FATIMA COLLEGE (AUTONOMOUS)

Re-Accredited with "A++" Grade by NAAC (4th Cycle)
Maryland, Madurai- 625 018, Tamil Nadu, India

NAME OF THE DEPARTMENT : INFORMATION TECHNOLOGY

NAME OF THE PROGRAMME : M.Sc

PROGRAMME CODE : PSIT

ACADEMIC YEAR : 2022-2023

M.Sc INFORMATION TECHNOLOGY

Minutes of the meeting of the Board of Studies for M.Sc IT held at Department of Information Technology on 16.8.22

Members present.

1. Dr. G. Sumathi, Head
Department of computer Science,
Sri Meenakshi Government Arts college for women
Madurai

2. Dr. K. Kungumaraj, Head
PG Department of computer Science,
Arulmigu palaniandavar Arts college for women,
palani

3. Sr. Jothi, Head
Department of computer Science,
Holy cross college,
Nagercoil — Absent

4. Mrs. M. Thilagavathi madhavan,
Senior programmer Analyst,
Aparajitha Corporate Service pvt. Ltd.,
Madurai

5. Ms. P.G. poornimadevi, Faculty,
Dolphin Elite school,
Madurai

Mr. A. Mable Jasmine Shobha - A Mable Jasmine Shobha

Mrs. V. Mageshwari - [signature]

Mrs. T. Leena prema kumari - [signature]

Miss T. Charanya Nagammal - T. [signature]

Dr. V. Jane varamani sulekha - V.J.V. [signature]

Dr. N. Kalaichelvi - N. [signature]

Mrs. I. Razul Beevi - I. [signature]

I ACTION TAKEN REPORT:

The Action Taken Report for the academic year 2021-22 was presented to the board members as.

Suggestions	Action taken
* In JAVA Lab, the J2ME programs has to be included	As suggested, the topics has been included.
* Database connectivity Concepts has to be included in python	Suggested topic has been Included.

Change of course title :- NIL

Revised course:

S.NO.	COURSE CODE	COURSE TITLE	REVISED CONTENT	% OF REVISION	NEED FOR REVISION	RELEVANCE TO L	R	N	G	SCOPE FOR EMP	ENT	S
1.	21PG1IT5	JAVA & J2ME LAB	programs using J2ME is introdu	15%	Members suggestions				✓	✓		
2.	21PG3IT13	python programming	Database connectivity concepts are intro-duced	20%	Board Members suggestion				✓	✓		

NEW COURSES INTRODUCED

S NO	COURSE CODE	COURSE TITLE	RELEVANCE TO				SCOPE FOR			NEED FOR INTRODUCTION
			L	R	N	G	EMP	ENT	SD	
1.	21PG1IT1	JAVA & J2ME				✓	✓			Industrial Requirements.
2.	21PG1IT2	Soft Computing				✓			✓	Industrial Requirement.
3.	21PG1IT3	Data Managent Using R programg				✓	✓			IT field Requirement
4.	21PG2IT7	Data science				✓			✓	IT requirement
5.	21PG2ITE1	Adhoc network				✓			✓	Impart skills on network
6.	21PG2ITE2	Machine Learning				✓	✓			Gain knowledge on Machine Learning
7.	21PG2ITE3	Cyber Security				✓			✓	Create awareness on Security.
8.	21PG3ITE5	Ethical Hacking				✓	✓			To know more about Etrical hacking.
9.	21PG3ITE6	Computer forensics				✓			✓	Impart skills.
10.	21PG4ITI6	Biometrics				✓			✓	Impart Biometric skills
11.	21PGCAISLI	Supply Chain management				✓	✓			Industrial Requirement.
12.	21PG22TSL1	Linux shell programing				✓	✓			Industrial Requirement

S.NO.	COURSE CODE	COURSE TITLE	RELEVANCE TO L	R	N	G	SCOPE FOR EMP	ENT	SD	NEED FOR INTRODUCTION
13.	21PS3ITSL1	Research Methodology				✓			✓	To Impart the importance of research.
14.	21PS4ITSL1	Artificial Intelligence				✓			✓	Industrial Requirement.

II. DOER:

II. Updation of Digital Open Educational Resources in the list of references of each course has been presented in the following format.

S.NO.	COURSE CODE	COURSE TITLE	DETAILS OF UPDATION.
	-	-	-

III. REVISION OF COURSES:

S.NO.	COURSE CODE	COURSE TITLE	REVISED CONTENT	NEED FOR REVISION	% OF REVISION	RELEVANCE TO L	R	N	G	SCOPE FOR EMP	ENT	S
1.	21PS1IT4	Distributed Operating System	RPC model & its Transpancy has removed.	members suggestion	2%.				✓	✓		
2.	21PS2IT7	cyber Security	classification of cybercrime has removed.	members Suggestion	5%.				✓	✓		
3.	21PS1IT1	Java & J2ME	Advanced Concept included in unit 5 Canva is removed	member suggestion	5%				✓	✓		

COURSE CODE	COURSE TITLE	REVISED CONTENT	NEED FOR REVISION	% OF REVISION	RELEVANCE TO L	N	S	Emp	SDG
21PS2IT8	Digital Image Processing	Segmentation has included	Members suggestion	5%			✓	✓	
21PS2IT10	Lab in Image Processing	Segmentation has been included	Members suggestion	5%			✓	✓	
21PS3IT12	Data Mining & Data warehousing	Complex Data & society concepts included.	Members suggestions	5%			✓	✓	
21PS3IT13	Advanced Python programming	Contents Shuffled in unit I & V	Members suggestion	20%			✓	✓	
22PS3ITE4	Software Testing	Contents Changed in all units	Members suggestion	90%			✓		✓
21PS3ITE6	Computer Forensics	contents Changed in unit V	Members suggestions	15%			✓		✓
21PS3ITE8	Internet of Things	unit III & IV content changed	members suggestion	40%			✓		✓
22PS2IT9	Android programming	Contents Changed in all units	Members suggestion	80%			✓	✓	

V. Introduction of purely Skill - Embedded certificate / Diploma / Advanced Diploma value-added course other than the value-added course that is already being offered - NIL

IV. NEW COURSES INTRODUCED:

COURSE CODE	COURSE TITLE	RELEVANCE TO L	R	N	S	SCOPE FOR Em	ET	SD	NEED FOR INTRODUCTION
22PS1IT3	Data Science using R-Programming				✓	✓			Board members suggestion
22PS1IT6	Lab: Data Science using R programming				✓	✓			Industrial Requirement
22PS1IT2EL	Advanced Excel VBA				✓	✓			To be offered to other discipline students
22PS3ITE5	System Software & Compiler Design				✓	✓			Industrial need.
22PS3ITE9	Algorithm Design and Analysis				✓	✓			Industrial need.
22PS4ITI6	Software Project Management				✓		✓		Members suggested
22PS2ITE3	Ethical Hacking				✓	✓			Industrial Requirement.

V. RUBRICS FOR INTERNSHIP / PROJECT:

CI (20 mks)	C2 (20 mks)	CIA TOTAL 40 mks	EXTERNAL 60 mks
Review I:	Review II:		* presentation
* Selection	* Presentation	CI + C2	* Implement
* Presentation	* Completion		

VII. DETAILS OF PROPOSED MOU:

* proposal for signing an MOU with Winways Solutions, Madurai.

VIII. COMMENDATIONS:

* Board Members appreciated the syllabus, as it covers all the required courses for Information Technology field.

SEMESTER I:

21PG1IT1 - Java & J2ME
21PG1IT2 - Soft computing
22PG1IT3 - Data Science using R programming
21PG1IT4 - Distributed operating System
21PG1IT5 - Lab 1: Java & J2ME
22PG1IT6 - Lab 2: Data Science using R programming
19PG1IT1EDC - Animation Software.

SEMESTER II:

21PG2IT7 - Cyber Security.
21PG2IT8 - Digital Image Processing
22PG2IT9 - Android programming
21PG2IT10 - Lab 3: Image processing.
21PG2IT11 - Lab 4: Android programming
22PG1IT2EDC - Advanced Excel VBA.
21PG2ITE1 / E2 / 22PG2ITE3 - Adhoc Network / Machine Learning / Ethical Hacking.

SEMESTER III:

21PG3IT12 - Data Mining and Data Warehousing
21PG3IT13 - Advanced python programming.
21PG3IT14 - Lab 5: Data Mining and Data Warehousing
21PG3IT15 - Lab 6: Advanced python programming
21PG3ITE4 / 22PG3ITE5 / 21PG3ITE6 - Software Testing / System Software & Compiler Design / Computer Forensics.
21PG3ITE7 / 21PG3ITE8 / E9 - Big Data Analytics / Internet of Things / 22PG3ITE9 - Algorithm Design and Analysis
19PG3II5I - Summer Internship.

SEMESTER IV:

21PG4IT16 - Biometrics
19PG4ITPR - project & Viva voce.

* Advanced HTML 5 as Computer Application Course for IPG IT.

Members:

Dr. G. Sumathi - 16/3/22

Dr. K. Kungumaraj -

Sr. Jotci - Absent

Mrs. M. Thilagavathi Madhavan -

Mrs. T. G. Poornima devi -

Mrs. A. Mabel Jasmine Shobha -

Mrs. V. Mageshwari -

Mrs. T. Leena prema Kumari -

Mrs. T. Charanya Nagammal -

Dr. V. Jane varamani Sulekha -

Dr. N. Kalaichelvi -

Mrs. I. Razul Beevi -

16/3/2022

VISION OF THE DEPARTMENT

The vision is to be the center of excellence in training the students in Information Technology to excel both as a professional and as a responsible woman in the society.

MISSION OF THE DEPARTMENT

- Empower women by teaching them technology and life lessons.
- Encourage students to be the change in the society.
- Educate students and prepare them in various aspects of IT industry.
- Provide leadership quality for effective strategic and tactical planning in use of technology.
- Instill the power of faith and hope so they could be the blessing to their next generation.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

A graduate of M.Sc. Information Technology programme after two years will be

PEO 1	Our graduates will be academic, digital and information literates, creative, inquisitive, innovative and committed researchers who would be desirous for the "more" in all aspects
PEO 2	They will be efficient individual and team performers who would deliver excellent professional service exhibiting progress, flexibility, transparency, accountability and in taking up initiatives in their professional work
PEO 3	The graduates will be effective managers of all sorts of real – life and professional circumstances, making ethical decisions,

	pursuing excellence within the time framework and demonstrating apt leadership skills
PEO 4	They will engage locally and globally evincing social and environmental stewardship demonstrating civic responsibilities and employing right skills at the right moment.

GRADUATE ATTRIBUTES (GA)

Fatima College empowers her women graduates holistically. A Fatimite achieves all-round empowerment by acquiring Social, Professional and Ethical competencies. A graduate would sustain and nurture the following attributes:

I. SOCIAL COMPETENCE	
GA 1	Deep disciplinary expertise with a wide range of academic and digital literacy
GA 2	Hone creativity, passion for innovation and aspire excellence
GA 3	Enthusiasm towards emancipation and empowerment of humanity
GA 4	Potentials of being independent
GA 5	Intellectual competence and inquisitiveness with problem solving abilities befitting the field of research
GA 6	Effectiveness in different forms of communications to be employed in personal and professional environments through varied platforms
GA 7	Communicative competence with civic, professional and cyber dignity and decorum
GA 8	Integrity respecting the diversity and pluralism in societies, cultures and religions
GA 9	All – inclusive skill sets to interpret, analyse and solve social and environmental issues in diverse environments
GA 10	Self awareness that would enable them to recognise their uniqueness through continuous self-assessment in order to

	face and make changes building on their strengths and improving their weaknesses
GA 11	Finesse to co-operate exhibiting team-spirit while working in groups to achieve goals
GA 12	Dexterity in self-management to control their selves in attaining the kind of life that they dream for
GA 13	Resilience to rise up instantly from their intimidating setbacks
GA 14	Virtuosity to use their personal and intellectual autonomy in being life-long learners
GA 15	Digital learning and research attributes
GA 16	Cyber security competence reflecting compassion, care and concern towards the marginalised
GA 17	Rectitude to use digital technology reflecting civic and social responsibilities in local, national and global scenario
II. PROFESSIONAL COMPETENCE	
GA 18	Optimism, flexibility and diligence that would make them professionally competent
GA 19	Prowess to be successful entrepreuners and become employees of trans-national societies
GA 20	Excellence in Local and Global Job Markets
GA 21	Effectiveness in Time Management
GA 22	Efficiency in taking up Initiatives
GA 23	Eagerness to deliver excellent service
GA 24	Managerial Skills to Identify, Commend and tap Potentials
III. ETHICAL COMPETENCE	
GA 25	Integrity and be disciplined in bringing stability leading a systematic life promoting good human behaviour to build better society

GA 26	Honesty in words and deeds
GA 27	Transparency revealing one's own character as well as self-esteem to lead a genuine and authentic life
GA 28	Social and Environmental Stewardship
GA 29	Readiness to make ethical decisions consistently from the galore of conflicting choices paying heed to their conscience
GA 30	Right life skills at the right moment

PROGRAMME OUTCOMES (PO)

The learners will be able to

PO 1	Apply acquired scientific knowledge to solve major and complex issues in the society/industry.
PO 2	Attain research skills to solve complex cultural, societal and environmental issues.
PO 3	Employ latest and updated tools and technologies to solve complex issues.
PO 4	Demonstrate Professional Ethics that foster Community, Nation and Environment Building Initiatives

PROGRAMME SPECIFIC OUTCOMES (PSO)

On completion of M.Sc.IT programme, the graduates would be able to

PSO 1	Understand the concepts and applications in the field of Information Technology like Web designing and development,

	Mobile application development, and Network communication technologies.
PSO 2	Ability to understand the structure and development methodologies of software systems.
PSO 3	Apply the learning from the courses and develop applications for real world problems.
PSO 4	Understand the technological developments in the usage of modern design and development tools to analyze and design for a variety of applications.
PSO 5	Familiarity and practical competence with a broad range of programming language and open source platforms.
PSO 6	Demonstrate the understanding of the principles and working of the hardware and software aspects of computer systems
PSO 7	Possess professional skills and knowledge of software design process.
PSO 8	Be acquainted with the contemporary issues, latest trends in technological development and thereby innovate new ideas and solutions to existing problems.
PSO 9	Communicate in both oral and written forms, demonstrating the practice of professional ethics and the concerns for social welfare.

FATIMA COLLEGE (AUTONOMOUS), MADURAI-18

DEPARTMENT OF INFORMATION TECHNOLOGY

PROGRAMME CODE: PSIT

COURSE CODE	COURSE TITLE	HRS / WK	CREDIT	CIA Mks	ESE Mks	TOT. MKs
SEMESTER - I						
21PG1IT1	Java & J2ME	4	4	40	60	100
21PG1IT2	Soft computing	4	4	40	60	100
22PG1IT3	Data Science using R-Programming	4	4	40	60	100
21PG1IT4	Distributed Operating System	4	4	40	60	100
21PG1IT5	Lab in Java & J2ME	5	3	40	60	100
22PG1IT6	Lab in Data Science using R-Programming	5	3	40	60	100
	Library	1	-	-	-	-
Total		**27**	**22**			
SEMESTER - II						
21PG2IT7	Cyber Security	4	4	40	60	100
21PG2IT8	Digital Image Processing	4	4	40	60	100
22PG2IT9	Android Programming	4	4	40	60	100
21PG2IT10	Lab in Image Processing	5	3	40	60	100
21PG2IT11	Lab in Android Programming	5	3	40	60	100
	Library	1		-	-	-

COURSE CODE	COURSE TITLE	HRS / WK	CREDIT	CIA Mks	ESE Mks	TOT. MKs
Total		**23**	**18**			
SEMESTER - III						
21PG3IT12	Data Mining and Data Warehousing	5	5	40	60	100
21PG3IT13	Advanced Python Programming	5	5	40	60	100
21PG3IT14	Lab 5 Data Mining and Data Warehousing	5	3	40	60	100
21PG3IT15	Lab 6 Advanced Python Programming	5	3	40	60	100
Total		**20**	**16**			
SEMESTER - IV						
22PG4IT16	Software Project Management	-	4	40	60	100
Total		**-**	**4**			
	Total	**120**	**60**			

MAJOR ELECTIVE / EXTRA DEPARTMENTAL COURSE / INTERNSHIP/ PROJECT

S. No	SEM.	COURSECODE	COURSE TITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. Mks
1.	I	19IT1EDC	EDC 1 Animation Software	3	3	40	60	100
2.	II	22IT2EDC	EDC 2 Advanced Excel VBA	3	3	40	60	100
3.		21PG2ITE1 21PG2ITE2 21PG2ITE3	Elective - I Adhoc Network Machine Learning Ethical Hacking	4	5	40	60	100
4.	III	22PG3ITE4 22PG3ITE5 21PG3ITE6	Elective - II Software Testing System Software & Compiler Design Computer Forensics	5	5	40	60	100
5.		21PG3ITE7 21PG3ITE8 22PG3ITE9	Elective - III Big Data Analytics Internet of Things Algorithm Design and Analysis	5	5	40	60	100
6.		21PG3ITSI	Summer Internship	-	3	40	60	100
7.	IV	19PG4ITPR	Project	-	6	40	60	100
			TOTAL	**20**	**30**			

OFF-CLASS PROGRAMME

ADD-ON COURSES

Course Code	Courses	Hrs.	Credits	Semester in which the course is offered	CIA Mks	ESE Mks	Total Marks
	SOFT SKILLS	40	4	I	40	60	100
	COMPUTER APPLICATIONS (Dept. Specific Course)	40	4	II	40	60	100
	MOOC COURSES (Department Specific Courses/any other courses) * Students can opt other than the listed course from UGC-SWAYAM /UGC /CEC	-	Minimum 2 Credits	-	-	-	
	COMPREHENSIVE VIVA (Question bank to be prepared for all the papers by the respective course teachers)	-	2	IV	-	-	100

	READING CULTURE	15/ Semester	1	I-IV	-	-	-
	TOTAL		13 +				

EXTRA CREDIT COURSE

COURSE CODE	COURSES	HRS.	CREDITS	SEMESTER IN WHICH THE COURSE IS OFFERED	CIA MKS	ESE MKS	TOTAL MARKS
	SELF LEARNING COURSE for ADVANCED LEARNERS **SUPPLY CHAIN MANAGEMENT**	-	2	I	40	60	100
21PG3ITSL3	**SELF LEARNING COURSES for ADVANCED LEARNERS** **Research Methodology**	-	2	III	40	60	100
	MOOC COURSES / International Certified online Courses (Department	-	Minimum 2 Credits	I – IV	-	-	

	Specific Courses/any other courses) * Students can opt other than the listed course from UGC-SWAYAM /UGC /CEC						

- **Lab Courses :**
  - A range of 10-15 experiments per semester

- **Summer Internship:**
  - Duration-1 month (2nd Week of May to 2nd week of June-before college reopens)

- **Project:**
  - Off class
  - Evaluation components-Report writing + Viva Voce (Internal marks-50) + External marks 50

- **EDC:**

  Syllabus should be offered for two different batches of students from other than the parent department in Sem-I & Sem-II

I M.Sc.

SEMESTER –II

For those who joined in 2022 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	22PG1IT3	DATA SCIENCE USING R PROGRAMMING	Lecture	4	4

COURSE DESCRIPTION

This course emphasizes learning various concepts in data science.

COURSE OBJECTIVES

To provide strong foundation for data science and application area related to it and understand the underlying core concepts and emerging technologies in data science.

UNITS

UNIT I: INTRODUCTION TO DATA SCIENCE AND R (11 Hrs)

The roles and stages of Data Science Project - Setting Expectation - Starting with R and data - Starting with R - Working with datafiles and relational databases.

UNIT II: EXPLORING & MANAGING DATA (11 Hrs)

Exploring Data - Using Summary Statistics to spot problems - Spotting problems using graphics and visualization - Managing Data - Cleaning Data, Data Transformations, Sampling for modeling and validation.

UNIT III: DATA ENGINEERING AND DATA SHAPING and EVALUATING MODELS (11 Hrs)

Data Selection - Basic data transforms - Aggregating transforms - Multiple data transforms - Reshaping Transforms - Choosing and Evaluating Models - Mapping Problems to machine learning tasks - Evaluating models - LIME

UNIT IV: LINEAR AND LOGISTIC REGRESSION, UNSUPERVISED & ADVANCED METHODS (11 Hrs)

Using Linear Regression - Using Logistic Regression – Regularization - Unsupervised Methods - Cluster Analysis - Association Rules - Advanced Methods - Tree-based methods - generalized additive models - Support Vector Machines.

UNIT V: DOCUMETATION AND EFFECTIVE PRESENTATIONS(11 Hrs)

Predicting Buzz - R Markdown to produce milestone documentation - Comments and version control for running documentation - Deploying models - Producing effective Presentations - Results to the project sponsor -Model to end users - Work to other data scientists.

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 Hrs.)

Creation of R Data App that uses GPS and Graphics

TEXT BOOK:

1. Mount, John, and Nina Zumel. *Practical data science with R*. Simon and Schuster, 2019.

REFERENCES:

1. "Mailund, Thomas. *Beginning Data Science in R*. California: Apress, 2017.

Open Educational Resources:

1) https://www.javatpoint.com/data-science

COURSE CONTENTS & LECTURE SCHEDULE

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 INTRODUCTION TO DATA SCIENCE AND R				
1.1	The roles and stages of Data Science Project	2	Discussion	Black Board
1.2	Setting Expectation - Starting with R and data	3	Chalk & Talk	Black Board
1.3	Starting with R	2	Lecture	LCD
1.4	Working with datafiles	2	Discussion	Google classroom
1.5	Relational databases.	2	Chalk & Talk	Black Board
UNIT -2EXPLORING & MANAGING DATA				
2.1	Exploring Data - Using Summary Statistics to spot problems	2	Lecture	PPT & White board
2.2	Spotting problems using graphics and visualization	2	Chalk & Talk	Green Board
2.3	Managing Data	2	Chalk & Talk	Black Board
2.4	Cleaning Data, Data Transformations	3	Chalk & Talk	Black Board
2.5	Sampling for modeling and validation	2	Chalk & Talk	Black Board
UNIT – 3 DATA ENGINEERING AND DATA SHAPING AND EVALUATING MODELS				
3.1	Data Selection - Basic data transforms	2	Discussion	PPT & White board
3.2	Aggregating transforms - Multiple data transforms	2	Chalk &Talk	Green Board
3.3	Reshaping Transforms - Choosing and Evaluating Models	2	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
3.4	Mapping Problems to machine learning tasks	2	Chalk & Talk	Black Board
3.5	Evaluating models	2	Discussion	Black Board
3.6	LIME	1	Lecture	PPT & White board
UNIT – 4 LINEAR AND LOGISTIC REGRESSION, UNSUPERVISED & ADVANCED METHODS				
4.1	Using Linear Regression - Using Logistic Regression	1	Discussion	PPT &White board
4.2	Regularization - Unsupervised Methods	2	Chalk & Talk	Green Board
4.3	Cluster Analysis - Association Rules	2	Chalk & Talk	Black Board
4.4	Advanced Methods - Tree-based methods	2	Chalk & Talk	Black Board
4.5	Generalized additive models	2	Discussion	Black Board
4.6	Support Vector Machines.	2	Lecture	Green Board
UNIT – 5 DOCUMETATION AND EFFECTIVE PRESENTATIONS				
5.1	Predicting Buzz - R Markdown to produce milestone documentation	3	Lecture	PPT & White board
5.2	Comments and version control for running documentation	2	Chalk & Talk	Black Board
5.3	Deploying models - Producing effective Presentations	2	Lecture	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
5.4	Results to the project sponsor -Model to end users	2	Chalk &Talk	Black Board
5.5	Work to other data scientists	2	Chalk & Talk	Black Board
UNIT –6 DYNAMISM				
6.1	Recent Concepts in Data Science	5	Discussion	Black Board

INTERNAL - PG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Seminar 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K2	4	4	-	-	-	8	-	8	20 %
K3	2	2	-	5	-	9	-	9	22.5 %
K4	2	2	-	-	5	9	-	9	22.5 %
K5	2	2	5	-	-	9	-	9	22.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

End Semester - PG

Levels	Section A 10 Mks	Section B 20 Mks.	Section C 10 Mks	Section D 10 Mks.	Section E 10 Mks.	Total 60Mks.	
K2	10	5	-	-	-	15	25 %
K3	-	5	10	-	-	15	25 %
K4	-	5	-	-	10	15	25 %
K5	-	5	-	10	-	15	25 %
Total	10	20	10	10	10	60	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

- **PG CIA Components**

  Nos

  C1 - Test (CIA 1) 1 - 10 Mks

  C2 - Test (CIA 2) 1 - 10 Mks

C3	-	Assignment	2 *	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Seminar	1	-	5 Mks
C6	-	Attendance		-	5 Mks

The best out of two will be taken into account

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand the fundamental concepts of data science	K2	PSO1, PSO2, PSO3& PSO8
CO 2	Evaluate the data analysis techniques for applications handling large data	K2, K4	PSO1, PSO2, PSO3 & PSO4
CO 3	Demonstrate the various evaluation models.	K2	PSO1, PSO2, PSO4 & PSO5
CO 4	Understand regression and advanced models in data science.	K4, K6	PSO1, PSO2, PSO7 & PSO8
CO 5	Demonstrate various presentation models.	K4	PSO1, PSO2, PSO 6 & PSO9

Mapping of COs with PSOs

CO/ PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO1	**3**	**3**	**3**	**1**	**1**	**1**	**1**	**3**	**1**
CO2	**3**	**3**	**3**	**3**	**1**	**1**	**1**	**1**	**1**

CO3	**3**	**3**	**1**	**3**	**3**	**2**	**1**	**1**	**1**
CO4	**3**	**3**	**1**	**2**	**1**	**1**	**3**	**3**	**1**
CO5	**3**	**3**	**2**	**1**	**2**	**3**	**1**	**2**	**3**

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	2	1	1
CO2	2	3	1	1
CO3	3	2	3	1
CO4	3	2	3	1
CO5	3	2	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**

♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: Dr. V. JANE VARAMANI SULEKHA**
2. **Staff Name: Dr. N. Kalaichelvi**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

I M.Sc.,

SEMESTER –I

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	22PG1IT6	LAB 2: DATA SCIENCE USING R PROGRAMMING	Practical	5	3

COURSE DESCRIPTION

This course provides to understand the Data .

COURSE OBJECTIVES

The major objective of this lab is to provide a strong formal foundation in database concepts, technology, relating to query processing in SQL and PLSQL

UNITS

PROGRAM LIST

1. Creating and displaying Data.
2. Matrix manipulations
3. Creating and manipulating a List and an Array
4. Creating a Data Frame and Matrix-like Operations on a Data Frame
5. Merging two Data Frames
6. Applying functions to Data Frames
7. Using Functions with Factors
8. Accessing the Internet

9. String Manipulations
10. Visualization Effects
11. Plotting with Layers
12. Overriding Aesthetics
13. Histograms and Density Charts
14. Simple Linear Regression – Fitting, Evaluation and Visualization
15. Multiple Linear Regression, Lasso and Ridge Regression

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
PROGRAM LIST				
1	Creating and displaying Data, Matrix manipulations	10	Demonstration	Desktop
2	Creating and manipulating a List and an Array, Creating a Data Frame and Matrix-like Operations on a Data Frame	5	Demonstration	Desktop
3	Merging two Data Frames, Applying functions to Data Frames	5	Demonstration	Desktop
4	Using Functions with Factors, Accessing the Internet	5	Demonstration	Desktop
5	String Manipulations, Visualization Effects	5	Demonstration	Desktop
6	Plotting with Layers	5	Demonstration	Desktop
7	Overriding Aesthetics	10	Demonstration	Desktop
8	Histograms and Density Charts	10	Demonstration	Desktop

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
9	Simple Linear Regression – Fitting, Evaluation and Visualization	10	Demonstration	Desktop
10	Multiple Linear Regression, Lasso and Ridge Regression	10	Demonstration	Desktop

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC		NON - SCHOLASTIC	MARKS		
C1	C2	C3	CIA	ESE	Total
20	15	5	40	60	100

- **PG CIA Components**

C1– Average of Two Model test Marks

C 2- Program Completion and Record Work

C 3 – Non – Scholastic

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand the basic concepts of Linear algebra and statistics	K4 & K5	PSO1 & PSO2
CO 2	Implement the algebraic and statistical problems using R	K4 & K5	PSO5 & PSO7
CO 3	Apply the concepts of Linear algebra and statistics in real time problems	K4 & K5	PSO7 & PSO9
CO 4	Analyse real time data using various statistical measures	K4 & K5	PSO7, PSO8 & PSO9
CO 5	Construct models using various statistical methods	K4 & K5	PSO2, PSO4, PSO5, PSO6 & PSO7

Mapping of C0s with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	3	1	1	1	1	1	1	1
CO2	1	1	3	1	1	1	3	1	1
CO3	2	1	1	1	2	2	3	1	3
CO4	1	1	1	3	1	1	3	3	3
CO5	1	3	2	3	3	3	3	2	1

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	2	1	1
CO2	2	2	3	1
CO3	2	2	3	1
CO4	3	2	1	3
CO5	3	2	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**

♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: Dr. V. JANE VARAMANI SULEKHA**
2. **Staff Name: Dr. N. Kalaichelvi**

Forwarded By

V. Mageshwari

HOD'S Signature& Name

COURSE DESIGNER: Dr. N. Kalaichelvi

Forwarded By

I M.Sc.,

SEMESTER –II

For those who joined in 2022 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	22PG2IT9	ANDROID PROGRAMMING	Lecture	4	4

COURSE DESCRIPTION

The primary goals will be to design the next generation of mobile website, apps and other mobile interfaces across multiple platform such as IOS, android, windows and mobile web.

COURSE OBJECTIVES

- Develop a grasp of the android OS architecture.
- Understand the application development lifecycle.
- Identify, analyse and choose tools for android development including device emulator, profiling tools and IDE

UNITS

UNIT I: INTRODUCTION (10Hrs)

Introduction to Android Programming: Android- Versions- Features- Architecture- Android Developer Community- Android SDK- Android Development Tools- Android Virtual Devices.

UNIT II: ACTIVITIES, FRAGMENTS, INTENTS& USER INTERFACE(12hrs)

Understanding Activities- Linking Activities using Intents- Fragments- Calling built-in applications- Notifications- Components of Screen-Display Orientation- User Interface.

UNIT III: VIEWS (12 Hrs)

User Interface Views: Basic Views- Picker Views- Lists- Fragments- Image views- Menus Views.

UNIT IV: PERSISTENT DATA STORAGE, EMAILING AND NETWORKING (10 HRS)

Data Storage Options- Internal and external storage- SQLite Database- Content Providers- Emailing in Android- Networking in Android.

UNIT V: GRAPHICS AND ANIMATION (12 HRS)

Working with Graphics-Drawing Graphics to Canvas- Drawable object- Understanding the Concept of Hardware Acceleration-Working with Animations

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (4 Hrs.)

Creation of Android App that uses GPS and Graphics

TEXT BOOK:

1. "Android Application Development – Black Book" by Pradeep Kothari, Dreamtech Press, ISBN: 978-93-5119-409-5.
2. "Beginning Android 4 Application Development" by Wei-Meng Lee, Wiley, ISBN: 978-81-265-3557-6.

REFERENCES:

2. "Android" by Prasanna Kumar Dixit, Vikas Publishing House Pvt Ltd, ISBN: 9789325977884

Open Educational Resources:

1. https://www.tutorialspoint.com/android/index.htm1

2. https://www.vogella.com/tutorials/android.html

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 INTRODUCTION				
1.1	Introduction to Android Programming: Android-Versions-	1	Chalk & Talk	Black Board
1.2	Features- Architecture	1	Chalk & Talk	LCD
1.3	Android Developer Community- Android SDK	4	Lecture	Smart Board
1.4	Android Development Tools- Android Virtual Devices	2	Lecture	Smart Board
1.5	Operating Systems - Application Frameworks	2	Discussion	Google classroom
UNIT II:ACTIVITIES, FRAGMENTS, INTENTS& USER INTERFACE				
2.1	Understanding Activities- Linking Activities using Intents- Fragments.	4	Chalk & Talk	LCD
2.2	Calling built-in applications- Notifications- Components of Screen.	4	Lecture	Smart Board
2.3	Display Orientation- User Interface	4	Discussion	Google classroom

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT III: VIEWS				
3.1	User Interface Views: Basic Views	3	Lecture	Green Board Charts
3.2	Picker Views- Lists.	3	Chalk & Talk	Green Board
3.3	Fragments- Image views	3	Chalk & Talk	Black Board
3.4	Menus Views	3	Lecture	Smart Board
UNIT IV: PERSISTENT DATA STORAGE, EMAILING AND NETWORKING				
4.1	Data Storage Options- Internal and external storage	4	Chalk & Talk	LCD
4.2	SQLite Database- Content Providers	4	Chalk & Talk	Black Board
4.3	Emailing in Android- Networking in Android	4	Lecture	Smart Board
UNIT V: GRAPHICS AND ANIMATION				
5.1	Working with Graphics- Drawing Graphics to Canvas	4	Chalk & Talk	Black Board
5.2	Drawable object- Understanding the Concept of Hardware Acceleration	4	Lecture	Smart Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
5.3	Working with Animations	4	Chalk & Talk	Black Board
UNIT -6DYNAMISM				
6.1	Creation of Android App that uses GPS and Graphics	4	Discussion	Black board

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Design scripts to meet given interface and media control requirements	K2	PSO1, PSO4
CO 2	Utilize variables, properties and other code elements appropriately to implement the code design.	K2, K3	PSO2, PSO5
CO 3	Implement and evaluate techniques for the installation of mobile applications.	K3, K4	PSO5, PSO6
CO 4	Explain the principles of technologies which support media production	K3, K4	PSO3, PSO6

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
	and delivery on a variety of platforms.		
CO 5	Evaluate alternative mobile frameworks, and contrast different programming platforms	K4, K5	PSO6, PSO8

Mapping of COs with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	2	1	3	2	1	1	1	1
CO2	1	1	2	3	2	3	1	1	1
CO3	2	1	1	1	3	3	1	1	1
CO4	1	1	1	3	1	1	1	1	3
CO5	1	1	2	1	2	3	1	3	2

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	2	1	1
CO2	3	2	1	1
CO3	3	2	1	1
CO4	3	2	1	1
CO5	3	2	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**

♦ Weakly Correlated -**1**

COURSE DESIGNER:Dr. N. Kalaichelvi

Forwarded By

HOD'S Signature

& Name

I M.Sc.,

SEMESTER II

For those who joined in 2022 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	22IT2EDC	ADVANCED EXCEL VBA	Practical	3	3

COURSE DESCRIPTION

This course is designed to learn the best practices followed in industries to develop simple projects.

COURSE OBJECTIVES

To facilitate the student to understand excel with VBA concepts and make them to automate the backend processing.

UNITS

UNIT –I VBA BASICS : (6HRS.)

Getting started with Excel VBA – Working with cells, rows, and columns to copy/paste, count, find the last used row or column, assigning formulas, working with sheets- Communicate with the end-user with message boxes and take user input with input boxes.

UNIT –II CONDITIONAL LOGIC &LOOPS : (6HRS.)

Comparing values and conditions, if statements and select cases - Repeat processes with For loops and Do While or Do Until Loops

UNIT –III ARRAYS (6HRS.)

Dynamic arrays- populating arrays-Array declaration and resizing-Jagged arrays.

UNIT –IV EVENTS &SETTINGS : (6HRS.)

Trigger procedures to run when certain events happen like activating a worksheet, or changing cell values- Speed up your code and improve the user experience

UNIT –VFUNCTIONS &PROCEDURES : (6HRS.)

Public variables, functions, and passing variables to other procedures- Programmatically work with series of values without needing to interact with Excel objects.

LAB PROGRAMS :

1. Working with cells
2. Naming Ranges
3. Working with Input box and Message box
4. Decision making and Looping
5. Work with arrays
6. Using Named Range in VBA
7. Conditional Formatting using VBA
8. Functions and Procedures.
9. Working with Events
10. Error handlers

TEXT BOOKS:

"Excel 2019 Power Programming with VBA", by Micheal Alexander, Dick Kusleika, Wiley Publishers Pvt., Ltd.,

REFERENCES :

"Excel VBA Programming for Dummies", by John Walkenbach, Wiley Publisher, ISBN : 9781118490389,

"Excel 2016 Power Programming with VBA", by Micheal Alexander, Richard Kusleika, Wiley Publishers, ISBN : 9781119067726.

OPEN EDUCATIONAL RESOURCE:

https://goalkicker.com/ExcelVBABook

https://www.automateexcel.com/learn-vba-tutorial/

https://www.tutorialspoint.com/vba/vba_excel_macros.htm

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	UNIT -1 VBA BASICS			
1.1	Getting started with Excel VBA – Working with cells, rows, and columns to copy/paste, count, find the last used row or column, assigning formulas,	3	Chalk & Talk, Demonstration	Black Board
1.2	working with sheets- Communicate with the end-user with message boxes and take user input with input boxes.	3	Chalk & Talk, Demonstration	LCD
	UNIT -2 CONDITIONAL LOGIC & LOOPS			

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
2.1	Comparing values and conditions, if statements and select cases	3	Chalk & Talk, Demonstration	LCD
2.2	Repeat processes with For loops and Do While or Do Until Loops	3	Chalk & Talk, Demonstration	Smart Board
UNIT -3 ARRAYS				
3.1	Dynamic arrays-populating arrays-Array declaration and resizing.	3	Chalk & Talk, Demonstration	Green Board Charts
3.2	Jagged arrays	3	Chalk & Talk, Demonstration	Green Board
UNIT -4 EVENTS AND SETTINGS				
4.1	Trigger procedures to run when certain events happen like activating a worksheet, or changing cell values	3	Chalk & Talk, Demonstration	LCD
4.2	Speed up your code and improve the user experience	3	Chalk & Talk, Demonstration	Black Board
UNIT -5 FUNCTIONS AND PROCEDURES				

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
5.1	Public variables, functions, and passing variables to other procedures	3	Chalk & Talk, Demonstration	Black Board
5.2	Programmatically work with series of values without needing to interact with Excel objects.	3	Chalk & Talk, Demonstration	Smart Board

INTERNAL - PG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Seminar 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K2	4	4	-	-	-	8	-	8	20 %
K3	2	2	-	5	-	9	-	9	22.5 %
K4	2	2	-	-	5	9	-	9	22.5 %
K5	2	2	5	-	-	9	-	9	22.5 %

Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

End Semester - PG

Levels	Section A 10 Mks	Section B 20 Mks.	Section C 10 Mks	Section D 10 Mks.	Section E 10 Mks.	Total 60Mks.	
K2	10	5	-	-	-	15	25 %
K3	-	5	10	-	-	15	25 %
K4	-	5	-	-	10	15	25 %
K5	-	5	-	10	-	15	25 %
Total	10	20	10	10	10	60	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

- **PG CIA Components**

		Nos			
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	2 *	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Seminar	1	-	5 Mks
C6	-	Attendance		-	5 Mks

The best out of two will be taken into account

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand fundamentals of VBA	K1	PSO1
CO 2	Apply different conditional logics and loops	K1 & K3	PSO1,PSO4
CO 3	Build forms with interactivity	K2 & K3	PSO2,PSO4
CO 4	Apply Events and Setting in Excel sheets.	K2 & K3	PSO2,PSO4

CO 5	Develop Procedures and Array concepts.	K3	PSO4

Mapping of COs with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	3	1	1	1	1	1	1	1
CO2	1	1	2	3	3	1	1	1	1
CO3	2	1	1	3	3	2	1	1	1
CO4	1	1	1	2	3	3	1	1	1
CO5	1	1	2	1	3	1	1	3	2

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	2	1	1
CO2	3	2	1	1
CO3	3	2	1	1
CO4	3	2	1	1
CO5	3	2	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**

♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. V. MAGESHWARI**

Forwarded By

HOD'S Signature

& Name

I M.Sc.,

SEMESTER –II

For those who joined in 2022 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	22PG3ITE3	ETHICAL HACKING	Lecture	4	5

COURSE DESCRIPTION

This course includes finding and attempting to exploit any vulnerabilities to determine whether unauthorized access or other malicious activities are possible.

COURSE OBJECTIVES

The purpose of ethical hacking is to evaluate the security of and identify vulnerabilities in systems, networks or system infrastructure

UNITS

UNIT I:COMPUTER HACKING & COMPUTER CRIME (15 Hrs.)

Introduction – Definition of hacking- Destructive programs – Hacker ethics – Legal constraints – Computer Crime – Computer Security measures – Computer Misuse Act,1990 – Professional duties and obligations.

UNIT-II : IPR & PERSONAL PRIVACY (15Hrs.)

Introduction – Nature of Intellectual property- Intellectual property legislation- Ethical and professional issues.

Valuing privacy – Internet technologies and privacy – Privacy legislation – The Data Protection Act,1998 – Professional and ethical issues

UNIT-III :NETWORK AND COMPUTER ATTACKS (15 Hrs.)

Malware – Intruder attacks on Network an computers : Denial of service attacks- Distributed Denial of service attacks – Buffer overflow attacks – Ping

of Death attacks – Session Hijacking – Addressing Physical security : Keyloggers – Behind locked doors

UNIT IV: HACKING WEB SERVERS AND WIRELESS NETWORKS (15 Hrs)

Understanding Web Application– Understanding Web application Vulnerabilities – Tools for Web attackers and security testers – Web tools.

Understanding wireless technology – Understanding Wireless network standards – Understanding Authentication – Understanding War driving – Understanding Wireless Hacking.

UNIT V: NETWORK PROTECTION SYSTEM (15 Hrs)

Understanding routers – Understanding firewalls – Understanding Intrusion detection and Prevention systems – Understanding Honeypots.

TEXT BOOKS :

1. Duquenoy, Penny, Simon Jones, and Barry G. Blundell. Ethical, legal and professional issues in computing. Cengage Learning EMEA (formerly Thomson Learning), 2008.

2. Simpson, Michael T., Kent Backman, and James Corley. *Hands-on ethical hacking and network defense*. Cengage Learning, 2010.

REFERENCES:

1. 'Hacking – the art of Exploitation", by Zenk , second edition,

WEB REFERNCES :

1. http://repo.zenk-security.com
2. https://nptel.ac.in/courses/106/105/106105217/

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 COMPUTER HACKING & COMPUTER CRIME				
1.1	Introduction – Definition of hacking- Destructive programs	5	Chalk & Talk	Black Board
1.2	Hacker ethics – Legal constraints – Computer Crime – Computer Security measures	6	Chalk & Talk	LCD
1.3	Computer Misuse Act,1990 – Professional duties and obligations.	3	Discussion	Google Classroom
UNIT -2 IPR & PERSONAL PRIVACY				
2.1	Introduction – Nature of Intellectual property- Intellectual property legislation- Ethical and professional issues.	6	Lecture	Green Board
2.2	Valuing privacy – Internet technologies and privacy – Privacy legislation	5	Chalk &Talk	Green Board
2.3	The Data Protection Act,1998 – Professional and ethical issues	3	Discussion	Google Classroom
UNIT -3 NETWORK AND COMPUTER ATTACKS				
3.1	Malware – Intruder attacks on Network an computers : Denial of service attacks	4	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
3.2	Distributed Denial of service attacks – Buffer overflow attacks – Ping of Death attacks	5	Chalk & Talk	LCD
3.3	Session Hijacking – Addressing Physical security	5	Chalk & Talk	Black Board
3.4	Key loggers – Behind locked doors	4	Lecture	Green Board
UNIT -4 HACKING WEB SERVERS AND WIRELESS NETWORKS				
4.1	Understanding Web Application– Understanding Web application Vulnerabilities	3	Chalk & Talk	Black Board
4.2	Tools for Web attackers and security testers – Web tools. Understanding wireless technology – Understanding Wireless network standards	6	Lecture	Green Board
4.3	Understanding Authentication – Understanding War driving –	3	Chalk & Talk	LCD
4.4	Understanding Wireless Hacking.	2	Chalk & Talk	Black Board
UNIT -5 NETWORK PROTECTION SYSTEM				

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
5.1	Understanding routers – Understanding firewalls –	6	Chalk & Talk	Black Board
5.2	Understanding Intrusion detection and Prevention systems – Understanding Honeypots.	4	Discussion	Google Classroom
UNIT -6 DYNAMISM				
6.1	Current trends in implementation of Ethical hacking tools in real time applications.	5	Assignments	Google class room

INTERNAL - PG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Seminar 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K2	4	4	-	-	-	8	-	8	20 %
K3	2	2	-	5	-	9	-	9	22.5 %
K4	2	2	-	-	5	9	-	9	22.5 %
K5	2	2	5	-	-	9	-	9	22.5 %

Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

End Semester - PG

Levels	Section A 10 Mks	Section B 20 Mks.	Section C 10 Mks	Section D 10 Mks.	Section E 10 Mks.	Total 60Mks.	
K2	10	5	-	-	-	15	25 %
K3	-	5	10	-	-	15	25 %
K4	-	5	-	-	10	15	25 %
K5	-	5	-	10	-	15	25 %
Total	10	20	10	10	10	60	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

- **PG CIA Components**

Nos					
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	2 *	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Seminar	1	-	5 Mks
C6	-	Attendance		-	5 Mks

The best out of two will be taken into account

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	To Understand the fundamental concepts in ethical hacking	K2	PSO1, PSO2
CO 2	Analyze different types of protocols	K3,K4	PSO3, PSO6
CO 3	Discuss the authentication requirements.	K2,K3	PSO4, PSO5
CO 4	Explains various types of attacks	K3, K4	PSO3, PSO9
CO 5	Analyze the Security issues	K4 ,K5	PSO6, PSO8

COURSE DESIGNER:

1. **Staff Name V. Mageshwari**

II M.Sc.

SEMESTER –III

For those who joined in 2022 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	22PG3ITE4	SOFTWARE TESTING	PG Core	5 Hrs.	5

COURSE DESCRIPTION

To study fundamental concepts in software testing, planning a test project, design test cases and data, conduct testing operations, manage software problems and defects, generate a testing report.

COURSE OBJECTIVES

- To give strong foundation in software quality assurance by teaching standards, models and measurement techniques.
- To enhance the knowledge of the students to provide innovative solutions to various quality assurances related problems.

UNITS

UNIT I: QUALITY ASSURANCE (14 Hrs)

Introduction to Quality: Introduction- What is quality- Definition of quality- Quality view. **Software Quality:** Introduction- Characteristics of software- Software development process- Software Quality Management- Important quality management

Basic Concepts of Software Testing: Introduction-Definition of testing- Approaches to testing- Popular definition of testing - Testing during development life cycle - Principles of software testing - salient feature of good testing - Test Planning - Categories of defect – Defect-Error-Mistake in software.

Developing testing methodologies (test plan) - Testing process (Self Study) - Test methodologies/Approaches**.**

UNIT II: SOFTWARE VERIFICATION AND VALIDATION (14 Hrs)

Verification: Verification work bench- Methods of verification - Types of Review on the Basis of Stage/Phase -Coverage in Verification. **Validation:** Validation Work Bench -Levels of Work Bench -Management of verification and validation - Software Development Verification and Validation Activities.

V Test Model: Introduction -V Model for software - **Testing During Proposal Stage - Testing during Requirement Stage - Testing During Test-Planning Phase(Self Study) -** Testing During Coding Phase - **Defect Management**: Defect Classification - Defect Management Process (fixing and Root Cause of Defect) - Techniques for Finding Defects

UNIT III: TESTING TECHNIQUES (14Hrs)

Levels of Testing: Introduction-Proposal Testing- Design Testing- Unit Testing-Module Testing -Integration Testing -System Testing -Testing Stages.

Acceptance Testing: Alpha Testing - Beta Testing -Gamma Testing

Special Tests: Complexity Testing- Graphical User Interface Testing-Compatibility Testing-Performance Testing-Volume Testing and Stress Testing-**Ad-Hoc Testing Monkey Testing- Exploratory Testing-Random Testing(Self-Study)**

UNIT IV: TESTING PROCESS (14Hrs)

Test Planning: Introduction-Test Planning-Test Plan-Quality plan and Test Plan-Quality plan template-Test Estimation-Building test data and test cases-Test Scenario-Test Cases-Essential Activities in Testing-Template for test cases-Building Test Data-Roles and Responsibilities in Testing Life Cycle-Test Progress Monitoring-**Test Metrics-Testing Related Data-Effectiveness of Testing-Defect Density-Defect Leakage Ration(Self-Study)**

UNIT V : TESTING TOOLS (14 Hrs)

Software Testing Tool: An Overview: Need for Automation Testing Tools-Taxonomy of Testing Tool-Functional Regression Testing Tools-Performance Testing Tool-Testing Management Tool-Source Code Testing Tool-Load Runner – Overview of LoadRunner – Creating Vuser script using Virtual User Generator – Creating Virtual Users Using Loadrunner Controller – JMeter – JMeter Overview – JDBC Test – **HTTP Test(Self study)**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 Hrs)

Tools used in real time applications and their implementations

TEXT BOOK:

1. ***Software Testing - Principles, Techniques and Tools,*** M.G. Limaye, Tata McGraw-Hill Education Private Ltd., 2017.
2. ***Software Testing Tools,*** Dr.K.V.K.K.Prasad, Published by Dreamtech Press, Edition, 2012. Chapters :3, 7 , 8

REFERENCES:

1. Software Quality Assurance : Principles and Practice for the New Paradigm, N.S.Godbole, 2nd Edition, Narosa Publishing House, 2017.Chapters: 1, 2.1, 2.5, 4.4 - 4.6, 6.1 - 6.12

2. Software Quality and Testing: A Concise Study, S. A. Kelkar, 3rd Edition, PHI Learning, 2012.

3. ***Software Testing - Principles, Techniques and Tools,*** M.G. Limaye, Tata McGraw-Hill Education Private Ltd., 2017.
4. ***Software Testing Tools,*** Dr.K.V.K.K.Prasad, Published by Dreamtech Press, Edition, 2012. Chapters :3, 7 , 8

REFERENCES:

Software Quality and Testing: A Concise Study, S. A. Kelkar, 3rd Edition, PHI Learning, 2012.

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 QUALITY ASSURANCE				
1.1	Introduction to Quality: Introduction- What is quality- Definition of quality-Quality view. **Software Quality:** Introduction- Characteristics of software-Software development process-Software Quality Management- Important quality management	3	Chalk & Talk	Black Board
1.2	**Basic Concepts of Software Testing:** Introduction-Definition of testing-Approaches to testing-Popular definition of testing - Testing during development life cycle	2	Chalk & Talk	LCD
1.3	Principles of software testing - salient feature of good testing - Test Planning	4	Lecture	PPT & White board
1.4	Categories of defect – Defect-Error-Mistake in software.	2	Lecture	Smart Board
1.5	**Developing testing methodologies (test plan) - Testing process (Self Study)** - Test methodologies/Approaches	3	Discussion	Google classroom
UNIT -2 SOFTWARE VERIFICATION AND VALIDATION				
2.1	Verification: Verification work bench- Methods of	3	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	verification - Types of Review on the Basis of Stage/Phase - Coverage in Verification.			
2.2	**Validation:** Validation Work Bench -Levels of Work Bench -Management of verification and validation - Software Development Verification and Validation Activities. **V Test Model:** Introduction - V Model for software	7	Chalk & Talk	LCD
2.3	**Testing During Proposal Stage - Testing during Requirement Stage - Testing During Test-Planning Phase(Self Study)** - Testing During Coding Phase - **Defect Management**: Defect Classification - Defect Management Process (fixing and Root Cause of Defect) - Techniques for Finding Defects	4	Discussion	Google classroom
UNIT -3 TESTING TECHNIQUES				
3.1	**Levels of Testing:** Introduction-Proposal Testing- Design Testing- Unit Testing-Module Testing - Integration Testing -System Testing -Testing Stages.	5	Lecture	Green Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
3.2	**Acceptance Testing:** Alpha Testing - Beta Testing - Gamma Testing	2	Chalk & Talk	Green Board
3.3	Special Tests: Complexity Testing- Graphical User Interface Testing- Compatibility Testing- Performance Testing	4	Chalk & Talk	Black Board
3.4	Volume Testing and Stress Testing-**Ad-Hoc Testing Monkey Testing- Exploratory Testing- Random Testing(Self-Study)**	3	Discussion	Google classroom
UNIT -4 TESTING PROCESS				
4.1	Test Planning: Introduction-Test Planning-Test Plan-Quality plan and Test Plan-Quality plan template-Test Estimation	7	Chalk & Talk	Black Board
4.2	Building test data and test cases-Test Scenario-Test Cases-Essential Activities in Testing-Template for test cases-Building Test Data-Roles and Responsibilities in Testing Life Cycle	4	Chalk & Talk	LCD
4.3	Test Progress Monitoring-**Test Metrics-Testing Related Data-Effectiveness of Testing-Defect Density-Defect Leakage Ration(Self-Study)**	3	Discussion	Google classroom
UNIT -5 TESTING TOOLS				

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
5.1	Software Testing Tool: An Overview: Need for Automation Testing Tools-Taxonomy of Testing Tool	1	Chalk & Talk	Black Board
5.2	Functional Regression Testing Tools-Performance Testing Tool-Testing Management Tool-Source Code Testing Tool-Load Runner	6	Chalk & Talk	Black Board
5.3	Overview of LoadRunner – Creating Vuser script using Virtual User Generator – Creating Virtual Users Using Loadrunner Controller – JMeter – JMeter Overview	5	Chalk & Talk	LCD
5.4	JDBC Test – **HTTP Test(Self study)**	2	Discussion	Google classroom
UNIT -6 DYNAMISM				
6.1	Tools used in real time applications and their implementations	5	Group discussion	Black board

Levels	C1	C2	C3	C4	Total Scholastic Marks	Non Scholastic Marks C5	CIA Total	% of Assessment

	Session - wise Average 5 Mks.	Better of W1, W2 5+5=10 Mks.	M1+M2 15 Mks	MID-SEM TEST 5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	5	-	-	2 ½	-		-	-
K2	-	5	4	2 ½	5		5	12.5 %
K3	-	-	3	5	12		12	30 %
K4	-	-	3	5	9		9	22.5%
Non Scholastic	-	-	-	-	9		9	22.5 %
Total	5	5	10	15	35	5	40	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

SCHOLASTIC				NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	CIA	ESE	Total
5	10	15	5	5	40	60	100

C1 – Average of Two Session Wise Tests

C2 – Average of Two Monthly Tests

C3 - Mid Sem Test

C4 – Best of Two Weekly Tests

C5 – Non - Scholastic

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Discuss various software application domains and different process model used in software development.	K2	PSO1,PSO2
CO 2	Demonstrate the basics of software quality assurance and defect prevention.	K2, K3	PSO4,PSO5
CO 3	Compare different testing strategies and tactics.	K3,K4	PSO5,PSO6
CO 4	Apply the software testing techniques in commercial environment.	K3, K4	PSO3,PSO6
CO 5	Explain high performance testing using Jmeter.	K4, K5	PSO6,PSO8

Mapping of COs with PSOs

CO/ PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO1	3	2	1	3	2	1	1	1	1
CO2	1	1	2	3	2	3	1	1	1
CO3	2	1	1	1	3	3	1	1	1

CO4	**1**	**1**	**1**	**3**	**1**	**1**	**1**	**1**	**3**
CO5	**1**	**1**	**2**	**1**	**2**	**3**	**1**	**3**	**2**

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	2	1	1
CO2	3	2	1	1
CO3	3	2	1	1
CO4	3	2	1	1
CO5	3	2	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**

♦ Weakly Correlated -**1**

COURSE DESIGNER: Mrs. I. Razul Beevi

Forwarded By

HOD'S Signature

& Name

II M.Sc.

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	22PG3ITE5	SYSTEM SOFTWARE AND COMPILER DESIGN	Lecture	5	5

COURSE DESCRIPTION

The primary goals will be to make the students obtain in depth knowledge on system software and working principles of compiler.

COURSE OBJECTIVES

- Develop a grasp of the system software and compiler analyses.
- Understand the concepts of Assembler, Linker, Loader and Compilers.

UNITS

UNIT I: INTRODUCTION TO SYSTEM SOFTWAREAND ASSEMBLERS **(10 Hrs)**

Introduction to system software and machine architecture-simplified instructional computer-CISC Machines-RISC Machines-Basic Assembler Functions-Machine Dependent Assembler Features-Machine Independent Assembler Features-Assembler Design Options.

UNIT II: LOADERS AND LINKERS **(12 Hrs)**

Basic Loader Functions- Machine Dependent Loader Features- Machine Independent Loader Features- Loader Design Options.

UNIT III: COMPILERS (10 Hrs)

Basic Compiler Functions - Machine-Dependent Compiler features – Machine-Independent Complier Features -Compiler Design Options

UNIT IV: LEXICAL ANALYZER (12 Hrs)

Need and Role of Lexical Analyzer-Simple Approach to the Design of Lexical Analyser-Regular Expressions-Finite Automata-Language for specifying Lexical Analyzer –Implementation of Lexical Analyser- Design of Lexical Analyzer for a sample language.

UNIT V: SYNTAX ANALYZER (12 Hrs)

Syntax Analyzer (Parser): The Role of Parser-Context free Grammars-Shift reduce Parsing -Operator-Precedence Parsing-Top-Down Parsing-Predictive Parsers

UNIT V: DYNAMISM

Analyze the concepts of Various types of Compilers

TEXT BOOK:

3. "System Software – An Introduction to Systems Programming" by Leland L. Beck, D. Manjula, Pearson, ISBN: 978-81-317-6281-3.
4. "Principles of Compiler Design" by Alfred V. Aho Jeffrey D. Ullman, Narosa Publishing House, ISBN: 81-85015-61-9

REFERENCES:

1. "Compiler Design" by Dr.S.Malathi, K.Kiruthika, Jackulin C, Ane Books Pvt Ltd, ISBN: 978-93-8546-259-7.

Open Educational Resources:

1. https://www.javatpoint.com/system-software
2. https://www.guru99.com/compiler-design-tutorial.html

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 INTRODUCTION TO SYSTEM SOFTWARE AND ASSEMBLERS				
1.1	Introduction to system software and machine architecture-simplified instructional computer-CISC Machines-RISC Machines	4	Chalk & Talk	Black Board
1.2	Basic Assembler Functions-Machine Dependent Assembler Features	5	Chalk & Talk	Black Board
1.3	Machine Independent Assembler Features-Assembler Design Options.	5	Group discussion	White board
UNIT -2 LOADERS AND LINKERS				
2.1	Basic Loader Functions-Machine Dependent Loader Features	5	Lecture	Smart Board
2.2	Machine Independent Loader Features- Loader Design Options	5	Lecture	Black Board
UNIT -3 COMPILERS				

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
3.1	Basic Compiler Functions - Machine-Dependent Compiler features – Machine-Independent	5	Chalk & Talk	Black Board
3.2	Complier Features -Compiler Design Options	5	Lecture	Green Board
UNIT-4 LEXICAL ANALYZER				
4.1	Need and Role of Lexical Analyzer-Simple Approach to the Design of Lexical Analyser-Regular Expressions	3	Chalk & Talk	Black Board
4.2	-Finite Automata-Language for specifying Lexical Analyzer –	4	Lecture	Green Board
4.3	Implementation of Lexical Analyser- Design of Lexical Analyzer for a sample language.	5	Chalk & Talk	Black Board
UNIT -5 SYNTAX ANALYZER				
5.1	Syntax Analyzer (Parser): The Role of Parser-Context free	5	Lecture	Green Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	Grammars-Shift reduce Parsing			
5.2	Operator-Precedence Parsing-Top-Down Parsing	5	Chalk & Talk	Black Board
5.3	-Predictive Parsers	2	Chalk & Talk	Black Board
	UNIT -6 DYNAMISM			
6.1	Analyze the concepts of Various types of Compilers	3	Assignments	Google class room

INTERNAL - PG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Seminar 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K2	4	4	-	-	-	8	-	8	20 %
K3	2	2	-	5	-	9	-	9	22.5 %
K4	2	2	-	-	5	9	-	9	22.5 %

K5	2	2	5	-	-	9	-	9	22.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

End Semester - PG

Levels	Section A 10 Mks	Section B 20 Mks.	Section C 10 Mks	Section D 10 Mks.	Section E 10 Mks.	Total 60Mks.	
K2	10	5	-	-	-	15	25 %
K3	-	5	10	-	-	15	25 %
K4	-	5	-	-	10	15	25 %
K5	-	5	-	10	-	15	25 %
Total	10	20	10	10	10	60	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

- **PG CIA Components**

Nos					
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	2 *	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Seminar	1	-	5 Mks
C6	-	Attendance		-	5 Mks

****The best out of two will be taken into account***

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Interpret the concepts of system software and machine architecture	K2	PSO1, PSO4
CO 2	Identify the concepts of loader and linkers	K2, K3	PSO2, PSO5
CO 3	Analyse the concepts of working principles of compilers	K3, K4	PSO5, PSO6
CO 4	Experiment Finite Automata for regular expressions.	K3, K4	PSO3, PSO6
CO 5	Simplify the expressions using Parser	K4, K5	PSO6, PSO8

Mapping COs Consistency with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	3	3	1	1	1	1	1	1
CO2	3	1	3	3	1	1	1	1	1
CO3	3	3	1	1	2	2	1	3	1
CO4	1	3	3	1	3	1	3	3	1
CO5	1	3	2	3	2	1	3	3	3

Mapping of COs with Pos

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	2	1	1
CO2	3	2	1	1
CO3	1	2	3	1
CO4	1	3	1	1
CO5	3	2	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER: Dr. N. Kalaichelvi

Forwarded By

HOD'S Signature

& Name

II M.Sc.,

SEMESTER –III

For those who joined in 2022 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	22PG3ITE9	ALGORITHM DESIGN AND ANALYSIS	Lecture	4	5

COURSE DESCRIPTION

This course introduces basic methods for the design and analysis of efficient algorithms emphasizing methods useful in practice.

COURSE OBJECTIVES

To facilitate the student to analyze performance of algorithms and to choose the appropriate data structure and algorithm design method for a specified application.

UNITS

UNIT I: INTRODUCTION(11 HRS.)

Algorithm -Psuedo code for expressing algorithms - Performance Analysis- Space complexity, Time complexity, Asymptotic Notation- Big oh notation, Omega notation, Theta notation and Little oh notation, Probabilistic analysis, Amortized analysis. **Divide and conquer:** General method, applications- Binary search, Quick sort, Merge sort, Strassen's matrix multiplication.

UNIT II: SEARCHING AND TRAVERSAL TECHNIQUES(11 HRS.)

Efficient non - recursive binary tree traversal algorithm - Disjoint set operations, union and find algorithms - Spanning trees - Graph traversals -

Breadth first search and Depth first search - Connected Components, Bi - connected components - Disjoint Sets- disjoint set operations, union and find algorithms - Spanning trees, connected components and biconnected components.

UNIT III: GREEDY METHOD AND DYNAMIC PROGRAMMING(11 HRS.)

Greedy Method: General method, applications - Job sequencing with deadlines, 0/1 knapsack problem - Minimum cost spanning trees - Single source shortest path problem.

Dynamic Programming: General method, applications-Matrix chain multiplication, Optimal binary search trees, 0/1 knapsack problem - All pairs shortest path problem - Travelling sales person problem - Reliability design.

UNIT IV: BACKTRACKING AND BRANCH AND BOUND (11 HRS.)

Backtracking: General method - applications-n-queen problem - sum of subsets problem - graph coloring - Hamiltonian cycles.

Branch and Bound: General method - applications - Travelling sales person problem,0/1 knapsack problem- LC Branch and Bound solution - FIFO Branch and Bound solution.

UNIT V: NP-HARD AND NP-COMPLETE PROBLEMS(11 HRS.)

NP-Hard and NP-Complete problems: Basic concepts - non deterministic algorithms, NP - Hard and NPComplete classes - Cook's theorem.

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 Hrs.)

Recent advancement in algorithm analysis.

TEXT BOOKS:

1. Fundamentals of Computer Algorithms, Ellis Horowitz,SatrajSahni and Rajasekharam,Galgotia publications pvt. Ltd.

REFERENCES:

1. Foundations of Algorithm, 4th edition, R. Neapolitan and K. Naimipour, Jones and Bartlett Learning.
2. Design and Analysis of Algorithms, P. H. Dave, H. B. Dave, Pearson Education, 2008.

Open Educational Resources:

1. https://www.tutorialspoint.com/design_and_analysis_of_algorithms/analysis_of_algorithms.htm

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 INTRODUCTION				
1.1	Algorithm -Psuedo code for expressing algorithms - Performance Analysis-Space complexity, Time complexity, Asymptotic Notation	4	Chalk & Talk	Black Board
1.2	Big oh notation, Omega notation, Theta notation and Little oh notation, Probabilistic analysis, Amortized analysis. **Divide and conquer:** General method, applications-Binary search	4	Chalk & Talk	Black Board
1.3	Quick sort, Merge sort, Strassen's matrix multiplication.	3	Group discussion	White board
UNIT -2 SEARCHING AND TRAVERSAL TECHNIQUES				

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
2.1	Efficient non - recursive binary tree traversal algorithm - Disjoint set operations, union and find algorithms - Spanning trees - Graph traversals	3	Lecture	Smart Board
2.2	Breadth first search and Depth first search - Connected Components, Bi - connected components - Disjoint Sets- disjoint set operations, union and find algorithms	4	Lecture	Black Board
2.3	Spanning trees, connected components and biconnected components.	4	Lecture	Green Board
UNIT -3 GREEDY METHOD AND DYNAMIC PROGRAMMING				
3.1	**Greedy Method:**General method, applications - Job sequencing with deadlines, 0/1 knapsack problem - Minimum cost spanning trees - Single source shortest path problem.	4	Chalk & Talk	Black Board
3.2	**Dynamic Programming:** General method, applications-Matrix chain multiplication, Optimal binary search trees, 0/1 knapsack problem.	4	Lecture	Green Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
3.3	All pairs shortest path problem - Travelling sales person problem - Reliability design	3	Chalk & Talk	Green Board
UNIT -4 BACKTRACKING AND BRANCH AND BOUND				
4.1	**Backtracking:** General method - applications-n-queen problem	3	Chalk & Talk	Black Board
4.2	sum of subsets problem - graph coloring - Hamiltonian cycles. **Branch and Bound:** General method - applications - Travelling sales person problem,.	4	Lecture	Green Board
4.3	0/1 knapsack problem- LC Branch and Bound solution -	2	Chalk & Talk	Black Board
4.4	FIFO Branch and Bound solution	2	Lecture	Green Board
UNIT -5 NP-HARD AND NP-COMPLETE PROBLEMS				
5.1	**NP-Hard and NP-Complete problems:** Basic concepts - non deterministic algorithms.	5	Lecture	Green Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
5.2	NP - Hard and NPComplete classes - Cook's theorem	6	Chalk & Talk	Black Board
	UNIT -6 DYNAMISM			
6.1	Recent advancement in algorithm analysis.	5	Assignments	Google class room

INTERNAL - PG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Seminar 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K2	4	4	-	-	-	8	-	8	20 %
K3	2	2	-	5	-	9	-	9	22.5 %
K4	2	2	-	-	5	9	-	9	22.5 %
K5	2	2	5	-	-	9	-	9	22.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

End Semester - PG

Levels	Section A 10 Mks	Section B 20 Mks.	Section C 10 Mks	Section D 10 Mks.	Section E 10 Mks.	Total 60Mks.	
K2	10	5	-	-	-	15	25 %
K3	-	5	10	-	-	15	25 %
K4	-	5	-	-	10	15	25 %
K5	-	5	-	10	-	15	25 %
Total	10	20	10	10	10	60	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

- **PG CIA Components**

  Nos

  C1 - Test (CIA 1) 1 - 10 Mks

  C2 - Test (CIA 2) 1 - 10 Mks

C3	-	Assignment	2 *	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Seminar	1	-	5 Mks
C6	-	Attendance		-	5 Mks

The best out of two will be taken into account

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	To learn about basic concepts	K2	PSO1 & PSO2
CO 2	To develop knowledge on different searching and traversal techniques.	K2,K3	PSO2 & PSO3
CO 3	To learn about the greedy and dynamic programming	K2	PSO2 & PSO4
CO 4	To Implement backtracking, branch and bound techniques.	K3, K4	PSO5, PSO6
CO 5	To analyze various techniques in NP-hard and NP-complete problems.	K4 & K5	PSO8 & PSO9

Mapping COs Consistency with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	3	3	1	1	1	1	1	1
CO2	3	1	3	3	1	1	1	1	1
CO3	3	3	1	1	2	2	1	3	1
CO4	1	3	3	1	3	1	3	3	1
CO5	1	3	2	3	2	1	3	3	3

Mapping of COs with Pos

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	2	1	1
CO2	3	2	1	1
CO3	1	2	3	1
CO4	1	3	1	1
CO5	3	2	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: Dr. V. JANE VARAMANI SULEKHA**

Forwarded By

V. Mageshwari

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	22PG4IT16	SOFTWARE PROJECT MANAGEMENT	Self study	-	4

COURSE DESCRIPTION

This course introduces the basic steps involved in Software Development Life Cycle (SDLC).

COURSE OBJECTIVES

To facilitate the students to analyze risk in software design and quality and to plan, design, develop and validate the software project.

UNITS

UNIT –I SOFTWARE ENGINEERING AND PLANNING
(15HRS.)

Size factors – Quality and Productivity Factors – Managerial Issues. Planning a Software Project - Problem definition – Developing a Solution Strategy – Planning the Development Process – Planning an Organizational Structure – **Other Planning Activities (Self Study).**

UNIT –II SOFTWARE COST ESTIMATION

Software Cost Estimation - Software Cost Factors – Software Cost Estimation Techniques – Staffing-Level Estimation – Estimating Software Maintenance Costs.

UNIT –III SOFTWARE REQUIREMENTS

The Software Requirements Specification – Formal Specification Techniques – Languages and Processors for Requirements Specification.

UNIT –IV SOFTWARE DESIGN AND IMPLEMENTATION

Software Design - Fundamental Design Concepts – Modules and Modularization Criteria – Design Notations – Design Techniques – Detailed Design Considerations – Real-Time and Distributed System Design – Test Plans – Milestones, Walkthroughs, and Inspections - Design Guidelines.

UNIT –V TESTING AND MAINTENANCE

Verification and Validation Techniques - Quality Assurance – Static Analysis – Symbolic Execution – Unit Testing and Debugging – System Testing – Formal Verification - Software Maintenance - Enhancing Maintainability During Development

TEXT BOOK:

1. Fairley, Richard. Software engineering concepts. McGraw-Hill, Inc., 1985.Chapters 1, 2, 3, 4, 5, 6, 8.1 - 8.7, 9.1 - 9.5

REFERENCES:

1. Pressman, Roger S. Software engineering: a practitioner's approach. Palgrave macmillan, 2005.
2. Humphrey, Watts S. A discipline for software engineering. Addison-Wesley Longman Publishing Co., Inc., 1995.

OPEN EDUCATIONAL RESOURCES:

1. Software Engineering Tutorial - Tutorialspoint

https://www.tutorialspoint.com/software_engineering/index.htm

2. Software Engineering Tutorial - Tutorialride.com

https://www.tutorialride.com/software-engineering/software-engineering-tutorial.htm

INTERNAL - PG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Seminar 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K2	4	4	-	-	-	8	-	8	20 %
K3	2	2	-	5	-	9	-	9	22.5 %
K4	2	2	-	-	5	9	-	9	22.5 %
K5	2	2	5	-	-	9	-	9	22.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

End Semester - PG

Levels	Section A 10 Mks	Section B 20 Mks.	Section C 10 Mks	Section D 10 Mks.	Section E 10 Mks.	Total 60Mks.	
K2	10	5	-	-	-	15	25 %
K3	-	5	10	-	-	15	25 %
K4	-	5	-	-	10	15	25 %
K5	-	5	-	10	-	15	25 %
Total	10	20	10	10	10	60	100 %

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

- **PG CIA Components**

Nos

C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	2 *	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Seminar	1	-	5 Mks
C6	-	Attendance		-	5 Mks

****The best out of two will be taken into account***

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand how to plan a software project.	K2	PSO1& PSO2
CO 2	Analyze the cost estimate and problem complexity using various estimation techniques.	K2, K3 & K4	PSO3
CO 3	Prepare the SRS, Design document, Project plan of a given software system.	K2, K3 & K4	PSO2& PSO3
CO 4	Apply Software design and implementation ideas in S/W project development.	K2, K3 & K4	PSO2& PSO3
CO 5	Generate test cases using White Box testing and Black Box testing.	K2, K3 & K4	PSO7& PSO8

Mapping COs Consistency with PSOs

CO/ PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO1	3	3	3	1	1	1	1	1	1

CO2	**3**	**1**	**3**	**3**	**1**	**1**	**1**	**1**	**1**
CO3	**3**	**3**	**1**	**1**	**2**	**2**	**1**	**3**	**1**
CO4	**1**	**3**	**3**	**1**	**3**	**1**	**3**	**3**	**1**
CO5	**1**	**3**	**2**	**3**	**2**	**1**	**3**	**3**	**3**

Mapping of COs with Pos

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	2	1	1
CO2	3	2	1	1
CO3	1	2	3	1
CO4	1	3	1	1
CO5	3	2	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. V. JANE VARAMANI SULEKHA**

Forwarded By

HOD'S Signature

& Name