucidate the copyright laws and subject matters of copyright	11	-
5.	Elucidate the copyright laws and subject matters of copyright		

Module-wise Breakdown

Module	Details	Hrs
1	Module 1 Introduction: Meaning of Research,	10
2	Module 2 Introduction: Meaning of Research,	10
3	Module 3 Introduction: Meaning of Research,	10

Prescribed Test Books

Sl No	Book Title	Authors	Edition	Publisher	Year
1	Engineering Research	Dipankar Deb	-	Published by NSS Cell	2019

Reference Books

Sl No	Book Title	Authors	Edition	Publisher	Year
1	Government of Karnataka	activities reports.	-		2013

E-Resources

E-Books:

1. https://download.e-bookshelf.de/download/0012/0144/90/L-G-0012014490-0035363481.pdf

MOOC Courses:

1. https://onlinecourses.swayam2.ac.in/ ntr24_ed08/preview

Proposed Assessment Plan (for 50 marks of CIE):

Tool	Remarks	Marks
Internals	Three tests conducted for 20 marks each and reduced to 10 marks	30
AAT	Details of activities to be conducted	20
	Total	50

Course Articulation Matrix

CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1		3	3	3										
CO2				3										
CO3					4									
CO4			3											
CO5														

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Course Title	Data structure and applications		
Course Code	23IS503	(L-T-P)C	(3-2-1) 4.0
Exam	3 Hrs.	Hours/Week	6
SEE	50 Marks	Total Hours	27L+14P

Course Objectives

• dsa

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

#	Course Outcomes	Mapping to PO's	Mapping to PSO's
1.	a	6	-
2.	b	3,6	-
3.	c	3,6	-

Module-wise Breakdown

Module	Details	Hrs
1	Module 1	8
2	Module 2	8
3	Module 3	8

Prescribed Test Books

Sl No	Book Title	Authors	Edition	Publisher	Year
1	Machine Learning	VTU Belagavi	-	Pearson	2021

Reference Books

Sl No	Book Title	Authors	Edition	Publisher	Year
1	web development	activities reports and its manual.	-		2013

E-Resources

E-Books:
1. 1. http://14.139.161.31/OddSem-0822-1122/Hands-On_Machine_Learning_with_Scikit-Learn-Keras-and-TensorFlow-2nd- Edition-Aurelien-Geron.pdf
MOOC Courses:
1. https://swayam.gov.in/nd1_noc19_cs52/preview

Proposed Assessment Plan (for 50 marks of CIE):

Tool	Remarks	Marks
Internals	Three tests conducted for 20 marks each and reduced to 10 marks	30
AAT	Details of activities to be conducted	20
	Total	50

Laboratory Plan

S.No	Program Details
1	stack program

Course Articulation Matrix

CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2		3											
CO2		1			3									
CO3														