Hashing

Quiz by Rajasree S

In Your Library

Feel free to use or edit the questions

includes Teacher and Student dashboards

Measure skills
from any curriculum

Tag the questions with any skills you have. Your dashboard will track each student's mastery of each skill.

1 — 30 sec

Q. Which of the following hash functions use the distribution of digits?

- × Fold Boundary
- ✓ Digit Analysis
- × Fold Shifting
- × Algebraic Coding

2 — 30 sec

Q. Let key=679345, address size=2, determine h(key) using fold shifting method.

- × 06
- ✓ 05
- × 205
- × 25

3 — 30 sec

Q. Let key=679345, address size=2, determine h(key) using fold boundary method.

- × 25
- × 93
- ✓ 23
- × 69

4 — 45 sec

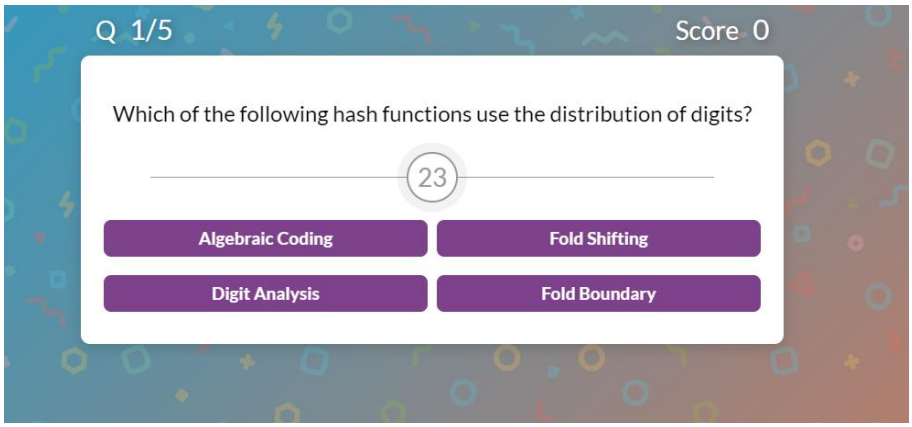
Q. Let key=CAB, determine the hash value using length dependent method.

- × 133
- × 180
- × 123
- ✓ 181

5 — 15 sec

Q. If key value=350, m=11, find the hash value using division method.

- ✓ 9
- × 50
- × 12
- × 0




app.quizalize.com
Play again
See all activities
You got 100% (5/5)
on Hashing
May 9, 2023 12:45 PM
Outstanding work, keep it up!
You've mastered this topic, so let's work on something else!

Innovative approaches used in teaching learning

Name of the faculty	Name of the course	Innovative approaches used in teaching learning process
Dr.M.Rajalakshmi	Operating System	Lecture for File Allocation Methods
	Data Warehousing and Data Mining	Lecture for K-Means and K-Medoids Algorithm
Dr.M.Sangeetha	Software Engineering	IEEE SRS documents
Mr.C.Murale	Internet Technology	You tube video for Introduction to Web Services https://youtu.be/6s0lE7zQhLs
Smt S.Rajasree	Internet Technology	You tube video for Ruby-on-Rails Framework https://youtu.be/4EBUi4Z7zMo https://youtu.be/XZ8qkKw3kJI https://youtu.be/gUxXQvq6Xuo
Ms.S.Devi	Data Structures and Algorithms	Lecture for Travelling Salesman Problem

process

Facility for e-content
Link of the E-Content recording facility:
https://www.cit.edu.in/wp-content/uploads/2018/08/CIT-E-Learning-Centre.pdf

Teachers use ICT-enabled tools including online resources for effective teaching and learning: AY(2022-2023)

Faculty Name	Subject code	Subject Name	Academic Year	Class	Semester	ICT Tools Used	Link
Dr.S.Sangeetha Mariammal	19CI44	Operating Systems	2022 - 2023	B.E.,Computer Science and Engineering	IV	Google Class Room	https://classroom.google.com/c/NTE2ODY5ODI4MzI3
	19CI43	Computer Architecture	2022 - 2023	B.E.,Computer Science and Engineering	IV	Google Class Room	https://classroom.google.com/c/NjAwNzQ1MTY0OTMy
Dr.A.N.Senthilvel	19CI43	Computer Architecture	2022 - 2023	B.E.,Computer Science and Engineering	IV	Power Point Presentation	https://meet.google.com/gsx-tmxe-ihn
Mrs R Suganya	19CS21	C Programming	2022-2023	B.E.,Computer Science and Engineering	II	Google Class Room	https://classroom.google.com/c/NTE4NTA0NTk4Njk0?cjc=273scbb
						Padlet	https://padlet.com/suganyatup/cit-c-programming-8ml9etu9kcc9ol5t
Dr.A.Kunthavai	19CI44	Operating Systems	2022-2023	B.E.,Computer Science and Engineering	IV	Google Class Room & Power Point Presentation	https://classroom.google.com/c/NTk2NTY4MTIwMzkz
	!9CI42	DBMS	2022-2023	B.E.,Computer Science and Engineering	IV	Google Class Room & Power Point Presentation	https://classroom.google.com/c/NTk1ODg3NzM2Mjg0
Dr.R.Saveeth	19CS41	Formal Languages and Automata Theory	2022-2023	B.E.,Computer Science and Engineering		Google Classroom	https://classroom.google.com/c/NTE3NzQ3NTkwMDIz
Mrs.K.Priyadarsini	19CI53	Embedded Systems	2022-2023	B.E.,Computer Science and Engineering	VI	Google Class Room & Power Point Presentation	https://classroom.google.com/c/NTg0MTM3OTczODI4
Dr.S.Priya	19CS62	Machine Learning	2022-2023	B.E.,Computer Science and Engineering	VI	Google Class Room & Power Point Presentation	https://classroom.google.com/c/NTgzMjMyMzQzNDAy

Dr.K.Amshakala	19CSL73	Artificial Intelligence Laboratory	2022-2023	B.E., Computer Science and Engineering	VII	Google Classroom	https://classroom.google.com/c/NTYxMzE4MDQxNjk0
	19CI46	OOPS and Java Theory	2022-2023	B.E., Computer Science and Engineering	VII	Google Classroom	https://classroom.google.com/c/NTM3NDgxMTg0NDQ2
	19CI61	Artificial Intelligence	2022-2023	B.E., Computer Science and Engineering	VII	Google Classroom	https://classroom.google.com/c/NTM3NDM0NzQ5NjA0
	19CS62	Machine Learning	2022-2023	B.E., Computer Science and Engineering	VI	Google Classroom	https://classroom.google.com/c/NTg4NDM4NzQxMzAx
S.Sharmiladevi	19CS61	Internet of Things and its Applications	2022-2023	B.E., Computer Science and Engineering	VI	Google Classroom	https://classroom.google.com/c/NTEyMzQ0OTk4MDk3
						Simulator	https://www.tinkercad.com/
Dr A.Priyadharshini	19CI45	Software Engineering	2022-2023	B.E., Computer Science and Engineering	IV	Google Classroom	https://classroom.google.com/c/NTk2OTI4MjgxODc1
	19CIE02	Big Data Analytics	2022-2023	B.E., Computer Science and Engineering	VIII	Google Classroom	https://classroom.google.com/c/NTgwNzk5Nzc0MjQ2

Teaching-Learning Processes

- **Academic Calendar**- Work schedule for the students and based on the schedule End Semester examination are conducted on the time
- **Pedagogical initiatives-**Faculties have attended various ICT related courses-MOOC, MOODLE , NPTEL course to improve blended classroom teaching
- **OPENSOURCE** Software's is been practiced in Classroom like **SCILAB, OCTAVE, LTSpice, WPLSoft, QuickField**
- **Real time examples -** Simulations &Mini Projects in laboratory, Term-paper write-ups in classroom
- **Collaborative learning –**One Credit Courses (connect with Industrial Experts),
- Conducted courses like *Agile Technology*, *Cyber Security in Manufacturing and Smart Grid, Machine vision*through people from **Tata Consultancy Services**, *FPGA based motor control using LABVIEW*-from **Innovative Invaders Technologies**
- **ICT supported learning-** Usage tools like Quizizz, Kahoot, Google Classroom ,MOODLE
- **Interactive classroom** -one minute talks, seminars, Group Quiz
- To support**Weak students –** REDO courses are conducted by allocation of separate faculty member for each subject and Subject counselling hoursfaculty meet the students periodically to counsel them
- Encouragement of **Bright students** is allowing them for **SELF Study COURSE,FASTTRACK Course& NPTEL (for Course waiver)** so that student can undergo INTERNSHIPs in Final semesters. Endowment prizes for students from Institute level based on academic , extra& co-curricular activity of the student. **Toppers , class representatives** in each classare encouraged in department & Best outgoing student is nominated from Eighth semester students
- **Classroom Teaching quality** is been taken care by regular assignments, Quiz, seminars & tutorial for Quantitative papers, Software like PYTHON, MULTISIM,LABVIEW, QUICKFIELD,MATLAB,VERILOG is been utilized for ASSIGNMENTS. Doubt clearing sessions in each class is been allotted (especially for Quantitative papers)
- **STUDENT ENGAGEMENT-** Tutorials, various Simulation tools makes the students engaged to the subject and very interactive in class. **Capstone Projects** are encouraged for the students and displayed in our department laboratories .Students

are involved in participating HACKATHONs, paper presentations, publishing their project works

- **Experiments in laboratory –** Each experiment is evaluated based on *Continuous Assessment Scheme(CAS)* & separate weightage of marks allotted for *Simulation*
- Periodical **FEEDBACK** is been collected from students in each semesters, Regular class committee meeting (CCM) in each semesters, Tutor Ward Meetings are conducted every week, based on feedbacks from the ALUMNI, importance of GATE Examination is been included in syllabus by including a course in 7th semester of 2019 regulation **19EEL75-Professional Competency.**

COIMBATORE INSTITUTE OF TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

OPEN SOURCE SOFTWARE IN EEE DEPARTMENT

S.No	Open Source Software	Subjects
1.	SCILAB	15EE56-Control Engineering Laboratory 19EEL55 –Control Systems Laboratory
2.	ONLINE MULTISIM SIMULATOR	19EE34-Analog Electronics, 19EEL37- Analog and Digital Electronics Laboratory
3.	PYTHON	19EE63- Digital Signal Processing
4.	EDAPLAYGROUND	15EE74- FPGA Based System Design 15EE76- FPGA Based System Design Laboratory 19EE35-Digital Electronics
5.	LTspice	19EEE25- Electronic Product Design
6.	MPLAB(proprietary freeware)	19EEL56- Embedded System Design Laboratory 15EE57- Embedded System Design Laboratory
7.	ARUDINO IDE	15EEE28-Internet of Things 19EE54- Embedded System Design

		19EEE34-Internet of Things
8.	QUICKFIELD	15EE48- Comprehensive Learning
9.	CISCO PACKET TRACER	19EEE34-Internet of Things
10.	WPLsoft	19EEE39- Industrial Automation
11.	CIRCUITVERSE	19EEL37- Analog and Digital Electronics Laboratory
12.	HADOOP	15EEE25- Fog Computing 19EEE33- Fog Computing
13.	DELTA PLC	15EE48- Comprehensive Learning
14.	GDB COMPLIER	15EE55- C++ in Electrical Engineering Applications 19EE46- OOPS and C++ for Electrical Engineers
15.	THINGSPEAK	19EEE34-Internet of Things
16.	JAVA APPLET-FALSTAD simulator	19EE34-Analog Electronics

Course Description

17MDC32 / Financial Analysis and Reporting

Semester III Year Sep 2022 – Jan 2023

Name of the Faculty : Dr.R.Umarani

Internet Homepage :
E.mail : umarani.r@cit.edu.in
GCR Link : https://classroom.google.com/c/NTAyNDQ0MjE0MTEw
Class Schedule:
Lecture Days: Wednesday, Thursday and Friday.
Timings: 9.00 – 9.55 am, 12.00 to 12.55 pm and 11.05 to 12.55 pm.

Hours for Meeting Students : Monday 3.50 – 4.30pm or by appointment

i) Course Objectives:

- *Assess the Procedures of the accounting system.*
- *Preparing financial statements and analyse its linkages.*
- *Evaluate the financial statements and annual reports*
- *Analyse the impact of working capital on the business*
- *Identify the inferior quality of financial reporting*

ii) Course Outcomes:

1) After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes:

- Understand the Financial Statements of the company.
- Analyse the Financial Statement of the company and interpret the results
- Prepare the Cost sheet of a company

2) Once the student has successfully completed this course, he/she must be able to answer the following questions or perform/demonstrate the following:

Topic/Unit/Chapter Layout

Topic	Lecture Hours
Financial Accounting Definition Classification of Financial Activities Generally Accepted Accounting Principles Accounting Equation: Balance sheet, Income Statement and Retained Earnings. Recording Process: Debit and Credit Steps in Recording Process Making Journal Entries Posting the Journal Entries to Ledger Accounts	15

Posting the Ledger to Trial Balance Preparation of Trial Balance	
Financial Statements Understanding the Balance Sheet Understanding the, Income Statement Understanding the Cash flow Statement Need and Linkages Individual elements of Financial Statements Preparation of Common Size Balance sheet and Income Statement	8
Annual Report Reading an annual report for a listed entity Parts of Annual Reports Financial Highlights Directors' Report Management Discussion and Analysis Standalone and Consolidated Financial Statements- Notes to Financial Statements Related Party Transactions	7
Financial Ratios Profitability Ratios Return Ratios Liquidity Ratios Stability Ratios Efficiency Ratios Interpretation of Ratios.	12
Working Capital Analysis Working Capital Calculation Impact of Working Capital on business Negative and Positive Working Capital Perspective of the banker and owner in analysing working capital Calculating Cash Conversion Cycle Analysis of Receivables, Inventory , Cash and Payables	8
Quality of Financial Reporting Measuring Quality of Earnings Identifying the potential red flag.	4
Costing Concepts of Cost Elements of Cost Classification of cost Preparation of Cost Sheet	6

4) Reference Books:

1. *Jain and Narang , "Accounting for Managers", Kalyani Publishers, 2006*
2. *Horngren, Sundem, Elliot, "Introduction to Financial Accounting", Pearson Education, 2005*
3. *Maheshwari.S.N, "An Introduction of Accounting", Vikas Publishig House Pvt Limited 2005.*
4. *Narayanaswamy, "Financial Accounting:A Managerial Perspective", PHI Learning Pvt Ltd, 2008.*

5. *Thomas .R. Robinsn and et.al, "International Financial Statement Analysis", John Weily & Sons, Inc, 2009.*

5) Evaluation Scheme

Theory

Evaluation Criteria	**Marks**
Assessment 1(100 Marks)	
Assignment	40
Mid Semester Exam I	60
Assessment 2(100 Marks)	
Mini Project	40
Mid Semester Exam II	60
Total Marks (Assessment 1 +Assessment 2)	200
Total Marks Converted to Internals (200 converted to 40)	40
University Exam / External Exam	60
Total	100

Department of Mathematics
COIMBATORE INSTITUTE OF TECHNOLOGY
(Government Aided Autonomous Institution) Coimbatore - 641 014.

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Course Plan – December 2022 – April 2023

Course /Branch/Semester : M.Sc/DCS/VIII
SubjectCode/Subject : 17MDC81/ Modeling and Simulation
Faculty :Dr.V.Savithri/Dr.S.Sangeethamani, Assistant Professor, Department of Mathematics Consulting Time &StaffRoom: Every Friday 4.30 p.m to 5.30 p.m / FR-13 (MainBlock)

Course Outcomes:

CO1: Define Simulation, Systems, models and perform manual simulations

CO2: To illustrate changes in the dynamic systems like queueing systems using simulation

CO3: To predict the behavior of linear and non-linear systems using empirical modeling

CO4: To evaluate the behavior of deterministic and stochastic systems using Simulation techniques

CONTENTS	Number of Hours
Unit- I – INTRODUCTION TO SIMULATION	
When simulation is the appropriate tool- When simulation is not appropriate	1
Advantages and Disadvantages of Simulation	1
Areas of application	1
Systems and System Environment-Components of a System	1
Discrete and Continuous Systems	1
Models of a system-Types of models	1
Discrete-Event Simulation-Steps in a Simulation Study	1
Simulation example-Queueing and Inventory	1
General Principles of Simulation	1

Unit – II – STATISTICSICAL BASICS AND QUEUEING MODEL SIMULATION	
Useful Statistical Models	1
Discrete Distributions	
Continuous Distributions	1
Poisson Process-Properties of Poisson Process	1
Non-stationary Poisson Process-Empirical distributions	1
Characteristics of Queueing systems- Queueing Notation- Long run Measures of Performance of Queueing systems-The Conservative Equation	1
Steady-state Behavior of Infinite –Population Markovian Models	1
Single Server Queues with Poisson Arrivals and Unlimited Capacity:M/G/1, Multi-server Queues	1
Steady state Behavior of Finite Population Models	1
Networks of Queues	1

Unit – III RANDOM NUMBERS	
Generation of Psuedo-random numbers	1
Techniques for generating random numbers-Linear Congruential Method	1
Combined Linear Congruential Generators	1
Test for Random Numbers-Frequency Tests-tests for Autocorrelation	1
Random variate Generation-Inverse Transform technique	1
Exponential Distribution- Weibull Distribution-Triangular Distribution-Empirical Continuous Distributions	1
Continuous Distributions without a closed-form Inverse-Discrete Distributions	1
Acceptance Rejection Technique-Poisson Distribution-Non-Stationary Poisson Process- Gamma Distribution	1
Direct Transformation for the Normal and Lognormal Distributions-Convolution Method-Special Properties	1
Unit – IV – ANALYSIS OF SIMULATION DATA	
Input Modeling-Data Collection-Identifying the Distribution with Data Histograms-Selecting the Family of Distributions-Q-Q Plots	1
Parameter Estimation-Preliminary statistics-Sample Mean-Sample Variance – suggested Estimators	1
Goodness of fit Tests-Chi-square test	1
Kolmogrov Smimov Test	1
Verification and validation of Simulation Models-Model Building, Verification and Validation	1
Verification of Simulation Models, Calibration and validation of models-face Validity-Validity of Model Assumptions	1
Validating input-Output Transformations-Input Output Validation: Using Historical Data-Using a Turing Test	1

Output Analysis for a Single Model-Comparison of Two system Designs-Independent Sampling with Equal Variances	1
Independent Sampling with Unequal Variances-Metamodeling	1
Unit – V – SIMULATION SOFTWARE AND LANGUAGES	
Simulation Software: History of Simulation Software- Selection of Simulation Software	2
An Example of Simulation- Simulation in GPSS-Arena-Automod-ProModel-QUEST-SIMULA-Witness-Extend, Simio	2
Simulation of Manufacturing and Material-handling Systems: Simulation Models of Manufaturing Systems	1
Models of Material-handling Systems-Goals and Performance measures-Issues in Manufacturing and Material-handling Simulations	2
Modeling downtimes and failures-trace-Driven Models	1
Case Studies of the Simulation of Manufacturing and Material-handling Systems	1

TEXT BOOKS:

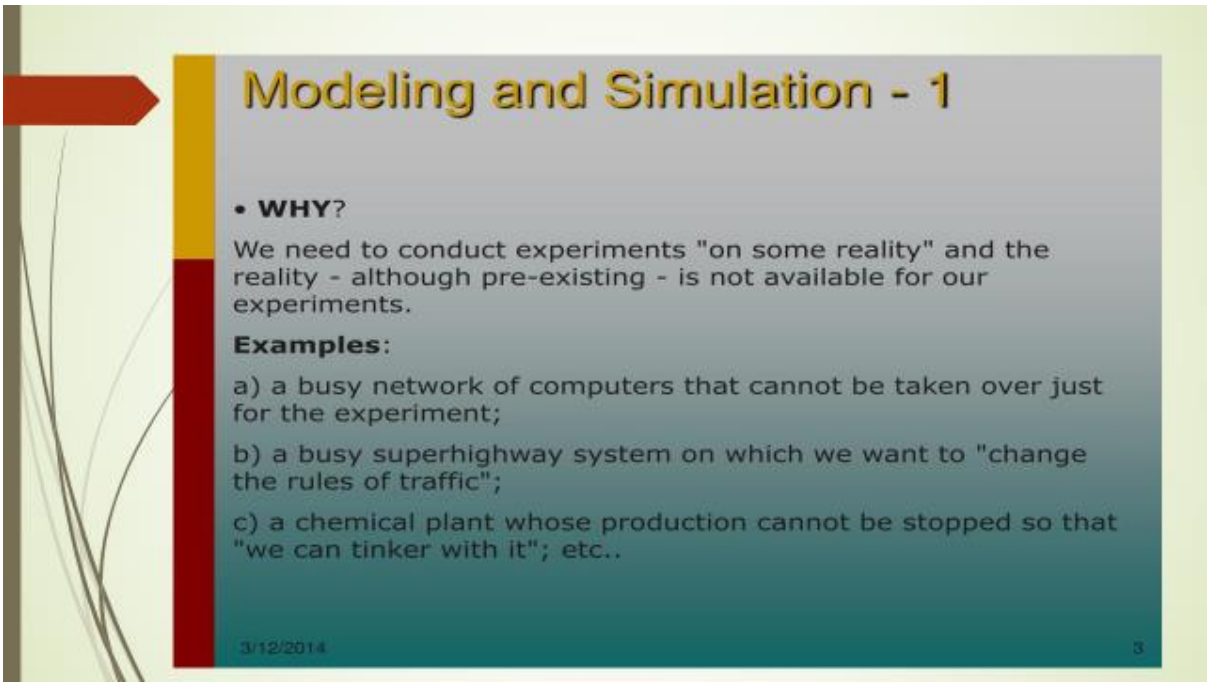
1. Jerry Banks, John S. Carson II, Barry L Nelson, David M Nicol, Discrete – Event System Simulation, Second Edition, Prentice Hall, 1996.

REFERENCE BOOKS:

1. Law A. M. & Kelton, W. D, Simulation Modeling and Analysis, 2nd ed, NewYork McGraw Hill Inc. (1991)
2. Geoffrey Gordon, System Simulation, Prentice Hall Publication, 2nd edition, 1978, ISBN: 81-203-014004.
3. Frank R. Giordano, Maurice D. Weir and William P. Fox. Mathematical Modeling, Thomson Brooks/Cole, Vikas Publishing House Pvt Ltd., New Delhi. [Para I, II & III]
4. H. Sayama, Introduction to the Modeling and Analysis of Complex Systems, Open SUNY Textbooks, Milne Library State University of the New York at Geneseo, Geneseo, NY 14454, 2015.
5. Clive L. Dym, Principles of Mathematical Modeling, 2nd edition, Elsevier, 2004.

INTERNAL ASSEMENT MARKS (25)

I MID SEMESTER		7.5 MARKS
II MID SEMESTER		7.5 MARKS
ASSIGNMENT		5 MARKS
SEMINAR/ TESTS		5 MARKS
	TOTAL	25 MARKS



Introduction

- Simulation is used to design and optimize manufacturing systems.
- It is more widely applied to manufacturing systems than any other.
- Simulation is used
  - As an aid in the design of new production facilities, warehouses etc.,
  - To evaluate suggested improvements to the existing system
  - For evaluating the impact of capital investments
  - Acts as a test drive before making capital investments
- Simulation of Manufacturing and material handling system need to address the following:
  - Issues of scope and level of detail
  - Proper scope and level of detail should be determined by the objectives of the study
  - Level of detail is constrained by the availability of input data and the knowledge of how system components works

COIMBATORE INSTITUTE OF TECHNOLOGY, COIMBATORE - 14

(Government Aided Autonomous Institution, Affiliated to Anna University)

DEPARTMENT OF MATHEMATICS

ACADEMIC YEAR : DEC 2022 - MAY 2023 SEMESTER: VIII
COURSE/BRANCH : IV M. Sc. DECISION AND COMPUTING SCIENCES
SUBJECT CODE/NAME : 17MDC83/ GAME THEORY AND DECISION ANALYSIS
NAME OF THE FACULTY : PRIYANKA I
FACULTY ROOM NO : FR-8 (MAIN BLOCK)

COURSE PLAN

S. No.	TOPICS	HOURS
GAME THEORY		
1.	Decision making – Description of a game – Basic elements of game theory	1
2.	The Two Person, Zero – Sum games – Characteristics of a game – The maximin and minimax principles – Steps in solving the game – Saddle point method	2
3.	Principle of dominance in games – solutions to 2×2 games without saddle point : Mixed strategies – Methods of oddments (for 2×2 games)	2
4.	Solutions to $2 \times n$ or $m \times 2$ games – Graphical method	1
5.	Algebraic Method – Method of Linear Programming	2
6.	Iterative Method for Approximate Solution	1
7.	Bidding Problems-n- Person Zero sum games. Strategic games-Nash Equilibrium.	3
DECISION ANALYSIS		
8.	Decision Making without Experimentation- Decision Making with Experimentation	2
9.	Decision Trees- Using Spreadsheets to Perform Sensitivity Analysis on Decision Trees-Utility Theory	2
10.	The Practical Application of Decision Analysis- Advanced Decision Trees	2
11.	Chi-Square Automatic Interaction Detection (CHAID)-CHAID Tree Development-Bonferroni Correction	2
12.	Generating Business Rules using CHAID Tree-Classification and Regression Tree	2
13.	Gini Impurity Index-Entropy-Cost-Based Splitting Criteria-Ensemble Method-Random Forest	2
MULTI-CRITERION DECISION MAKING		
14	Multi-attribute Decision making – an overview-classification of	2

	MCDM methods-deterministic, stochastic and fuzzy	
15.	MCDM application areas-MCDM methods-The weighted sum model-The weighted product model	2
16.	The Analytic Hierarchy process-The revised Analytic Hierarchy process	2
17.	Goal Programming-The ELECTRE method-The TOPSIS method	2
18.	Sensitivity analysis of MCDM methods-Data Estimation of MCDM Problems.	2
STOCHASTIC MODELS-MARKOV CHAINS		
19.	Introduction to Stochastic Process-Poisson Process-Compound Poisson Process	1
20.	Markov Chains – Chapman-Kolomogorov Equation – Classification of States of Markov Chain	1
21.	Long run properties of Markov Chains- First Passage times-Markov Chains with Absorbing States	1
22.	Expected Duration to Reach a State from other States	1
23.	Calculation of Retention Probability and Customer Lifetime Value using Markov Chains	1
24.	Markov Decision Process (MDP)	1
SIX SIGMA		
25.	Introduction to Six Sigma- What is Six Sigma?- Origins of Six Sigma	1
26.	Three-Sigma versus Six - Sigma Process - Cost of Poor Quality - Sigma Score	1
27.	Industrial Applications of Six Sigma - Six Sigma Measures- Yield-DMAIC Methodology.	3
	TOTAL	45 hours

TEXT BOOK

1. Rama Murthy P. Operations Research, New Age Intenational, Second Edition, 2007, New Delhi [Para 1]
2. Dinesh Kumar U. Business Analytics, Wiley, First Edition, 2017 [Para 2,4,5]
3. Triantaphyllou, Evangelos. (2000). Multi - Criteria Decision Making Methods: A Comparative Study. 10.1007/978-1-4757-3157-6, Kluwer Academic Publishers [Para 3]

REFERENCE BOOKS

1. Martin Osborne, An Introduction to Game Theory, Oxford University Press, 2003
2. Frederick S.Hiller, Gerald J.Leberman, Bodhibrata Nag and PreetamBasu, "Introduction to Operations Research", Ninth Edition, McGraw Hill, 2010.
3. HamdyA.Taha, "Operations Research – An Introduction", Eighth Edition, 2010.
4. EdmundasKazimierasZavadskas (2019), Multiple-Criteria Decision-Making (MCDM) Techniques for Business Processes Information Management, Publisher: MDPI AG
5. Belton, Valerie and Theodor Stewart (2001), Multi Criterion Decision Analysis: An Integrated Approach, Springer.
6. Cliff T. Ragsdale, Spreadsheet Modelling and Decision Analysis: A Practical Introduction to Business Analytics, Thomson South-Western
7. Avinash K. Dixit and Barry J. Nalebuff, The Art of Strategy, Norton, 2008.

INTERNET RESOURCES

1. E. Triantaphyllou, B. Shu, S. Nieto Sanchez, and T. Ray: Multi-Criteria Decision Making: An Operations Research Approach. Encyclopaedia of Electrical and Electronics Engineering, (J.G. Webster, Ed.), John Wiley & Sons, New York, NY, Vol. 15, pp. 175-186, (1998).

2. Mark Velasquez1and Patrick T. Hester, An Analysis of Multi - Criteria Decision Making Methods. International Journal of Operations Research Vol. 10, No. 2, 5666 (2013)

3. Vyas S. &MisalCheta S. Comparative Study of different Multi - criteria Decision
Making methods. International Journal on Advanced Computer Theory and Engineering (IJACTE), 2319 – 2526, Volume-2, Issue-4, 2013

COIMBATORE INSTITUTE OF TECHNOLOGY
Department of Computing (DCS)
COURSE PLAN

STAFF NAME: Dr. S. Chandia
DEPARTMENT: Computing (DCS)
ACADEMIC YEAR: 2022 – 2023 **SEMESTER:** EVEN
PROGRAMME NAME: M.Sc. (Decision and Computing Sciences)
COURSE CODE/ NAME: 16MDSE25 /Software Architecture and Design Patterns
CONTACT HOURS: Tuesday 12.00-12.55 pm; Wednesday 9.55 -10.50 am; Friday 2.00-2.55 pm.

COURSE OUTCOMES

On Completion of the course, the students should be able to

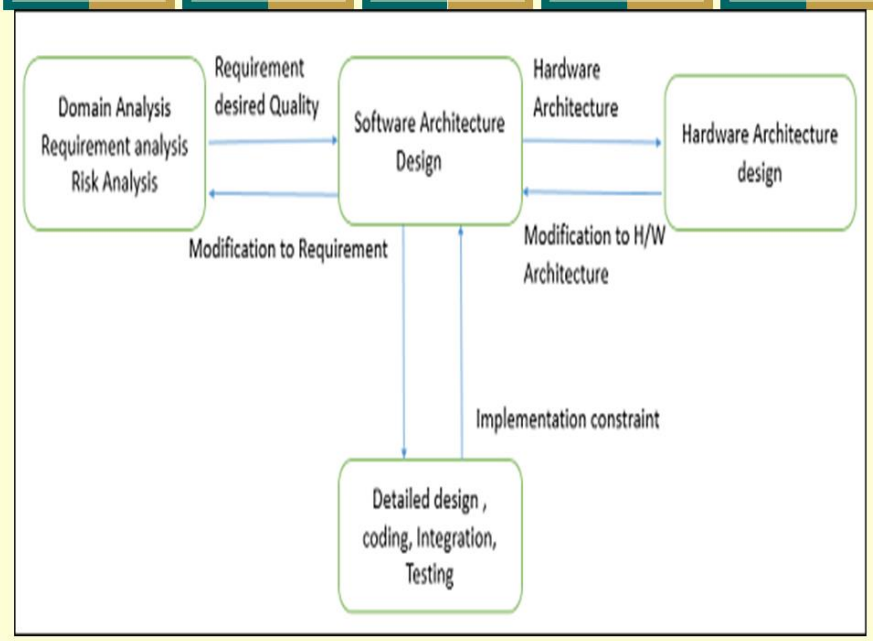
- Describe the various types of software patterns and their needs in software development.
- Apply design patterns to solve the issues in designing the objects.
- Design the software architectures using appropriate architectural patterns based on the quality attributes and documenting them.

WEEKLY PLAN

Week	Topics Covered	Number of Hours
December IV week	Definition, Making a Pattern	3
January I week	Pattern Categories	2
January II week	Relationship between patterns, Pattern and Software Architecture	3
January III week	Introduction	3
January IV week	Creational Patterns, Structural Patterns	3
February I week	Behavioral Patterns	2
February II week	Case Study, Software Architecture: Definition and Needs (Introduction), Architectural Patterns, Reference Models	5
March I week	Reference Models, Reference Architecture	3
March II week	Architectural Structures and Views, Pipes and Filters	3
March III week	Data Abstraction and Object Oriented Organization, Event Based	3
March IV week	Implicit Invocation, Layered Style, Repository	3
April I week	Interpreter, Process Control	3
April II week	Distributed, Case Study, Creating an Architecture	3
April III week	Understanding quality attributes, Achieving Qualities	3
April IV week	Designing the architecture, documenting the architecture, Case Study	3
TOTAL HOURS		**45**

TEXT BOOKS

1. Frank Buschmann, Regine Meunier, Hans Rohnex, Peter Sommerland & Michael, "Pattern - Oriented Software Architecture .- A Systems of Patterns Volume - I", 1996 (Reprint 2001) (Para - I).
2. Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides, "Design Patterns - Elements of reusable Object Oriented Software", Pearson Education, 1999. (Para II).
3. Mary Shaw, David Garlan, "Software Architecture - Perspectives on an Emerging Discipline", PHI,1996 (Para IV).
4. Len Bass, Paul Clements, Rick Kazman, "Software Architecture in Practice", 2nd Edition, Pearson Education,First Indian Reprint, 2003. (Para III & V).


Domain Analysis
Requirement analysis
Risk Analysis
Requirement
desired Quality
Software Architecture
Design
Hardware
Architecture
Hardware Architecture
design
Modification to Requirement
Modification to H/W
Architecture
Implementation constraint
Detailed design ,
coding, Integration,
Testing

Course Description

16MDS43 – ADVANCED DATA STRUCTURES AND ALGORITHMS

Class : M.Sc (D.C.S) VIII Sem **Year** Dec 2022 – Apr 2023

Name **:** D.Anandhi **Mail-id:** anandhi@cit.edu.in

Lecture Days : Tuesday, Thursday, Friday **Timings:** 9.55-10.50, 11.05 -12.00, 12.00-12.55

Hours for meeting students : Monday 3.50-4.45

i) **Course Outcomes**

- *Design, implement, test and debug programs using a variety of data structures including binary and general tree structures, search trees, B-trees, Tries, graph , heaps, hash tables and buffer pools.*
- *Describe and implement a variety of advanced data structures (AVL Tree, Multiway Tree, B+Tree, Red Black Tree).*
- *For a given data structure, a student will be able to Classify best, average, worst and amortized scenario for a given data structure with respect to a problem.*
- *Identify the problem given and design the algorithm using various algorithm design techniques like Divide and Conquer, Greedy method, Dynamic Programming, Backtracking and Branch and Bound Technique*
- *Recognize and apply design techniques and make judgements about which particular design technique will improve performance of a problem*

ii) Topics Layout

S.No	Topics	Hours
1	Tree : Binary search tree: Definition, operations.	3
2	AVL Tree: Balancing trees, node operations.	3
3	**MULTIWAY TREES:** Definition - m-way search trees	3
4	B-trees - Red Black tree – operations	3
5	Trie Structures - B+ trees.	4
6	**GRAPHS:** Representation - Breadth first search - Depth first search	4
7	Topological Sort	2
8	**HEAP:** Definition - heap data structures	2
9	heap algorithms – applications	2
10	**HASHING:** Basic concepts - hashing methods	3
11	hashing algorithms - collision resolution methods.	3
12	**ALGORITHM DESIGN TECHNIQUES: DIVIDE & CONQUER:** General method - Merge sort	2
13	**GREEDY METHOD:** General method - Knapsack problem -Prim's & Kruskal's algorithm	3
14	**DYNAMIC PROGRAMMING:** General method, Multistage graph	3
15	Travelling Salesperson Problem. **BACK TRACKING:** General method	3
16	Eight queen's problem.	2

iii) TEXT BOOKS

- Richard F. Gilbery, Behrouz A.Forouzan, "Data structures - A Pseudocode Approach with C", 2002, Thomson Asia Pvt Ltd. (Trees, Multiway trees, Heap, Hashing)

- Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekaran, "Fundamental of Computer Algorithms", Galgotia Publications, 1998. (Algorithm Design Techniques)
- Thomas H.Cormen, Charles E.Leiserson, Ronald L. Rivert, Clifford Stein "Introduction to Algorithms", Second Edition, Prentice Hall of India, Publications, New Delhi, 2007. (Graphs, Red Black Trees).

iv) REFERENCE BOOKS

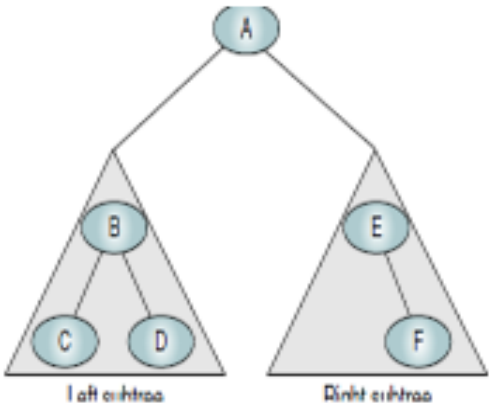
- Anany Levitin, "Introduction : The Design & Analysis of Algorithm", 2003 Edition, Pearson Education Inc.
- S.K.Basu, "Design Method & Analysis of Algorithm", PHI, 2005.

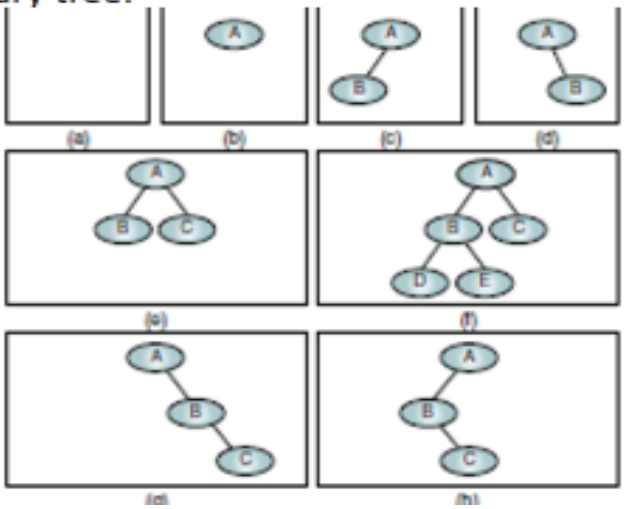
(v) **Evaluation Scheme**

Evaluation Criteria	Marks
Sessional Exam 1	7.5
Sessional Exam 2	7.5
Seminar/OpenBookTest	5
Assignment	5
End Semester Exam	75
Total	100

Binary Trees

- A binary tree is a tree in which no node can have more than two subtrees;
- The maximum outdegree for a node is two.
- In other words, a node can have zero, one, or two subtrees.
- These subtrees are designated as the left subtree and the right subtree.
- Note that each subtree is itself a binary tree.





BINARY SEARCH TREES

- Binary Search Trees and AVL Trees.
- Both are used when data need to be ordered.
- But they both differ primarily (i.e) AVL trees are balanced, whereas binary search trees are not.
- In the design of the linear list structure, we had two choices: an array or a linked list.
- The array structure provides a very **efficient search** algorithm, the binary search, but its **insertion** and **deletion** algorithms are very **inefficient**.
- On the other hand, the linked list structure provides **efficient insertion** and **deletion**, but its **search** algorithm is very **inefficient**.
- What we need is a **structure** that provides an efficient search algorithm and at the same time efficient insert and delete algorithms.
- The binary search tree and the AVL tree provide that structure.
- A binary search tree (BST) is a binary tree with the following properties:
  - All items in the left subtree are less than the root.
  - All items in the right subtree are greater than or equal to the root.
  - Each subtree is itself a binary search tree.

D.Anandhi

Coimbatore Institute of Technology, Coimbatore (Autonomous Institution)

Coimbatore Institute of Technology

Department of Computing – Decision and Computing Sciences

Course Plan

Course: **17MDC84 BUSINESS INTELLIGENCE LABORATORY**

Period: DEC 2022-APRIL 2023

Semester VIII

Batch 2019- 2025

Faculty Handled: K.H.VANI

Period	Topic to be covered	No. of hours
DEC - last week	Perform ETL process for large datasets of csv,xml,xls, and other formats	4
JAN – First week	Perform ETL process for large datasets of csv,xml,xls, and other formats	4
JAN – Second week	Build datawarehouse using appropriate schema for business scenarios	4
JAN– Third week	Build datawarehouse using appropriate schema for business scenarios	4
JAN – Fourth week	Perform Olap operations using multidimensional data	4
FEB – First week	Perform EDA using views,concept hierarchies and data cubes	4
FEB - Second, Third, Fourth week	Perform EDA using views,concept hierarchies and data cubes	8
MARCH - First, Second week	Create BI dashboards to turn insights into actions	4
MARCH – Third, Fourth week	Present the analysed data using maps,graphs and plots, Power query, Loading and cleaning Webscraping Combining folders Merging tables Perform append operation	8
APRIL – First week	Data transformation using M language	4
APRIL– Second week	DAX Queries	4

	Creating calculated tables.calculated columns and measures using DAX	
APRIL– Third, - Fourth week	Creating workflows using Power Automate	8
	Total	**60**

Mark Split-up:

1. CAT I – 50

2. CAT 2 - 50

Total – 100

Faculty Signature **HOD Signature**

Department of Computing -DCS

2019 Batch - *17MDC85 – Decision Analysis Lab*

Course Description

Semester : VIII Year: Dec2022 – April 2023

Name of the Faculty :

Dr. V.Savithri , Dr.S.Chandia

E-mail : v.savithri@cit.edu.in
schandia@cit.edu.in

Class Schedule

Lab Hours : Monday – 2:55 p.m. to 4:45 p.m. and Thursday –9:00 a.m. to 10.55 p.m.

COURSE OUTCOMES

Upon Completion of the course, the students will be able to:

- Design game model to describe the issue using game theory strategies
- Analyze and derive decisions using decision tree and analysis methods
- Design and perform decision analysis using Six Sigma Concepts

iii) Topic/Unit/Chapter Layout

Topic	Laboratory hours
Minmax and Maxmin Criteria in MSExcel, Python, R	8
Principle of Dominance MSExcel, Python, R	8
Solving Game theory using Graphical Method	5
Analyzing Decision Tree and Random Forest using Software Packages	10

Sensitivity Analysis using MSExcel-Solver , R	6
Computing Steady State probabilities using Markov chain in R, Excel	6
To calculate six sigma level of centered processes	5
To perform Multi Criteria Decision Making in Excel	4
Creating Dynamic games using Gambit Software	8

(v) **Evaluation Scheme**

Laboratory

Evaluation Number	Schedule	Marks
Continuous Assessment Test 1	March 1st week	50
Continuous Assessment Test 2	April 3rd week week	50

(vi) Weekly Lesson Plan

Week	**Concepts to be Covered**	**Continuous Assessment Test**
Dec 4th week	Minmax and Maxmin Criteria using MSExcel, Python & R	
Jan 1st week	Minmax and Maxmin Criteria using MSExcel, Python & R	
Jan 2nd week	Principle of Dominance using MSExcel, Python & R	
Jan 3rd week	Solving Game theory using Graphical Method	
Jan 4th	Analyzing Decision Tree and	

week	Random Forest using Software Packages	
Feb 1st week	Sensitivity Analysis using MSExcel-Solver, R	
Feb 2nd week	Computing Steady State probabilities using Markov chain in R, Excel	
Feb 3rd week	To calculate six sigma level of centered processes	
March 1st week	To perform Multi Criteria Decision Making in Excel	
March 2nd week	Decision Tree Analysis using Rapid Miner	
March 3rd week	Decision Tree Analysis using Rapid Miner	Continuous Assessment Test 1
March 4th week	Decision Tree Analysis using Rapid Miner - Creating Dynamic games using Gambit Software	
Apr 1st week	Decision Tree Analysis using Rapid Miner -	
Apr 2nd week	Creating Dynamic games using Gambit Software	
Apr 3rd week	Creating Dynamic games using Gambit Software	Continuous Assessment Test 2

Course Description

Course Title/Number :Entrepreneurship Development / 17MDC86

Semester : VIII Sem Year : Dec-May 2023

Name of the Faculty : Dr. V.Savithri

Internet Homepage:

E-mail:v.savithri@gmail.com

Class Schedule

Lecture: Days 2days/Week

COURSE OUTCOMES

Upon Completion of the course, the students will be able to:

CO1: Have the ability to discern distinct entrepreneurial traits
CO2:Know the parameters to assess opportunities and constraints for new business ideas
CO3: Understand the systematic process to select and screen a business idea
CO4: Design strategies for successful implementation of ideas
CO5: Evaluate the procedures and prepare a business plan

Reference Books

1. Raj Shankar, "Entrepreneurship: Theory & Practice", 1st Edition, Tata McGraw Hill, New Delhi, 2009.

2. Robert D. Hisrich, Michael P. Peters Dean A. Shepherd, "Entrepreneurship", 9th Edition, McGraw Hill/Irwin, 2012.

3. Rajeev Roy, "Entrepreneurship", 2nd Edition, Oxford University Press, New Delhi, 2011. 4. S. S. Khanka, Entrepreneurial Development, S.Chand and Co, New Delhi, 2012

(v) Evaluation Scheme (Self Study)

Evaluation Criteria	Marks
Group Discussion	30
On the spot topic	20
Assignments	30
Seminar	10
Case Study	10
Total	100

(vi) Monthly Lesson Plan

Week	Topics Covered by Students	Mode of Learning
December	**Introduction to Entrepreneurship** : Meaning, Theories, Categories, Significance. Entrepreneurial India: Evolution over centuries, Current trends. Myths about Entrepreneurship: Myths about passion, surety in riches, financial backing, influential people. Entrepreneur: Definition, Characteristics, Types, Challenges. Entrepreneurship Ecosystem: Context, Positive influencers, Players.	Seminar
January	**Intrapreneurship** :Meaning, Need, Difference from entrepreneurship, Hurdles, Successful practices. Entrepreneurial Motivation: Key drivers, Mindset, Theories. Entrepreneurial Competencies: Identification & development of competencies, Role of EDPs. **Business Idea Generation** : Approach, Techniques. Opportunity Analysis: Opportunity sighting, evaluation, Mapping ideas to opportunities. Business Modelling: Meaning, Functions, Types, Design & interpretation.	Seminar
February,	Business Planning: Types, Myths, Sections, Documentation Tips. Business Plan Review:	Seminar

March	Business Model review, Financial review, Technical feasibility Review **Business Creation** : Entity types, Steps in setting up a unit, Compliances &approvals.Evolution of a start-up: Key factors, Evolution modelling, Dimensions of maturity. Innovation for Business Growth: Concept, Process, Challenges	
	.Business Sickness: Symptoms, Causes, Remedial measures & rehabilitation	Assignment
April	**Women Entrepreneurship** : Need, Development, Benefits, Challenges.	Group Discussion
	Rural Entrepreneurship: Opportunities, Benefits, Role of Government.	Seminar
	Women Empowerment Development – Need, Benefit and Challenges	Group Discussion
	Social Entrepreneurship: Need, Types & characteristics of social enterprise, Measures of success, Benefits,	Assignment
	Entrepreneurship Development Program	Case Study

Instructions: (if any)_____

COURSE DESCRIPTION

15MSS82 – INTERNET OF THINGS

Semester VIII **Year**: DEC 2022 – APR 2023

Name of the Faculty: Dr.V.Keerthika **E-mail:** vkeerthika@cit.edu.in

Class Schedule

Lecture Hours: Days: Wednesday, and Thursday

Timings: 09:00-10:50, 2:00 – 2:55

COURSE OUTCOME

- Recognize the challenges for smart object
- Given an application, assess the different IoT technologies that suits the application
- Demonstrate knowledge of MAC and routing protocols developed for Low Power and Lossy networks.
- Design simple IoT systems comprising sensors, edge devices, wireless network connections and
  data analytics capabilities.
- Demonstrate knowledge of main architectures and paradigms for the Internet of Things

Unit Layout

S.NO	Topics	Lecture Hours
1	**INTRODUCTION** Smart Objects - Challenges for Smart Objects - IP for Smart Objects: motivation and main challenges	3
2	Security for Smart objects - Web services for Smart Objects - Connectivity models for Smart Object Networks	3
3	Introduction to the Internet of Things: application scenarios, current solutions	3
4	**SMART OBJECTS AND LLNS** Hardware and Software - Energy Management - Communication for Smart Objects: IEEE 802.15.4: main features, topologies, addressing and MAC frame format	3
5	Low Power and Lossy Networks (LLN):Introduction to 6LoWPAN - 6LoWPAN architecture: simple, extended and ad-hoc networks - 6LoWPAN adaptation layer	4
6	Issues in determining IPv6 links in LLNs - IPv6 addressing in 6LoWPAN- 6LoWPAN forwarding: route-over and mesh under approaches	2
7	Neighbour Discovery optimizations and extensions to the ND protocol for 6LoWPAN networks.	2
8	**ROUTING IN LOW POWER AND LOSSY NETWORKS** Mesh-under and route-over solutions - Routing Requirements - Routing metrics	3

9	The IPv6 Routing Protocol for LLNs (RPL)- Protocol operation - use of destination oriented directed acyclic graphs	4
10	DODAG formation- RPL Messages	2
11	**CoAP** Interaction model - Messages and Request/Response Model - Resource observing	4
12	Service discovery - Resource discovery - CORE Link Format	5
13	**APPLICATIONS** Smart Cities and Urban automation - Home Automation - Building Automation - Structural Health Monitoring	7

TOTAL: 45

TEXT BOOK:

1. J.-P. Vasseur, A. Dunkels, "Interconnecting Smart Objects with IP: The Next Internet", Morgan

   Kaufmann, 2010.

REFERENCE BOOKS:

1. Z. Shelby, C, "Bormann. 6LoWPAN: The Wireless Embedded Internet", Wiley, 2009
2. Z. Sahelby, K. Hartke, K. Hartke, "The Constrained Application Protocol (CoAP)", RFC 7252, 2014.

UNIT 1
INTRODUCTION

SMART OBJECTS

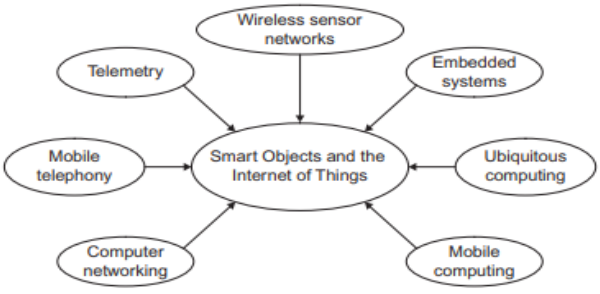
HANDLED BY

Dr.V.KEERTHIKA

WHAT ARE SMART OBJECTS?

- Smart object is an item equipped with a form of **sensor** or actuator, a tiny **microprocessor**, a **communication device**, and a **power source**.
- Sensor - ability to interact
- Microprocessor - to transform the data
- communication device - to communicate its sensor readings to the outside world
- power source - electrical energy for the smart object

SMART OBJECTS



Course Plan

Course Name: Agile Process Models

Course Code: 15 MSSE 05

Semester : VIII

Year :December 2022 – April 2023

Name of the Faculty : V.Shanthi

Course Outcomes:

- *Ascertain the need of software development methodologies with agility and self adaptability features for developing the software to meet the user needs.*
- *Compare the practices followed in different agile methodologies and choose the suitable methodology for a given project*
- *Synthesize the various agile methodology practices to produce a methodology for a project*
- *Develop the system by employing test first programming concept using Junit framework.*
- *Develop a simple application using Scrum or XP methodology*

Topic/Unit/Chapter Layout

Topic	Lecture Hours
Agile and Self Adapting : The Cooperative Game Principle - Agile Overview- Evolution of Agile Methodologies-Agile outside Software Development	9
The Scrum Process - Scrum's Contributions - Roles and responsibilities – Crystal methodoloty – Design Principles – The Crystal Framework – Crystal Method – Crystal's Contributions.	7
The Feature Driven Development(FDD) Process Model - Beyond the FDD process Description - Conceptual Similarities and Differences - FDD's Contributions - Extreme Programming(XP) Basics - XP values and Principles - XP's Contributions	10
Adaptive Software Development Life Cycle - Leadership-Collaboration Management -ASD's Contributions. Articulating Ecosystem - Designing Agile Methodology - The Agile Metamorphosis	10
J UNIT FRAMEWORK Automatic Tests - Goal -Fixtures-Testing Exceptions - Junit's Implementation - Junit API - Test First Programming - Stub - Other Uses for Tests - Extending Junit - Junit	9

and Ant - Running Junit Standalone - Junit and IDEs. -	

Text Books:

Alistair Cockburn, "Agile Software Development: The Cooperative Game", Addison-Wesley, Second Edition, 2007. (Para I)

Jim Highsmith, "Agile Software Development Ecosystems", Addison Wesley, 2002. (Para II, III, IV)

Kent Beck, "Junit Pocket Guide", O'Reilly Media, First Edition, 2004. (Para V)

REFERENCE BOOK

Craig Larman, "Agile & Iterative Development - A Manager's Guide", Pearson Education, 2004.

Evaluation Scheme:

Evaluation Criteria	Marks
Mid Sem Test 1	7.5
Mid Sem Test 1	7.5
Objective test, Openbook test	5
Assignment	5
External Exam	75
Total	100

Course Description

15MSSE38 / QUANTUM COMPUTING

Semester VIII **Year** December 2022 – April 2023

Name of the Faculty : Dr. S. Manjula Gandhi

Internet Homepage:

E-mail:
manjulagandhi@cit.edu.in/manjulagandhi.cta.cit@gmail.com

Class Schedule

Lecture: Days: Monday, Tuesday, Wednesday **Timings:** 9:00-9:55, 9:55-10:50, 11:05-12:00,

Hours for meeting students: Wednesday 3:50 – 4:45 p.m. or by appointment

i) **Course Objective**

- To introduce the concepts of Quantum computing-qubits, state representations, quantum gates.
- To understand the working of quantum algorithms and apply them to solve real world problems.
- To design and write quantum programs and execute on real quantum devices.

ii) **Course Outcomes**

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes

The student will :

- Understand the quantum model of computation and the basic principles of quantum mechanics.
- Be familiar with basic quantum algorithms and their analysis and quantum cryptography protocols
- Ability to work with quantum programming languages.

ii) Once the student has successfully completed this course, he/she must be able to answer the following questions or perform/demonstrate the following:

- Differentiate bits and qubits
- Advantage of working on quantum systems

- Working with single qubit gates
- Working with multi qubit gates
- Will understand the postulates of quantum mechanics
- Will know the importance superposition and entanglement
- Will be able to create all Bell states
- Will be able to understand and implement quantum teleportation
- Understand various quantum algorithms and compare them classically
- Implement Quantum algorithms such as Shor's , Grover's
- Will be able to understand quantum cryptography
- Implement BB84 and B92 protocols
- Write quantum programs and run them on simulator or real quantum devices

iii) Topic/Unit/Chapter Layout

Topic	Lecture Hours
INTRODUCTION Bits and Quantum bits-Bloch sphere representation of a Qubit-multiple qubits, postulates of quantum mechanics, analysis of complexity classes.	9
QUANTUM CIRCUITS Superposition, Entanglement, Single qubit gates- multiple qubit gates - quantum circuits-Bell states, No cloning theorem and quantum teleportation.	9
QUANTUM ALGORITHMS Introduction to quantum algorithms- Deutsch's algorithm, Deutsch-Jozsa algorithm-Grover's quantum search algorithm- Simon's algorithm-Shor's quantum factorization algorithm.	9
QUANTUM CRYPTOGRAPHY Cryptography-classical cryptography- introduction to quantum cryptography-BB84- B92 protocols- Introduction to security proofs for these protocols.	9
QUANTUM PROGRAMMING	9

iv) **Reference books**

1. Nielsen M. A., "Quantum Computation and Quantum Information", Cambridge University Press. 2002
2. Learn Quantum Computation using Qiskit, https://qiskit.org/textbook/preface.html

3. Benenti G., Casati G. and Strini G., “Principles of Quantum Computation and Information”, Vol. I: Basic Concepts, Vol II: Basic Tools and Special Topics, World Scientific. 2004
4. Pittenger A. O., “An Introduction to Quantum Computing Algorithms”, 2000
5. Mermin, N.D., “Quantum computer science”, Cambridge University Press, 2007
6. Phillip Kaye, Raymond Laflamme, and Michele Mosca, “An Introduction to Quantum Computing”, Oxford University Press, 2007
7. Yanofsky, Noson S. and Mirco A. Mannucci, “Quantum Computing for Computer Scientists”, Cambridge University Press, 2008

(v) **Evaluation Scheme**

1) Theory

Evaluation Criteria	Marks
Sessional Exam 1	7.5
Sessional Exam 2	7.5
Assignment	5
Certification Exam	5
University Exam/External Exam	75
Total	100

Course Plan

17MDC48 / FINANCIAL ANALYSIS LABORATORY

Semester IV Year February 2022– July 2022

Name of the Faculty : Dr.R.Umarani ,Dr.D.Manju and Ms.K.Vani

Internet Homepage :
E.mail : umarani.r@cit.edu.in, manju@cit.edu.in,vani.k@cit.edu.in
GCR Link : https://classroom.google.com/c/NTE2NjM0NzI1MjQ1
Class Schedule:
Lecture Days: Wednesday and Friday Timings: 2.55 – 4.45pm, 11.05 to 12.55 pm.
Hours for Meeting Students : Tuesday 1.00 – 2.00 pm or by appointment

i) Course Objectives:

To familiarise the students in Financial Modelling

ii) Course Outcomes:

- Evaluate the various items to be included in the financial statements and create a dynamic financial model for preparingthe financial statements.
- Widen and Deepen their knowledge on the financial statement linkages
- Prepare a financial model for time value of money, capital budgeting and cost of capital applications
- Analysing the working capital of a company
- Develop a model for detailed financial statements analysis model using Excel and Python.

iii) Once the student has successfully completed this course, he/she must be able to answer the following questions or perform/demonstrate the following:

Topic/Unit/Chapter Layout

Topic	Lecture Hours
CAT I 1. Financial Statement Building : Financial Statement Modelling projection of Revenues, Costs and other Income statementand Balance Sheet Items. Creating a dynamic model for financial statements 2. Flexible Financial Model for dash board creation 3. Dynamic Financial Model for Revenue Calculation 4. Financial Statement Linkages for Company Model Building. 5. Time Value of Money Applications - Loan Schedule Creation, EMIs, Effect of change of parameters on EMI and Tenure;	30
CAT II 6. Capital Budgeting Applications : Net Present Value; Internal Rate of Return 7. Cost of Capital : Cost of Debt, Cost of Equity, Weighted Average cost of capital 8. Repayment Schedule Preparation 9. Working Capital Requirement 10. . Project Work	30

5) Evaluation Scheme

Evaluation Criteria	Marks
CAT 1:	
Laboratory Exercises	60
Test	40
Assessment 1	100
CAT 2:	
Laboratory Observation, Record and Exercises, Project Report	60
Test and Project Viva	40
Assessment 2	100
A1 + A2	200
A1 + A2 Converted to 60	60

Course Plan

17MDC43 / CORPORATE FINANCE

Semester IV Year March 2023– July 2023

Name of the Faculty : Dr.R.Umarani

Internet Homepage :
E.mail : umarani.r@cit.edu.in
GCR : https://classroom.google.com/c/NTE3NjAzODIyNTQ3

Class Schedule:
Lecture Days: Tuesday, Wednesday and Thrusday
Timings: 12 – 12.55, 9.55 – 10.50, 2.00 – 2.55.

Hours for Meeting Students : Monday 1.00 – 2.00 pm or by appointment

i) Course Objectives:

To familiarise the students in making financial decisions with the help of various techniques of corporate fiannce.

ii) Course Outcomes:

- Assess the time value of money and risk return calculation and its importance in financial decisions
- Analyse the various sources available for getting funds for the business and the cost involved in it.
- Evaluate the investment options available and select the best alternative for investments
- Decide the proportion of capital for business and frame the dividend policy .
- Implementing the principles and concepts used in financial decision making

iii) Once the student has successfully completed this course, he/she must be able to do Financial analysis and make decisions.

Topic/Unit/Chapter Layout

Topic	Lecture Hours
Financial Management: Meaning Importance of Finance Objectives Scope Financial Decisions. **Time Value of Money:** Valuation Concepts: Compounding Value Multiple compounding Future Value Compounding Annuities Present Value **Risk and Return:** Types of Risk Measures of Risk Efficient Risk-Return Trade off Capital Asset Pricing Model	9
Sources of Finance: Sources and its features Types-Long term sources- Equity Preferred stock Retained earnings Term Loan Short term sources Bank Sources	9
Capital Budgeting: Concept Importance Kinds of Investment Proposals **Capital appraisal Methods:** Pay Back period method Net Present Value method Present value index method Accounting rate of return method Analysis of Risk and Uncertainty in Capital Budgeting.(Problems)	9
Cost of Capital: Concepts Classification Cost of Debt Cost of Equity	9

Cost of Retained Earnings Weighted Average Cost of Capital (Problems) **Leverages:** Meaning Types Operating and Financial Leverages Combined Leverages (Problems)	
Capital Structure: Meaning and Relevance Point of Indifference Theories of Capital Structure: NI, NOI, MM and Traditional approaches Factors determining Capital Structure **Dividend Policy:** Irrelevance of dividends Relevance of dividends Determinants Types of dividends	9

4) Reference Books:

1. Khan and Jain, "Financial Management", Tata McGraw Hill, New Delhi, 2008
2. Pandey .I.M," Financial Management", Vikas Publshing House, New Delhi, 2005
3. Prasanna Chandra , "Financial Management", Tata McGraw Hill, New Delhi, 2008
4. Maheshwari .S.N," Financial Management", Kalyani Publishers
5. Brealey and Meyers, "Principles of Corporate Finance", Tata McGraw Hill,New Delhi, 2008

Evaluation Scheme - Theory

Evaluation Criteria	Marks
Assessment 1(100 Marks)	
Assignment A1 : 30 marks A2 :10 marks	40
Mid Semester Exam I Part A (5 * 2 = 10 marks) Part B (5 * 10 = 50 marks)	60
Assessment 2(100 Marks)	
Assignment and Mini project A3 : 10 marks Miniproject : 30 marks	40
Mid Semester Exam II Part A (5 * 2 = 10 marks) Part B (5 * 10 = 50 marks)	60
Total Marks (Assessment 1 +Assessment 2)	**200**
Total Marks Converted to Internals (200 converted to 40)	40
University Exam / External Exam	60
Total	100

Course Description

17MDC32 / Financial Analysis and Reporting

Semester III Year Sep 2022 – Jan 2023

Name of the Faculty : Dr.R.Umarani

Internet Homepage :
E.mail : umarani.r@cit.edu.in
GCR Link : https://classroom.google.com/c/NTAyNDQ0MjE0MTEw
Class Schedule:
Lecture Days: Wednesday, Thursday and Friday.
Timings: 9.00 – 9.55 am, 12.00 to 12.55 pm and 11.05 to 12.55 pm.

Hours for Meeting Students : Monday 3.50 – 4.30pm or by appointment

i) Course Objectives:

- *Assess the Procedures of the accounting system.*
- *Preparing financial statements and analyse its linkages.*
- *Evaluate the financial statements and annual reports*
- *Analyse the impact of working capital on the business*
- *Identify the inferior quality of financial reporting*

ii) Course Outcomes:

1) After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes:

- Understand the Financial Statements of the company.
- Analyse the Financial Statement of the company and interpret the results
- Prepare the Cost sheet of a company

2) Once the student has successfully completed this course, he/she must be able to answer the following questions or perform/demonstrate the following:

Topic/Unit/Chapter Layout

Topic	Lecture Hours
Financial Accounting Definition Classification of Financial Activities Generally Accepted Accounting Principles Accounting Equation: Balance sheet, Income Statement and Retained Earnings. Recording Process: Debit and Credit Steps in Recording Process Making Journal Entries Posting the Journal Entries to Ledger Accounts	15

Posting the Ledger to Trial Balance Preparation of Trial Balance	
Financial Statements Understanding the Balance Sheet Understanding the, Income Statement Understanding the Cash flow Statement Need and Linkages Individual elements of Financial Statements Preparation of Common Size Balance sheet and Income Statement	8
Annual Report Reading an annual report for a listed entity Parts of Annual Reports Financial Highlights Directors' Report Management Discussion and Analysis Standalone and Consolidated Financial Statements- Notes to Financial Statements Related Party Transactions	7
Financial Ratios Profitability Ratios Return Ratios Liquidity Ratios Stability Ratios Efficiency Ratios Interpretation of Ratios.	12
Working Capital Analysis Working Capital Calculation Impact of Working Capital on business Negative and Positive Working Capital Perspective of the banker and owner in analysing working capital Calculating Cash Conversion Cycle Analysis of Receivables, Inventory , Cash and Payables	8
Quality of Financial Reporting Measuring Quality of Earnings Identifying the potential red flag.	4
Costing Concepts of Cost Elements of Cost Classification of cost Preparation of Cost Sheet	6

4) Reference Books:

1. *Jain and Narang , "Accounting for Managers", Kalyani Publishers, 2006*
2. *Horngren, Sundem, Elliot, "Introduction to Financial Accounting", Pearson Education, 2005*
3. *Maheshwari.S.N, "An Introduction of Accounting", Vikas Publishig House Pvt Limited 2005.*
4. *Narayanaswamy, "Financial Accounting:A Managerial Perspective", PHI Learning Pvt Ltd, 2008.*

5. *Thomas .R. Robinsn and et.al, "International Financial Statement Analysis", John Weily & Sons, Inc, 2009.*

5) Evaluation Scheme

Theory

Evaluation Criteria	**Marks**
Assessment 1(100 Marks)	
Assignment	40
Mid Semester Exam I	60
Assessment 2(100 Marks)	
Mini Project	40
Mid Semester Exam II	60
Total Marks (Assessment 1 +Assessment 2)	200
Total Marks Converted to Internals (200 converted to 40)	40
University Exam / External Exam	60
Total	100

Course Description

A useful tool for engineering students to understand content delivery by

Faculty

(Contents Recommended by EQUATE that satisfies accreditation requirements)

Faculty may adopt the contents with colloquial modifications

Effective Quality UpgradationAssistance for Technical Education

(EQUATE), New Delhi

Course Description

Course Title/Number : 17MDC41 / PREDICTIVE ANALYTICS

Semester : IV (2021 Batch M.Sc. DCS) Year : Jan 2023 – July 2023

Name of the Faculty : YAMUNA DEVI. N

E-mail : n.yamunadevi@cit.edu.in

Class Schedule

Lecture: Days : Monday Time : 9.55 am – 10.50 am
Tuesday Time : 1.55 pm – 2.50 pm
Wednesday Time : 9.55 am – 10.50 am

COURSE OUTCOMES

- *Analyze time series data and to use it for forecasting.*
- *Formulate and compute multiple linear regression model and understand its properties*
- *Classify objects into different groups using discriminant function, logistic regression equation and cluster analysis techniques*
- *Identify underlying factors in multivariate data sets using principal component analysis and factor analysis.*

ii) Once the student has successfully complete this course, he/she must be able to answer the following questions or perform/demonstrate the following:

- Can solve MLR problems and apply the techniques on practical situations.
- Can apply time series analysis techniques to predict the values of variables.
- Classify the objects appropriately by applying the discriminant analysis.
- Can estimate the factors underlying the practical problems using factor analysis methods.
- Can group the objects using hierarchical and other clustering techniques.
- Explain the differences between classification and clustering methods and usages.

iii) Topic/Unit/Chapter Layout

Topic	Lecture Hours
Multiple Regression Analysis(MLR) : Variables in Multivariate Data-Mean Vector, Covariance and Correlation Matrices and their properties-Estimation of missing values.	4
Multiple Linear Regression Equation and Polynomial Regression Models- Estimation of the coefficients using method of least squares-Linear Regression using Matrices-Properties of Least Squares-	4
Inferences in Multiple Linear Regression: ANOVA and testing the partial regression coefficients-Interpretation of R2-Standardized Regression Coefficient and its interpretation-Inclusion of categorical or indicator variables in MLR -Multi-collinearity problem-Stepwise Regression.	4
Time Series Forecasting : Regression Model for forecasting-Forecasting Time Series data with Seasonal Variation-Auto- Regressive(AR) Models	4
AR Model Identification: ACF and PACF, Moving Average -MA(q)) and ARMA(p,q) Models-Auto-Regressive	4

Integrated Moving Average (ARIMA) Process	
-Dickey Fuller Test-Augmented Dickey-Fuller Test-Transforming Non Stationary Process to Stationary Process using Differencing-ARIMA(p,d,q) model building-Ljung-box test for Auto-Correlations-Power of Forecasting: Theil's Coefficient.	4
Discrimination and Classification : Discriminant Function Analysis- Fisher's discriminant function -Fitting discriminant functions using R and interpreting the results.	4
Logistic Regression:Logistic Model-Definitions of Odds and Logit-Estimation of the logistic regression coefficients-Making Predictions-Multiple Logistic Regression-Fitting logistic regression equation using R and interpreting the results.	4
Principal Component Analysis and Factor Analysis : DataReduction Techniques-Definition of Population Principal Components--Principal Components obtained by Standardized variables -Rules to retain number of Principal Components using Scree Plot	4
. Factor Analysis-Definitions-The Orthogonal Factor Model-Its Covariance Structure- Factor Loadings and Interpretations- Exploratory and Confirmatory Factor Analysis- Estimation of PCA and FA using R.	3
Clustering - Introduction-Distance and Similarity Measures used in clustering-Euclidean distance-standardized educlidean distance- Manhattan distance-Minkowski Distance-Jaccard Index-Cosine Similarity and Gower's Similarity-Quality and Optimal Number of Clusters	3
K-Means Clustering and Hierarchical Clustering Methods -Cluster Analysis Using R and other Software Packages- Applications.	3

iv) **Reference books**

1. *Dinesh Kumar U, " Business Analytics", Wiley, First Edition, 2017*
2. *Alvin C.Rencher,"Methods of Multivariate Analysis", 2nd Edition, Wiley Inter-science, 2002*
3. *Richard A.Johnsonand Dean W.Wichern, " Applied Multivariate Statistical Analysis", 6th Edition, Pearson Prentice Hall, 2007*

(v) **Evaluation Scheme**

1) Theory

Evaluation Criteria	**Cycle I**	**Cycle II**
	Marks	Marks
Sessional Exam 1	60	
Sessional Exam 2		60
Class Test	17	
Assignments (2+2)	10+13	10+10
Objective Test		20
Total	100	100

Internal Assessment : 40 Marks (200 marks will be converted into 40 marks)
End Semester Exam : 60 Marks