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No.AC2(S)/54/2024-25

Dated: 15.07.2024

Notification

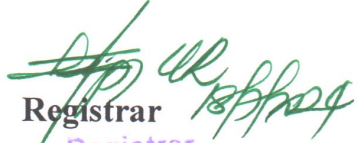
Sub:-Syllabus and Scheme of Examinations of Computer Science and Design (CS & D) programme (VII & VIII Semester) from the Academic year 2024-25.

- Ref:-**1. Decision of Board of Studies in Computer Science and Design (CS & D) meeting held on 11-05-2024.
2. Decision of the Faculty of School of Engineering meeting held on 14-06-2024.
3. Decision of the Academic Council meeting held on 28-06-2024.

The Board of Studies in Computer Science and Design (CS & D) which met on 11-05-2024 has resolved to recommend & approved the Syllabus and Scheme of examinations of Computer Science and Design (CS & D) programme (VII & VIII Semester) with effect from the Academic year 2024-25.

The Faculty of School of Engineering and Academic Council at their meetings held on 14-06-2024 and 28-06-2024 respectively has also approved the above said Syllabus and Scheme of examinations, hence it is hereby notified.

The Syllabus and Scheme of Examinations content may be downloaded from the University Website i.e., www.uni-mysore.ac.in.


Registrar
Registrar
University of Mysore
Mysore

To;

1. The Registrar (Evaluation), University of Mysore, Mysuru.
2. The Chairman, BOS/DOS in Computer Science and Design (CS & D), Manasagangothri, Mysore.
3. The Dean, Faculty of Engineering, DOS in MGM.
4. The Deputy Registrar/Assistant Registrar/Superintendent, Administrative Branch and Examination Branch, University of Mysore, Mysuru.
5. The PA to Vice-Chancellor/ Registrar/ Registrar (Evaluation), University of Mysore, Mysuru.
6. Office Copy.



MYSORE UNIVERSITY SCHOOL OF ENGINEERING
Scheme of Teaching and Examination 2021-2022(As per NEP-2020)
Outcome Based Education (OBE) and Choice Based Credit System (CBCS)
(Effective from the academic year 2021-2022)
Computer Science and Design (CS&D)



VII-SEMESTER													
Sl. No.	Course & Course Code	Course Title	Teaching Dept.	Paper Setting Board	Teaching Hours/week			Examination				Credits	
					Theory lectures	Tutorial	Practical/ Drawing	Examination in Hours	CIE Marks	SEE Marks	Total Marks		
					L	T	P						
1	PCC	21CD71	Fullstack Development	CS&D	CS&D	2	2	2	03	50	50	100	4
2	IPCC	21CD72	Advanced Computer Architecture	CS&D	CS&D	2	2	0	03	50	50	100	3
3	PEC	21CD73X	Professional Elective -3	CS&D	CS&D	2	2	0	03	50	50	100	3
4	PEC	21CD73X	Professional Elective -4	CS&D	CS&D	2	2	0	03	50	50	100	3
5	Project	21CDP74	Project work Phase – I	CS&D	CS&D	0	0	4	03	100		100	2
6	AEC	21AEC75X	Ability Enhancement Course-III	Any Dept.	Any Dept.	0	0	2		50		50	1
7	INT	21INT83	Summer Internship-II	Completed during the vacation of VI and VII semesters									
Total						08	08	08	15	350	200	550	16
Note: PCC: Professional Core Courses, IPCC: Integrated Professional Core Courses, CS&D: Artificial Intelligence and Data Science, PEC: Professional Elective Course, AEC: Ability Enhancement Course, PROJECT: Project work phase-1 and INT: Internship.													
Professional Elective-3 and Professional Elective-4						Ability Enhancement Course							
Course Code	Course Title		Course Code	Course Title		Course Code	Course Title						
21CD731	NOSQL Database		21CD735	J2EE Technologies		21AEC751	Technical Writing using LaTeX						
21CD732	Block Chain Technology		21CD736	Software Testing		21AEC752	Angular JS						
21CD733	Data Science and Visualization		21CD737	Object Oriented Design Patterns		21AEC753	Mobile Application Development						
21CD734	Machine Learning		21CD738	High Performance Computing		21AEC754	Project Management with Git						
Credit Definition: 1-hour lecture(L) per week per semester = 1 Credit 2-hour tutorial (T) per week per semester = 1 Credit 2-hour Practical/Drawing (P) per week per semester = 1 Credit				Four-credit courses are to be designed for 50 hours of Teaching-Learning process. Three credit courses are to be designed for 40 hours of Teaching-Learning process. Two credit courses are to be designed for 25 hours of Teaching-Learning process. One credit course is to be designed for 15 hours of Teaching-Learning process									
Professional Elective Courses (PEC): A professional elective (PEC) course is intended to enhance the depth and breadth of educational experience in the Engineering and Technology curriculum. Multidisciplinary courses that are added supplement the latest trend and advanced technology in the selected stream of engineering. Students can select any one of the professional electives offered by any department. Selection of a professional elective is not allowed provided, <ul style="list-style-type: none"> The candidate has studied the same course during the previous semesters of the programme. The syllabus content of open elective is similar to that of Departmental core courses, Open Electives or Professional electives. A similar course, under any category, is prescribed in the higher semesters of the programme. Registration to electives shall be documented under the guidance of Programme Coordinator/ Adviser/Mentor. 													
Project work: Based on the ability/abilities of the student/s and recommendations of the mentor, a single discipline or a multidisciplinary Mini project can be assigned to an individual student or to a group having not more than 4 students. CIE procedure for Project: (i) Single discipline: The CIE marks shall be awarded by a committee consisting of the Head of the concerned Department and two senior faculty members of the Department, one of whom shall be the Guide. The CIE marks awarded for the Mini-project work, shall be based on the evaluation of project report, project presentation skill and question and answer session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates. (ii) Interdisciplinary: Continuous Internal Evaluation shall be group wise at the college level with the participation of all the guides of the college. The CIE marks awarded for the Mini-project, shall be based on the evaluation of project report, project presentation skill and question and answer session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates.													
AICTE Activity Points: AICTE Activity Points to be earned by students admitted to BE/B.Tech., day college programme (For more details refer to Chapter 6, AICTE Activity Point Programme, Model Internship Guidelines) <ul style="list-style-type: none"> Over and above the academic grades, every Day College regular student admitted to the 4 years Degree programme and every student entering 4 years Degree programme through lateral entry, shall earn 100 and 75 Activity Points respectively for the award of degree through AICTE Activity Point Programme. Students transferred from other Universities to the fifth semester are required to earn 50 Activity Points from the year of entry to UoM. The Activity Points earned shall be reflected on the student's eighth semester Grade Card. The activities can be spread over the years, anytime during the semester weekends and holidays, as per the liking and convenience of the student from the year of entry to the programme. However, the minimum hours' requirement should be fulfilled. Activity Points (non-credit) do not affect SGPA/CGPA and shall not be considered for vertical progression. In case students fail to earn the prescribed activity Points, an Eighth semester Grade Card shall be issued only after earning the required activity Points. Students shall be admitted for the award of the degree only after the release of the Eighth semester Grade Card.													

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MYSORE UNIVERSITY SCHOOL OF ENGINEERING
Scheme of Teaching and Examination 2021-2022(As per NEP-2020)
Outcome Based Education (OBE) and Choice Based Credit System (CBCS)
(Effective from the academic year 2021-2022)
Computer Science and Design (CS&D)



VIII-SEMESTER													
Sl. No.	Course & Course Code		Course Title	Teaching Dept.	Paper Setting Board	Teaching Hours/week			Examination				Credits
						Theory lectures	Tutorial	Practical/ Drawing	Examination in Hours	CIE Marks	SEE Marks	Total Marks	
1	Project	21CDP81	Project work Phase - II	CS&D	CS&D	0	0	12	03	100	100	200	8
2	Seminar	21CDS82	Technical Seminar	CS&D	CS&D	Two interaction hours/week between student and faculty.			03	100		100	3
3	INT	21INT83	Summer Internship-II	Completed during the vacation of VI and VII semesters		Two interaction hours/week between student and faculty.				100		100	3
Total						00	00	16	06	300	100	400	14

Note: **CS&D**: Computer Science and Design , **PROJECT**: Project work phase-II and **INT**: Internship

AICTE Activity Points: In case students fail to earn the prescribed activity Points, an Eighth semester Grade Card shall be issued only after earning the required activity Points. Students shall be admitted for the award of the degree only after the release of the Eighth semester Grade Card.

Credit Definition:

1-hour lecture(L) per week per semester = 1 Credit

2-hour tutorial (T) per week per semester = 1 Credit

2-hour Practical/Drawing (P) per week per semester = 1 Credit

Four-credit courses are to be designed for 50 hours of Teaching-Learning process.

Three credit courses are to be designed for 40 hours of Teaching-Learning process.

Two credit courses are to be designed for 25 hours of Teaching-Learning process.

One credit course is to be designed for 15 hours of Teaching-Learning process

TECHNICAL SEMINAR: The objective of the seminar is to inculcate self-learning, present the seminar topic confidently, enhance communication skill, involve in group discussion for exchange of ideas. Each student, under the guidance of a Faculty, shall choose, preferably, a recent topic of his/her interest relevant to the programme of Specialization.

- Carry out literature survey, systematically organize the content.
- Prepare the report with own sentences, avoiding a cut and paste act.
- Type the matter to acquaint with the use of Micro-soft equation and drawing tools or any such facilities.
- Present the seminar topic orally and/or through PowerPoint slides.
- Answer the queries and involve in debate/discussion.
- Submit a typed report with a list of references.

The participants shall take part in the discussion to foster a friendly and stimulating environment in which the students are motivated to reach high standards and become self-confident

Evaluation Procedure:

The CIE marks for the seminar shall be awarded (based on the relevance of the topic, presentation skill, participation in the question and answer session, and quality of report) by the committee constituted for the purpose by the Head of the Department. The committee shall consist of three teachers from the department with the senior-most acting as the Chairman.

Marks distribution for CIE of the course:

Seminar Report:50 marks

Presentation skill:25 marks

Question and Answer: 25 marks.

No SEE component for Technical Seminar

CIE procedure for Project Work:

- 1) **Single discipline:** The CIE marks shall be awarded by a committee consisting of the Head of the concerned Department and two seniors faculty members of the Department, one of whom shall be the Guide. The CIE marks awarded for the project work, shall be based on the evaluation of project work Report, project presentation skill, and question and answer session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates.
- 2) **Interdisciplinary:** Continuous Internal Evaluation shall be group-wise at the college level with the participation of all guides of the college. Participation of external guide/s, if any, is desirable. The CIE marks awarded for the project work, shall be based on the evaluation of project work Report, project presentation skill, and question and answer session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates.
- 3) **SEE procedure for Project Work:** SEE for project work will be conducted by the two examiners appointed by the University. The SEE marks awarded for the project work shall be based on the evaluation of project work Report, project presentation skill, and question and answer session in the ratio 50:25:25

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FULLSTACK DEVELOPMENT. (21CD71)

VII Semester			
FULLSTACK DEVELOPMENT. 21CD72			
No. of Teaching hour/Week	2	CIE Marks	50
No. of Tutorial hours/week	2	SEE Marks	50
Total No. of Lecture hours	50	Exam Hours	03
L: T: P	2:2:2	Credits	04

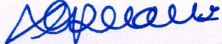
Modules	Course Content	Teaching Hours
Module 1	MVC based Web Designing: Web framework, MVC Design Pattern, Django Evolution, Views, Mapping URL to Views, Working of Django URL Confs and Loose Coupling, Errors in Django, Wild Card patterns in URLS.	10 Hours L(3):T(3):P(4)
Module 2	Django Templates and Models. Template System Basics, Using Django Template System, Basic Template Tags and Filters, MVT Development Pattern, Template Loading, Template Inheritance, MVT Development Pattern. Configuring Databases.	10 Hours L(3):T(3):P(4)
Module 3	Defining and Implementing Models, Basic Data Access, Adding Model String, Representations, Inserting/Updating data, Selecting and deleting objects, Schema Evolution. Django Admin Interfaces and Model Forms: Activating Admin Interfaces, Using Admin Interfaces, Customizing Admin Interfaces, Reasons to use Admin Interfaces.	10 Hours L(3):T(3):P(4)
Module 4	Form Processing, Creating Feedback forms, Form submissions, custom validation, creating Model Forms, URL Conf Ticks, Including Other URL Confs. Generic Views and Django State Persistence: Using Generic Views, Generic Views of Objects, Extending Generic Views of objects, Extending Generic Views.	10 Hours L(3):T(3):P(4)
Module 5	MIME Types, Generating Non-HTML contents like CSV and PDF, Syndication Feed Framework, Sitemap framework, Cookies, Sessions, Users and Authentication.	10 Hours L(3):T(3):P(4)

Course outcomes:

- CO1. Understand the working of MVT based full stack web development with Django.
- CO2. Designing of Models and Forms for rapid development of web pages.
- CO3. Analyse the role of Template Inheritance and Generic views for developing full stack web applications.
- CO4. Apply the Django framework libraries to render non HTML contents like CSV and PDF.

Reference books:

1. Adrian Holovaty, Jacob Kaplan Moss, The Definitive Guide to Django: Web Development Done Right, Second Edition, Springer-Verlag Berlin and Heidelberg GmbH & Co. KG Publishers, 2009.
2. Jonathan Hayward, Django Java Script Integration: AJAX and jQuery, First Edition, Pack Publishing, 2011.
3. Aidas Bendroraitis, Jake Kronika, Django 3 Web Development Cookbook, Fourth Edition, Packt Publishing, 2020.
4. William Vincent, Django for Beginners: Build websites with Python and Django, First Edition, Amazon Digital Services, 2018.

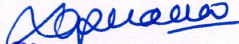

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Weblinks and Video Lectures (e-Resources):

1. MVT architecture with Django: <https://freevideolectures.com/course/3700/django-tutorials>
2. Using Python in Django: <https://www.youtube.com/watch?v=2BqoLiMT3Ao>
3. Model Forms with Django: <https://www.youtube.com/watch?v=gMM1rtTwKxE>
4. Real time Interactions in Django: <https://www.youtube.com/watch?v=3gHmfoeZ45k>
5. AJAX with Django for beginners: <https://www.youtube.com/watch?v=3VaKNyjlxAU>

Laboratory Component:

1. Installation of Python, Django and Visual Studio code editors can be demonstrated.
2. Creation of virtual environment, Django project and App should be demonstrated.
3. Develop a Django app that displays current date and time in server.
4. Develop a Django app that displays date and time four hours ahead and four hours before as an offset of current date and time in server.
5. Develop a simple Django app that displays an unordered list of fruits and ordered list of selected students for an event.
6. Develop a layout.html with a suitable header (containing navigation menu) and footer with copyright and developer information. Inherit this layout.html and create 3 additional pages: contact us, About Us and Home page of any website.
7. Develop a Django app that performs student registration to a course. It should also display list of students registered for any selected course. Create students and course as models with enrolment as ManyToMany field.


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Professional Elective –III / IV

NOSQL Database (21CD731)

VII Semester			
NOSQL Database, 21CD731			
No. of Teaching hour/Week	2	CIE Marks	50
No. of Tutorial hours/week	2	SEE Marks	50
Total No. of Lecture hours	40	Exam Hours	03
L:T:P	2:2:0	Credits	03

Modules	Course Content	Teaching Hours
Module 1	Why NoSQL? The Value of Relational Databases, Getting at Persistent Data, Concurrency, Integration, A (Mostly) Standard Model, Impedance Mismatch, Application and Integration Databases, Attack of the Clusters, The Emergence of NoSQL, Aggregate Data Models; Aggregates, Example of Relations and Aggregates.	08 Hours L(4):T(4)
Module 2	Consequences of Aggregate Orientation, Key-Value and Document Data Models, Column-Family Stores. Distribution Models; Single Server, Sharding, Master-Slave Replication, Peer-to-Peer Replication, Combining Sharding and Replication.	08 Hours L(4):T(4)
Module 3	Consistency, Update Consistency, Read Consistency, Relaxing Consistency, The CAP Theorem, Relaxing Durability, Quorums. Map-Reduce, Basic Map-Reduce, Partitioning and Combining, Composing Map-Reduce Calculations, A Two Stage Map-Reduce Example, Incremental Map-Reduce.	08 Hours L(4):T(4)
Module 4	Key-Value Databases, What Is a Key-Value Store, Key-Value Store Features, Consistency, Transactions, Query Features, Structure of Data, Scaling, Suitable Use Cases. Document Databases, What Is a Document Database? Features, Consistency, Transactions, Availability, Query Features, Scaling, Suitable Use Cases, Event Logging, Content Management Systems.	08 Hours L(4):T(4)
Module 5	Blogging Platforms, Web Analytics or Real-Time Analytics, E-Commerce Applications, When Not to Use, Complex Transactions Spanning Different Operations, Queries against Varying Aggregate Structure.	08 Hours L(4):T(4)

Course outcomes:

- CO1. Demonstrate an understanding of the detailed architecture of Column Oriented NoSQL databases, Document databases, Graph databases.
- CO2. Use the concepts pertaining to all the types of databases.
- CO3. Analyse the structural Models of NoSQL.
- CO4. Develop various applications using NoSQL databases.

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Advanced Computer Architecture (21CD72)

VII Semester			
Advanced Computer Architecture, 21CD72			
No. of Teaching hour/Week	2	CIE Marks	50
No. of Tutorial hours/week	2	SEE Marks	50
Total No. of Lecture hours	40	Exam Hours	03
L:T:P	2:2:0	Credits	03

Modules	Course Content	Teaching Hours
Module 1	Theory of Parallelism: Parallel Computer Models, The State of Computing, Multiprocessors and Multicomputer, Multivector and SIMD Computers, PRAM and VLSI Models, Program and Network Properties, Conditions of Parallelism, Program Partitioning and Scheduling. Program Flow Mechanisms, System Interconnect Architectures.	08 Hours L(4):T(4)
Module 2	Parallel Architectures: Multiprocessors and Multicomputers, Multiprocessor System Interconnects, Cache Coherence and Synchronization Mechanisms, Message Passing Mechanisms, Multivector and SIMD Computers, Vector Processing Principles, Multivector Multiprocessors, Compound Vector Processing.	08 Hours L(4):T(4)
Module 3	Scalable Architectures: Scalable, Multithreaded, and Dataflow Architectures, Latency-Hiding Techniques, Principles of Multithreading, Fine Grain Multicomputers. For all Algorithms or mechanisms any one example is sufficient.	08 Hours L(4):T(4)
Module 4	Software for parallel programming: Parallel Models, Languages, and Compilers, Parallel Programming Models, Parallel Languages and Compilers, Dependence Analysis of Data Arrays.	08 Hours L(4):T(4)
Module 5	Instruction and System Level Parallelism. Computer Architecture, Contents, Basic Design Issues, Problem Definition, Model of a Typical Processor, Compiler-detected Instruction Level Parallelism, For all Algorithms or mechanisms any one example is sufficient.	08 Hours L(4):T(4)

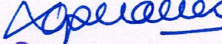
Course outcomes:

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

- CO1. Explain the concepts of parallel computing and hardware technologies.
- CO2. Compare and contrast the parallel architectures.
- CO3. Illustrate parallel programming concepts.

Reference Books:

1. Kai Hwang and Naresh Jotwani, Advanced Computer Architecture (SIE): Parallelism, Scalability, Programmability, McGraw Hill Education 3/e. 2015.
2. John L. Hennessy and David A. Patterson, Computer Architecture: A quantitative approach, 5th edition, Morgan Kaufmann Elseveir, 2013.

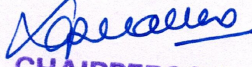

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Reference books:

1. Sadalage, P. & Fowler, NoSQL Distilled: A Brief Guide to the Emerging World of Polyglot Persistence, Pearson Addison Wesley, 2012.
2. Dan Sullivan, "NoSQL For Mere Mortals", 1st Edition, Pearson Education India, 2015. (ISBN-13:978-9332557338).
3. Dan McCreary and Ann Kelly, "Making Sense of NoSQL: A guide for Managers and the Rest of us", 1st Edition, Manning Publication/Dreamtech Press, 2013. (ISBN-13: 978-9351192022).
4. Kristina Chodorow, "MongoDB: The Definitive Guide- Powerful and Scalable Data Storage", 2nd Edition, O'Reilly Publications, 2013. (ISBN-13: 978-9351102694).

Web links and Video Lectures (e-Resources):

1. <https://www.geeksforgeeks.org/introduction-to-nosql/> (and related links in the page)
2. <https://www.youtube.com/watch?v=0buKQHokLK8> (How do NoSQL databases work? Simply explained)
3. <https://www.techtarget.com/searchdatamanagement/definition/NoSQL-Not-Only-SQL> (What is NoSQL and How do NoSQL databases work)
4. <https://www.mongodb.com/nosql-explained> (What is NoSQL)
5. <https://onlinecourses.nptel.ac.in/noc20-cs92/preview> (preview of Big data course contains NoSQL)


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Professional Elective –III / IV

BLOCK CHAIN TECHNOLOGY (21CD732)

Semester VII			
BLOCK CHAIN TECHNOLOGY (21CD732)			
No. of Teaching hour/Week	2	CIE Marks	50
No. of Tutorial hours/week	2	SEE Marks	50
Total No. of Lecture hours	40	Exam Hours	03
L:T:P	2:2:0	Credits	03

Modules	Course Content	Teaching Hours
Module 1	History: Digital Money to Distributed Ledgers -Design Primitives: Protocols, Security, Consensus, Permissions, Privacy : Block chain Architecture and Design-Basic crypto primitives: Hash, Signature -Hash chain to Block chain-Basic consensus mechanisms.	08 Hours L(4):T(4)
Module 2	Requirements for the consensus protocols-Proof of Work (PoW)-Scalability aspects of Block chain consensus protocols: Permissioned Block Chains-Design Goals-Consensus protocols for Permissioned Block chains.	08 Hours L(4):T(4)
Module 3	Decomposing the consensus process-Hyper ledger fabric components-Chain code Design and Implementation: Hyper ledger Fabric II: Beyond Chain code: fabric SDK and Front End-Hyper ledger composer tool.	08 Hours L(4):T(4)
Module 4	Block chain in Financial Software and Systems (FSS): - Settlements, KYC, Capital Markets-Insurance Block chain in trade/supply chain: Provenance of goods, visibility, trade/supply chain finance, invoice management/discounting.	08Hours L(4):T(4)
Module 5	Block chain for Government: Digital identity, land records and other kinds of record keeping between government entities, public distribution system / social welfare systems: Block chain Cryptography: Privacy and Security on Block chain.	08 Hours L(4):T(4)

Course outcomes:

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

- To understand the concepts of block chain technology and state the basic concepts of block chain.
- To understand the consensus and hyper ledger fabric in block chain technology.
- Paraphrase the list of consensus and demonstrate and interpret working of Hyper Ledger Fabric.
- Implement SDK composer tool and explain the Digital identity for government.
- Block chain in finance software and government system.

Reference Books:

1. Mark Gates, Block chain: Ultimate guide to understanding block chain, bit coin, crypto currencies, smart contracts and the future of money, Wise Fox Publishing and Mark Gates 2017.
2. Salman Baset, Luc Desrosiers, Nitin Gaur, Petr Novotny, Anthony O'Dowd, Venkatraman Ramakrishna. Hands-On Block chain with Hyper ledger: Building decentralized applications with Hyperledger Fabric and Composer", 2018.
3. Bahga, Vijay Madiseti. Block chain Applications: A Hands-On Approach, Arshdeep Bahga, Vijay Madiseti publishers 2017.

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Professional Elective –III / IV

DATA SCIENCE AND VISUALIZATION. 21CD733

VII Semester			
Data Science and Visualization, 21CD733			
No. of Teaching hour/Week	2	CIE Marks	50
No. of Tutorial hours/week	2	SEE Marks	50
Total No. of Lecture hours	40	Exam Hours	03
L:T:P	2:2:0	Credits	03

Modules	Course Content	Teaching Hours
Module 1	Introduction: What is Data Science? Big Data and Data Science hype and getting past the hype, Why now? – Datafication, Current landscape of perspectives, Skill sets. Needed Statistical Inference: Populations and samples, Statistical modelling, probability distributions, fitting a model.	08 Hours L(4):T(4)
Module 2	Exploratory Data Analysis and the Data Science Process Basic tools (plots, graphs and summary statistics) of EDA, Philosophy of EDA, The Data Science Process, Case Study: Real Direct (online realestate firm). Three Basic Machine Learning Algorithms: Linear Regression, k-Nearest Neighbours (k- NN), k-means.	08 Hours L(4):T(4)
Module 3	Feature Generation and Feature Selection Extracting Meaning from Data: Motivating application: user (customer) retention. Feature Generation (brainstorming, role of domain expertise, and place for imagination), Feature Selection algorithms. Filters; Wrappers; Decision Trees; Random Forests. Recommendation Systems: Building a User-Facing Data Product, Algorithmic ingredients of a Recommendation Engine, Dimensionality Reduction, Singular Value Decomposition, Principal Component Analysis, Exercise: build your own recommendation system.	08 Hours L(4):T(4)
Module 4	Data Visualization and Data Exploration Introduction: Data Visualization, Importance of Data Visualization, Data Wrangling, Tools and Libraries for Visualization Comparison Plots: Line Chart, Bar Chart and Radar Chart; Relation Plots: Scatter Plot, Bubble Plot, Correlogram and Heatmap; Composition Plots: Pie Chart, Stacked Bar Chart, Stacked Area Chart, Venn Diagram.	08 Hours L(4):T(4)
Module 5	Distribution Plots: Histogram, Density Plot, Box Plot, Violin Plot; Geo Plots: Dot Map, Choropleth Map, Connection Map; What Makes a Good Visualization? A Deep Dive into Matplotlib Introduction, Overview of Plots in Matplotlib, Pyplot Basics: Creating Figures, Closing Figures, Format Strings, Plotting, Plotting Using pandas DataFrames, Displaying Figures, Saving Figures.	08 Hours L(4):T(4)

Course outcomes:

At the end of the course the student will be able to:

- CO 1. Understand the data in different forms.
- CO 2. Apply different techniques to Explore Data Analysis and the Data Science Process.
- CO 3. Analyze feature selection algorithms & design a recommender system.
- CO 4. Evaluate data visualization tools and libraries and plot graphs.
- CO 5. Develop different charts and include mathematical expressions.

Reference Books

1. Doing Data Science, Cathy O'Neil and Rachel Schutt, O'Reilly Media, Inc O'Reilly Media, Inc, 2013.
2. Data Visualization workshop, Tim Grobmann and Mario Dobler, Packt Publishing, ISBN 9781800568112.
3. Mining of Massive Datasets, Anand Rajaraman and Jeffrey D. Ullman, Cambridge University Press, 2010.
4. Data Science from Scratch, Joel Grus, Shroff Publisher /O'Reilly Publisher Media. A handbook for data driven design by Andy krik.

Weblinks and Video Lectures (e-Resources):

1. <https://nptel.ac.in/courses/106/105/106105077/>
2. <https://www.oreilly.com/library/view/doing-data-science/9781449363871/toc01.html>
3. <http://book.visualisingdata.com/>
4. <https://matplotlib.org/>
5. <https://docs.python.org/3/tutorial/>
6. <https://www.tableau.com/>

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Professional Elective –III / IV

Machine Learning (21CD734)

Semester VII Machine Learning (21CD734)			
No. of Teaching hour/Week	2	CIE Marks	50
No. of Tutorial hours/week	2	SEE Marks	50
Total No. of Lecture hours	40	Exam Hours	03
L:T:P	2:2:0	Credits	03

Modules	Course Content	Teaching Hours
Module 1	Introduction to machine learning: Need for Machine Learning, Machine Learning Explained, and Machine Learning in relation to other fields, Types of Machine Learning. Challenges of Machine Learning, Machine Learning process, Machine Learning applications. Understanding Data: What is data, types of data, big data analytics and types of analytics, big data analytics framework, Descriptive statistics, univariate data analysis and visualization.	08 Hours L(4):T(4)
Module 2	Understanding Data Bivariate and Multivariate data, Multivariate statistics, Essential mathematics for Multivariate data, Overview hypothesis, Feature engineering and dimensionality reduction techniques, Basics of Learning Theory: Introduction to learning and its types, Introduction computation learning theory, Design of learning system, Introduction concept learning.	08 Hours L(4):T(4)
Module 3	Supervised Learning: Regression: Introduction to linear regression, Gradient descent algorithm, Polynomial regression Regularization techniques: L1 and L2 regularization, Model evaluation: mean squared error, R-squared score. Supervised Learning: Classification, Introduction to logistic regression, Decision trees and random forests, Support vector machines (SVM), Evaluation metrics for classification: accuracy, precision, recall, F1-score.	08 Hours L(4):T(4)
Module 4	Unsupervised Learning: Clustering: Introduction to clustering algorithms, K-means clustering, Hierarchical clustering, Density-based clustering, Evaluation metrics for clustering: inertia, silhouette score. Unsupervised Learning: Dimensionality Reduction: Introduction to dimensionality reduction, Principal Component Analysis (PCA), t-SNE algorithm, Applications of dimensionality reduction.	08 Hours L(4):T(4)
Module 5	Neural Networks: Introduction to neural networks, Basic structure of a neural network, Activation functions, Backpropagation algorithm, Overfitting and regularization techniques. Deep Learning: Introduction to deep learning, Convolutional Neural Networks (CNNs) for image recognition, Transfer learning Applications of Machine Learning: Image recognition, Natural Language Processing (NLP), Recommendation systems, Fraud detection, Predictive maintenance.	08 Hours L(4):T(4)

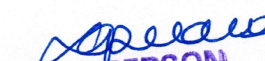
Course outcomes:

At the end of the course the student will be able to:

- CO1. Design intelligent agents for solving simple gaming problems.
- CO2. Have a good understanding of machine leaning in relation to other fields and fundamental issues.
- CO3. Understand data and applying machine learning algorithms to predict the outputs.
- CO4. Model the neuron and Neural Network, and to analyse ANN learning and its applications.

Reference Book:

1. S. Sridhar, M Vijayalakshmi “Machine Learning”. Oxford ,2021.


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Professional Elective –III / IV

J2EE TECHNOLOGIES. (21CD735)

VII Semester			
J2EE Technologies. (21CD735)			
No. of Teaching hour/Week	2	CIE Marks	50
No. of Tutorial hours/week	2	SEE Marks	50
Total No. of Lecture hours	40	Exam Hours	03
L:T:P	2:2:0	Credits	03

Modules	Course Content	Teaching Hours
Module 1	MULTITHREADED PROGRAMMING: The Java thread model, The main thread, creating a thread, Creating multiple threads, Thread priorities. ENUMERATIONS, AUTOBOXING: Enumerations, Enumeration fundamentals, the values() and valueOf() Methods, java enumerations are class types, enumerations Inherits Enum, example, type wrappers, Autoboxing, Autoboxing & Methods, Autoboxing/Unboxing occurs in Expressions, Autoboxing/Unboxing, Boolean and character values, Autoboxing/Unboxing helps prevent errors, A word of Warning.	08 Hours L(4):T(4)
Module 2	THE COLLECTIONS AND FRAMEWORK: Collections Overview, Recent Changes to Collections, The Collection Interfaces, The Collection Classes, Accessing a collection Via an Iterator, Storing User Defined Classes in Collections, The Random Access Interface, Working With Maps, Comparators, The Collection Algorithms, String Handling :The String Constructors, String Length, Special String Operations, String Literals, String Concatenation, String Concatenation with Other Data Types, String Conversion and toString() Character Extraction, charAt(), getChars(), getBytes() toCharArray(), String Comparison, equals() and equalsIgnoreCase(), regionMatches() startsWith() and endsWith(), equals() Versus == , compareTo() Searching Strings, Modifying a String, substring(), concat(), replace(), trim(), Data Conversion Using valueOf(), Changing the Case of Characters Within a String, Additional String Methods.	08 Hours L(4):T(4)
Module 3	SERVLETS: Background; The Life Cycle of a Servlet; Using Tomcat for Servlet Development; A simple Servlet; The Servlet API; The Javax.servlet Package; Reading Servlet Parameter; The Javax.servlet.http package; Handling HTTP Requests and Responses.	08 Hours L(4):T(4)
Module 4	JSP,RMI: Java Server Pages(JSP): JSP, JSP tags, Tomcat, Request String, User sessions, Cookies, Session, Objects. Java Remote Method Invocation: RMI concept; Server side, Client side.	08 Hours L(4):T(4)
Module 5	THE CONCEPT OF JDBC; JDBC Driver Types; JDBC Packages; A Brief Overview of the JDBC process; Database Connection; Associating the JDBC/ODBC Bridge with the Database; Statement Objects; ResultSet; Transaction Processing; Metadata, Data types; Exceptions.	08 Hours L(4):T(4)

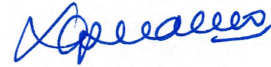
Course outcomes:

At the end of the course the student will be able to:

- CO 1. Interpret the need for advanced Java concepts like enumerations and collections in developing modular and efficient programs.
- CO2. Illustrate database access and details for managing information using the JDBC API.
- CO3. Describe how servlets fit into Java-based web application architecture.
- CO4. Develop reusable software components using Java Beans.

Reference Books:

1. Herbert Schildt: JAVA the Complete Reference, 7th/9th Edition, Tata McGraw Hill, 2007.
2. Jim Keogh: J2EE-TheCompleteReference, McGraw Hill, 2007.
3. Y. Daniel Liang: Introduction to JAVA Programming, 7thEdition, Pearson Education, 2007.
4. Stephanie Bodoff et al: The J2EE Tutorial, 2nd Edition, Pearson Education,2004.



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Professional Elective –III / IV

SOFTWARE TESTING. 21CD736

VII Semester			
SOFTWARE TESTING. (21CD736)			
No. of Teaching hour/Week	2	CIE Marks	50
No. of Tutorial hours/week	2	SEE Marks	50
Total No. of Lecture hours	40	Exam Hours	03
L:T:P	2:2:0	Credits	03

Modules	Course Content	Teaching Hours
Module 1	Basics of Software Testing: Basic definitions, Software Quality , Requirements, Behaviour and Correctness, Correctness versus Reliability, Testing and Debugging, Test cases, Insights from a Venn diagram, Identifying test cases, Test-generation Strategies, Test Metrics, Error and fault taxonomies , Levels of testing, Testing and Verification, Static Testing. Problem Statements: Generalized pseudocode, the triangle problem, the NextDate function, the commission problem, the SATM (Simple Automatic Teller Machine) problem, the currency converter, Saturn windshield wiper.	08 Hours L(4):T(4)
Module 2	Functional Testing: Boundary value analysis, Robustness testing, Worst-case testing, Robust Worst testing for triangle problem, Nextdate problem and commission problem, Equivalence classes, Equivalence test cases for the triangle problem, NextDate function, and the commission problem, Guidelines and observations, Decision tables, Test cases for the triangle problem, NextDate function, and the commission problem, Guidelines and observations. Fault Based Testing: Overview, Assumptions in fault based testing, Mutation analysis, Fault-based adequacy criteria, Variations on mutation analysis.	08 Hours L(4):T(4)
Module 3	Structural Testing: Overview, Statement testing, Programme testing, Condition testing, Path testing: DD paths, Test coverage metrics, Basis path testing, guidelines and observations, Data –Flow testing: Definition-Use testing, Slice-based testing, Guidelines and observations. Test Execution: Overview of test execution, from test case specification to test cases, Scaffolding, Generic versus specific scaffolding, Test oracles, Self-checks as oracles, Capture and replay.	08 Hours L(4):T(4)
Module 4	Process Framework : Basic principles: Sensitivity, redundancy, restriction, partition, visibility, Feedback, the quality process, Planning and monitoring, Quality goals, Dependability properties ,Analysis Testing, Improving the process, Organizational factors.	08 Hours L(4):T(4)
Module 5	Planning and Monitoring the Process: Quality and process, Test and analysis strategies and plans, Risk planning, monitoring the process, Improving the process, the quality team Documenting Analysis and Test: Organizing documents, Test strategy document, Analysis and test plan, Test design specifications documents, Test and analysis reports.	08 Hours L(4):T(4)


Course outcomes:

At the end of the course the student will be able to:

- CO1. Derive test cases for any given problem.
- CO2. Compare the different testing techniques.
- CO3. Classify the problem into suitable testing model.
- CO4. Apply the appropriate technique for the design of flow graph.

Reference Books:

1. Paul C. Jorgensen: Software Testing, A Craftsman's Approach, 3rd Edition, Auerbach Publications, 2008. (Listed topics only from Chapters 1, 2, 5, 6, 7, 9, 10, 12, 13)
2. Mauro Pezze, Michal Young: Software Testing and Analysis – Process, Principles and Techniques, Wiley India, 2009. (Listed topics only from Chapters 3, 4, 16, 17, 20,21, 22,24)
3. Aditya P Mathur: Foundations of Software Testing, Pearson Education, 2008.(Listed topics only from Section 1.2 , 1.3, 1.4 ,1.5, 1.8,1.12,6. 2.1,6. 2.4


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Professional Elective –III / IV

OBJECT ORIENTED DESIGN PATTERNS (21CD737)

Semester VII			
Object Oriented Design Patterns (21CD737)			
No. of Teaching hour/Week	2	CIE Marks	50
No. of Tutorial hours/week	2	SEE Marks	50
Total No. of Lecture hours	40	Exam Hours	03
L:T:P	2:2:0	Credits	03

Modules	Course Content	Teaching Hours
Module 1	Introduction: what is a design pattern? describing design patterns, the catalog of design pattern, organizing the catalog, how design patterns solve design problems, how to select a design pattern, how to use a design pattern. A Notation for Describing Object-Oriented Systems. Textbook 1: Chapter 1 and 2.7	08 Hours L(4):T(4)
Module 2	Design Pattern Catalog : Structural patterns, Adapter, bridge, composite, decorator, facade, flyweight, proxy. Textbook 2: chapter 4	08 Hours L(4):T(4)
Module 3	Behavioural Patterns: Chain of Responsibility, Command, Interpreter, Iterator, Mediator, Memento, Observer, State, Template Method. Textbook 2: chapter 5	08 Hours L(4):T(4)
Module 4	Interactive systems and the MVC architecture: Introduction, The MVC architectural pattern, analysing a simple drawing program, designing the system, designing of the subsystems, getting into implementation, implementing undo operation, drawing incomplete items, adding a new feature, pattern-based solutions. Textbook 1: Chapter 11	08Hours L(4):T(4)
Module 5	Designing with Distributed Objects: Client server system, java remote method invocation, implementing an object-oriented system on the web (discussions and further reading) a note on input and output, selection statements, loops arrays. Textbook 1: Chapter 12	08 Hours L(4):T(4)

Course outcomes:

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

- CO 1. Design and implement codes with higher performance and lower complexity.
- CO 2. Be aware of code qualities needed to keep code flexible.
- CO 3. Capable of applying these principles in the design of object oriented systems.
- CO 4. Be able to select and apply suitable patterns in specific contexts

Reference Books:

1. Brahma Dathan, Sarnath Rammath, Object-oriented analysis, design and implementation, Universities Press,2013
2. Erich Gamma, Richard Helan, Ralph Johman, John Vlissides , Design Patterns, Pearson Publication,2013.

Professional Elective –III / IV

High Performance Computing. (21CD738)

Semester VII			
No. of Teaching hour/Week	2	CIE Marks	50
No. of Tutorial hours/week	2	SEE Marks	50
Total No. of Lecture hours	40	Exam Hours	03
L:T:P	2:2:0	Credits	03

Modules	Course Content	Teaching Hours
Module 1	Parallel Programming & Computing – Introduction: Era of Parallel Programming Platforms: Implicit Parallelism: Trends in Microprocessor Architectures, Limitations of Memory System Performance, Dichotomy of Parallel Computing Platforms, Physical Organization of Parallel Platforms, Communication Costs in Parallel Machines, Routing Mechanisms for Interconnection Networks, Impact of Process-Processor Mapping and Mapping Techniques. T1: Ch: 1.1, 1.2, 2.1 – 2.7	08 Hours L(4):T(4)
Module 2	Principles of Parallel Algorithm Design: Preliminaries, Decomposition Techniques, Characteristics of Tasks and Interactions, Mapping Techniques for Load Balancing, Methods for Containing Interaction Overheads, Parallel Algorithm Models. Basic Communication Operations: One-to-All Broadcast and All-to-One Reduction, Allto-All Broadcast and Reduction, All-Reduce and Prefix-Sum Operations, Scatter and Gather, All-to-All Personalized Communication, Circular Shift, Improving the Speed of Some Communication Operations. T1: Ch 3, 4	08 Hours L(4):T(4)
Module 3	Analytical Modeling of Parallel Programs: Sources of Overhead in Parallel Programs, Performance Metrics for Parallel Systems, The Effect of Granularity on Performance, Scalability of Parallel Systems. Minimum Execution Time and Minimum Cost-Optimal Execution Time, Asymptotic Analysis of Parallel Programs Section 5.7. Other Scalability Metrics.	08 Hours L(4):T(4)
Module 4	Programming Using the Message-Passing Paradigm: Principles of Message-Passing Programming, The Building Blocks: Send and Receive Operations, MPI: the Message Passing Interface, Topologies and Embedding, Overlapping Communication with Computation, Collective Communication and Computation Operations, Groups and Communicators.	08 Hours L(4):T(4)
Module 5	Programming Shared Address Space Platforms: Thread Basics, Why Threads?, The POSIX Thread API, Thread Basics: Creation and Termination, Synchronization Primitives in Pthreads, Controlling Thread and Synchronization Attributes, Thread Cancellation, Composite Synchronization Constructs, Tips for Designing Asynchronous Programs. OpenMP: a Standard for Directive Based Parallel Programming Dense Matrix Algorithms: Matrix-Vector Multiplication, Matrix-Matrix Multiplication, Solving a System of Linear Equations. T1: Ch 7, 8 9	08 Hours L(4):T(4)

Course outcomes:

- Illustrate the key factors affecting performance of CSE applications.
- Illustrate mapping of applications to high-performance computing systems
- Apply hardware/software co-design for achieving performance on real-world applications

Reference Books:

1. Introduction to Parallel Computing, AnanthGrama, Anshul Gupta, George Karypis, and Vipin Kumar, 2nd edition, Addison-Welsey, 2003.
2. Grama, A. Gupta, G. Karypis, V. Kumar, An Introduction to Parallel Computing, Design and Analysis of Algorithms: 2/e, Addison-Wesley, 2003.
3. G.E. Karniadakis, R.M. Kirby II, Parallel Scientific Computing in C++ and MPI: A Seamless Approach to Parallel Algorithms and their Implementation, Cambridge University Press,2003.


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Ability Enhancement Course-III

Technical Writing using LaTeX (AEC751)

Semester VII			
No. of Teaching hour/Week	0	CIE Marks	50
No. of Tutorial hours/week	0	SEE Marks	00
Total No. of Lecture hours	2	Exam Hours	00
L: T: P	0:0:2	Credits	01

Modules	Course Content	Teaching Hours
Module 1	Introduction to LaTeX, Required Components of a LaTeX Document, Typing LaTeX Commands, preparing basic document, Changing the class – article, report, Sectioning, Chapters.	04 Hours
Module 2	Text Formatting, Lists, Special characters, Foot note, Mathematical Formulas, Exponents and Subscripts, Above and Below, Fractions, Functions, Sums, Integrals, and Limits, Roots, Text in Math Displays, Operators & Relations, Negated Symbols, More Symbols, Mathematical equations, Equation numbering, Greek letters, working with image, Giving caption and label.	04 Hours
Module 3	Tables, Arrays, and Lists, Constructing Arrays, Constructing Tables.	04 Hours
Module 4	Theorems, Basic theorems and proofs, Theorem counters, Theorem styles.	04 Hours
Module 5	Referencing, Bibliography and citation, Journal Articles/Reports, preparing research papers and project reports, Presentations in Latex, Brief introduction to beamer, Presentation using beamer class.	04 Hours

Course outcomes:

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

- Understand LaTeX, a document preparation system for high-quality typesetting.
- Getting Familiarized with the features of LaTeX.
- Getting Familiarized with the features of LaTeX.
- Typesetting of complex mathematical formulae using LaTeX.
- Typesetting of journal articles, technical reports, and slide presentations.
- Automatic generation of a table of contents, bibliographies, and indexes.

References:

1. Guide to LATEX, fourth edition, Helmut Kopka, Patrick W.Daly
2. https://www.overleaf.com/learn/latex/Beamer#Reference_guide
<https://mirror.niser.ac.in/ctan/macros/latex/contrib/beamer/doc/beameruserguide.pdf>

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Ability Enhancement Course-III

ANGULAR JS (AEC752)

VII Semester			
ANGULAR JS, 21AEC752			
No. of Teaching hour/Week	0	CIE Marks	50
No. of Tutorial hours/week	0	SEE Marks	00
Total No. of Lecture hours	2	Exam Hours	00
L: T: P	0:0:2	Credits	01

PART	Course Content	Teaching Hours
1	Develop Angular JS program that allows user to input their first name and last name and display their full name. Note: The default values for first name and last name may be included in the program.	04 Hours
2	Develop an Angular JS application that displays a list of shopping items. Allow users to add and remove items from the list using directives and controllers. Note: The default values of items may be included in the program.	04 Hours
3	Develop a simple Angular JS calculator application that can perform basic mathematical operations (addition, subtraction, multiplication, division) based on user input.	04 Hours
4	Write an Angular JS application that can calculate factorial and compute square based on given user input.	04 Hours
5	Develop AngularJS application that displays a details of students and their CGPA. Allow users to read the number of students and display the count. Note: Student details may be included in the program.	04 Hours
	Course outcomes (Course Skill Set): At the end of the course the student will be able to: CO 1. Develop Angular JS programs using basic features. CO 2. Develop dynamic Web applications using AngularJS modules. CO 3. Make use of form validations and controls for interactive applications. CO 4. Apply the concepts of Expressions, data bindings and filters in developing Angular JS program.	

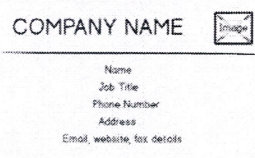
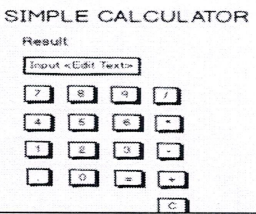
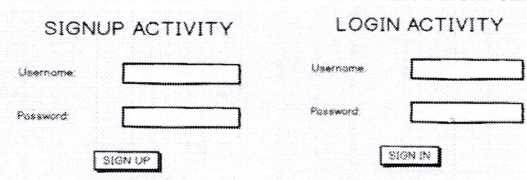


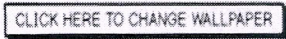

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Ability Enhancement Course-III

Mobile Application Development (AEC752)

VII Semester			
Mobile Application Development, 21AEC753			
No. of Teaching hour/Week	0	CIE Marks	50
No. of Tutorial hours/week	0	SEE Marks	00
Total No. of Lecture hours	2	Exam Hours	00
L: T: P	0:0:2	Credits	01

SL No.	Course Content	Teaching Hours
1	<p>Create an application to design a Visiting Card. The Visiting card should have a company logo at the top right corner. The company name should be displayed in Capital letters, aligned to the center. Information like the name of the employee, job title, phone number, address, email, fax and the website address are to be displayed. Insert a horizontal line between the job title and the phone number.</p> 	04 Hours
2	<p>Develop an Android application using controls like Button, Text View, Edit Text for designing a calculator having basic functionality like Addition, Subtraction, Multiplication, and Division.</p> 	04 Hours
3	<p>Create a SIGN Up activity with Username and Password. Validation of password should happen based on the following rules:</p> <ul style="list-style-type: none"> • Password should contain uppercase and lower-case letters. • Password should contain letters and numbers. • Password should contain special characters. • Minimum length of the password (the default value is 8). <p>On successful SIGN UP proceed to the next Login activity. Here the user should SIGN IN using the Username and Password created during signup activity.</p> <p>If the Username and Password are matched then navigate to the next activity which displays a message saying “Successful Login” or else display a toast message saying “Login Failed”. The user is given only two attempts and after that display a toast message saying “Failed Login Attempts” and disable the SIGN IN button. Use Bundle to transfer information from one activity to another.</p> 	04 Hours

4	<p>Develop an application to set an image as wallpaper. On click of a button, the wallpaper image should start to change randomly every 30 seconds.</p> <p>CHANGING WALLPAPER APPLICATION</p> 	04 Hours
5	<p>Write a program to create an activity with two buttons START and STOP. On pressing of the START button, the activity must start the counter by displaying the numbers from One and the counter must keep on counting until the STOP button is pressed. Display the counter value in a Text View control.</p> <p>COUNTER APPLICATION</p> 	04 Hours
<p>Descriptions (if any):</p> <ol style="list-style-type: none"> 1. Installation procedure of the Android Studio/Java software must be demonstrated and carried out in groups. 2. Students should use the latest version of Android Studio/Java/Kotlin to execute these programs. Diagrams given are for representational purpose only, students are expected to improvise on it. 		
<p>Text Books:</p> <ol style="list-style-type: none"> 1. Google Developer Training, "Android Developer Fundamentals Course – Concept Reference", Google Developer Training Team, 2017. https://www.gitbook.com/book/google-developer-training/android-developer-fundamentalscourse-concepts/details (Download pdf file from the above link) 		
<p>Reference Books:</p> <ol style="list-style-type: none"> 1. Erik Hellman, "Android Programming – Pushing the Limits", 1st Edition, Wiley India Pvt Ltd, 2014. ISBN-13: 978-8126547197. 2. Dawn Griffiths and David Griffiths, "Head First Android Development", 1st Edition, O'Reilly SPD Publishers, 2015. ISBN-13:978-9352131341. 3. Bill Phillips, Chris Stewart and Kristin Marsicano, "Android Programming: The Big Nerd Ranch Guide", 3rd Edition, Big Nerd Ranch Guides, 2017. ISBN-13:978-0134706054. 		

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Project Management with Git (21AEC754)

Semester VII			
No. of Teaching hour/Week	0	CIE Marks	50
No. of Tutorial hours/week	0	SEE Marks	00
Total No. of Lecture hours	2	Exam Hours	00
L: T: P	0:0:2	Credits	01

Modules	Course Content	Teaching Hours
Module 1	Introduction to Version Control Importance of version control in software development, Overview of Git and other version control systems.	04 Hours
Module 2	Getting Started with Git Installing and configuring Git, Creating a new Git repository.	04 Hours
Module 3	Basic Git Concepts and Commands Git workflow: add, commit, push, pull, Branching and merging Resolving conflicts.	04 Hours
Module 4	Collaborative Development with Git Remote repositories and Git hosting platforms (GitHub, GitLab, Bitbucket), Forking and cloning repositories, Pull requests and code review.	04 Hours
Module 5	Branching Strategies Feature branching, GitFlow workflow, Release management with Git.	04 Hours

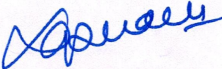
Course outcomes:

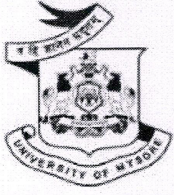
At the end of the course the students will be able to:

- Understand the fundamentals of version control and its importance in project management.
- Learn how to set up and configure Git for project management purposes.
- Master essential Git commands and workflows for collaboration and code management.
- Explore advanced Git features and techniques for optimizing project workflows.
- Apply Git-based project management practices to real-world scenarios.

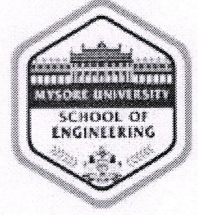
Reference Books:

1. Scott Chacon and Ben Straub. Pro Git.
2. Supplementary reading materials and online resources.


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UNIVERSITY OF MYSORE
(Re-accredited by NAAC with 'A' Grade)
(NIRF-2022: Ranked 33rd in University Category and 54th in Overall Category)
MYSORE UNIVERSITY SCHOOL OF ENGINEERING
Manasagangotri Campus, Mysuru
(Approved by AICTE, New Delhi)



Dr. Ananthapadmanabha T
Director, MUSE, Mysuru

Mobile: 91-9449815275
Email ID: directormusem@uni-mysore.ac.in

No.MUSE/10 /2024-25

Date: 06-05-2024.

To,

1. Dr. Thippeswamy K, Professor, Dept of CSE at Visvesvaraya Technological University, PG Centre, Mysuru.
2. Dr.Natesh M. Professor, Department of Computer Science and Engineering, VVCE, Mysuru
3. Dr. ManjunathAaradhya. Professor and Head DepartmentMaster of Computer Applications, JSS Science and Technology University, Mysuru.
4. Dr. Deepu R,Professor in Department of Computer Science and Engineering, PES University, Bangalore.
5. Dr. Anil Kumar K M,Professor · Department of Computer Science & Engineering, JSS Science and Technology University , Mysuru.
6. Dr. Ranjit K N, Professor and HOD Dept. of Computer Science and Engineering, MIT Thandavapura.
7. Dr NageshPoojary,Head of Computer Vision @ Continental, Bangalore.

Respected Sir/Madam,

Sub: Board of Studies Meeting 2024-25 for the department of Computer Science and Design, MUSE, University of Mysore-reg.

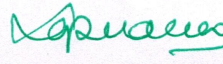
As per the directions of registrar, University of Mysore, Mysuru, meeting of Board of Studies in Computer Science and Design for the academic year 2024-25 in convened on 11/05/2024, Saturday on 11:00 A.M at Department of Studies in Computer Science, Manasagangotri, University of Mysore, Mysuru 06. Therefore, I request you to attend the meeting without fail and provide your valuable suggestions.

Attending BoS members will be provided by TA/DA and sitting fees as per the Mysore University norms.

Please acknowledge the receipt of this letter and contact me for future information.

Thanking You.

Yours sincerely


6/5/24
(Dr. Ananthapadmanabha T)

Director, MUSE Mysore

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Panel of Examiners recommended by BoS for the academic year 2024-2025
Computer Science and Design

Internal Members

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- 100 Mr. Devaraju, Technology Lead, Infosys. Ltd., Mysuru.
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