



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)

Accredited with Grade "A" by NAAC | Approved by AICTE



Minutes of Board of Studies Meeting

Date: 08.05.2020 **Time:** 11.00 am **Mode:** Virtual

Zoom: Meeting ID: 931 3417 4161

Password: 484805

Minutes of the BOS Meeting -2020 held on 08-05-2020

Agenda:

1. Review of 2015 and 2019 curriculum.
2. Updating the course contents
3. Approval of Problem solving Techniques Lab, Code Optimization and Debugging-I, Green Computing, Cyber Forensics and Virtualization Techniques courses.

The Minutes of Meeting

The commencement of the meeting was inaugurated by Prof.Dr.T.Sasikala, Convener, Board of Studies. The board of members reviewed the 2015 and 2019 curriculum and decisions were made to incorporate the following changes in the curriculum.

- The contents of the courses "*Database Management System*" and "*Programming in Java*" have been changed based on the feedback received from students and faculty members.
- Based on the feedback received from faculty members, the course on "*Programming in C and C++*" has been moved from Semester 2 to Semester 1. In conjunction, the course on "*Python Programming*" is moved from Semester 1 to Semester 2.
- In order to improvise the content of the course, "*Programming in C and C++*", the problem-solving concepts were introduced.
- The contents of the course "*Python Programming*" was also revised based on the feedback received from faculty and students.

- In continuance with **“Programming in C and C++”**, course, to practice the concepts learned, **“Problem solving Techniques Lab”** course, is introduced in Semester 1, based on the comments received from the industrial experts and board members.
- Based on the recent technological advancements, it is essential to incorporate the innovative courses into the curriculum. With regard to this, suggestions were received from the industrial experts. Based on the suggestions received, the new courses namely **“Green Computing”**, **“Cyber Forensics”** and **“Virtualization Techniques”** courses were introduced. The course contents of all the new courses were reviewed by the board members and approved.
- Further, to improvise the coding skill of the students, and to equip the students with skill-based learning, suggestions were given by the board members and industrial experts to include a lab course. In this regard, the **“Code Optimization and Debugging-I”** course has been included in Semester 3.
- The external members suggested to keep the basic concepts in the curriculum undisturbed. In addition, suggestions were given to incorporate functional programming, by bringing industrial experts to add additional insights to the students.

Convener: Dr.T.Sasikala, Dean School of Computing



External Members:

Academic Expert

- Mr. Somasundaram, Vice President, Maveric Systems, Chennai.
- Dr.T.G.Sambanthan, Professor & Head, Department of Computer Science & Engineering NITTTR, Chennai.
- Mr.SingaraveluEkambaram, Sr.Vice President, Cognizant Technology Solutions, Chennai.

Internal Members:

- Dr.R.Subashini, Prof. and Head, IT
- Dr.P.Jeyanthi, Associate Professor, IT
- Dr.Maria Anu ,Associate Professor, IT
- Dr.S.Revathy, Associate Professor, IT

List of New Courses Introduced in the Academic Year 2020-2021

ODD SEM

S.No	Course Code	Name of the Course
1	SCSA2105	Problem Solving Techniques Lab
	SCSA2302	Code Optimization and Debugging-I
3	S IT1604	Virtualization Techniques
4	S IT1608	Green Computing
5	SIT1612	Cyber Forensics

SCSA2105	PROBLEM SOLVING TECHNIQUES LAB	L	T	P	Credits	Total Marks
		0	0	4	2	100

COURSE OBJECTIVES

- Identify the problem.
- To analyse the various steps in program development.
- Evaluate and select the best algorithm to solve the problem.
- Deploy suitable methods to get the desired output.
- Create the solutions for various Real-World Problems

SUGGESTED LIST OF EXPERIMENTS:

1. Program to find GCD.
2. Program to find the max and min from the three numbers.
3. Program to find Exponentiation.
4. Program to find sum of an array of numbers.
5. Program to implement Sine function computation.
6. Program to Generate the Fibonacci sequence.
7. Program to find the roots of a Quadratic equation.
8. Program for reversing the digits of an integer.
9. Program to find the smallest divisor of an integer.
10. Program to Generate Prime Numbers.
11. Program to Raise a Number to a Large Power.
12. Program for Removal of Duplicates.
13. Program to find the kth smallest Element.
14. Program to generate histogram.
15. Program for addition and multiplication of matrices.
16. Program that converts a number ranging from 1 to 50 to Roman equivalent
17. To delete n Characters from a given position in a given string.
18. Program to search for a Key value in a given list of integers using linear search method.
19. Program to sort the number in ascending and descending order.
20. Program for finding the factorial using recursive and non-recursive functions

COURSE OUTCOMES

On completion of the course, student will be able to

- CO1: Analyse and classify the given problem into various modules
- CO2: Analysing the complexity of problems, modularize the problems into small modules and then convert them into programs.
- CO3: Develop the codes containing looping and decision-making statements.
- CO4: Implement user defined functions.
- CO5: Apply recursion and call the function with appropriate parameters.
- CO6: Design and develop solutions to real world problems

SCSA2302	CODE OPTIMIZATION AND DEBUGGING - I	L	T	P	Credits	Total Marks
		0	0	2	1	100

COURSE OBJECTIVES

- To improve the intermediate code by making it consume fewer resources.
- To get the faster running machine code.
- To improve the consistency of the code.
- To enhance the readability of the code and easier code maintenance.
- To improve the work flow of the code.

SUGGESTED LIST OF EXPERIMENTS

1. Implement Built In Function and Libraries using python.
2. Implement Optimizing loop using python.
3. Profiling CPU usage using python.
4. Profiling memory usage using python.
5. Implement query optimization in DBMS.
6. Implement heuristics in query optimization in DBMS.
7. Implement factorial of given number using memorization in data structure.
8. Implement Divide and conquer method in data structure.
9. Implement hybrid stable sorting algorithm in data structure.
10. Implement linked list with improving the time complexity in data structure.

COURSE OUTCOMES

On completion of the course, student will be able to

- CO1 - Understand importance of code optimization.
- CO2 - Apply time complexity and space complexity of the algorithm for improving optimization.
- CO3 - Analyze and appreciate variety of performance measures for various optimization problems.
- CO4 - Learn efficient computational procedures to solve optimization problems.
- CO5 - Be able to use programming languages to implement optimization algorithms.
- CO6 - Be able to reduce the execution time of code by applying proper coding technique.

SIT1608	GREEN COMPUTING	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES

- To study about existing green computing strategies
- Fundamental challenges in achieving green operations of computing units
- Assess enterprise-wide and personal computing and computing related energy consumption.

UNIT 1 GREEN COMPUTING FUNDAMENTALS

9 Hrs.

Green IT fundamentals: Business, IT, and the environment - Green computing: Carbon foot print - scoop on power - Green IT strategies: Drivers, Dimensions, and Goals - Environmentally responsible business: Policies, Practices and Metrics.

UNIT 2 GREEN ASSETS AND MODELING

9 Hrs.

Green Assets: Buildings, data centers, networks and devices - Green business process management: Modeling, optimization and collaboration - Green enterprise architecture - Environmental intelligence - Green supply chains - Green information systems: Design and development models.

UNIT 3 GRID FRAMEWORK

9 Hrs.

Virtualizing of IT systems - Role of electric utilities, telecommuting, teleconferencing and teleporting - Materials recycling - Best ways for green PC - Green data center - Green grid framework

UNIT 4 GREEN COMPLIANCE

9 Hrs.

Socio-cultural aspects of green IT - Green enterprise transformation roadmap - Green Compliance: protocols, standards and audits - Emergent carbon issues: technologies and future. The Way Climate Savers Computing Initiative Do - The Climate Savers Computing Initiative - What Green Computing Impact Organization Supplies - Green Computers Initiatives - Green Computing Impact Organization Overview - Green Electronics Council - Going Green Can Be Truly Challenging - The Green Grid Framework - The CSCI Top Secrets Revealed - The EPEAT Standards - To Have a Green Computer - Green Computing Means to Save Your Money and Your Business - Finances - Green Computing Initiative Platforms.

UNIT 5 CASE STUDIES

9 Hrs.

The Environmentally Responsible Business Strategies (ERBS) - Case study scenarios for trial runs - Case studies - Applying green IT strategies and applications to a home, hospital, packaging industry and telecom sector.

Max.45 Hours

TEXT / REFERENCE BOOKS

- Bhuvan Unhelkar, "Green IT Strategies and Applications - Using Environmental Intelligence", CRC Press, June 2011.
- Woody Leonhard, Katherrine Murray, "Green Home computing for dummies", August 2009. Warland & Pravin Variaya, "High Performance Communication Networks", Jean Harcourt Asia Pvt. Ltd., II Edition, 2001.
- Jason Harris, "Green Computing and Green IT - Best Practices on regulations & industry", Lulu.com, 2008.
- Alin Gales, Michael Schaefer, Mike Ebberts, "Green Data Center: steps for the Journey", Shoff/IBM rebook, 2011.
- John Lamb, "The Greening of IT", Pearson Education, 2009.

END SEMESTER EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration: 3 Hrs.

PART A : 10 questions of 2 marks each - No choice -

20 Marks

PART B : 2 questions from each unit with internal choice, each carrying 12 marks

80 Marks

SIT1612	CYBER FORENSICS	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES

- Demonstrate a working knowledge of computers, storage devices, and digital data
- Plan and prepare for an incident requiring computer forensic skills
- Seize a computer from a crime scene without damaging it or risking it becoming inadmissible in a court of law

UNIT 1 INTRODUCTION TO COMPUTER FORENSICS

9 Hrs.

Computer Forensics Fundamentals: What is Computer Forensics?, Use of Computer Forensics in Law Enforcement, Computer Forensics Assistance to Human Resources/Employment Proceedings, Computer Forensics Services, Benefits of Professional Forensics Methodology, Steps taken by Computer Forensics Specialists Types of Computer Forensics Technology: Types of Military Computer Forensic Technology, Types of Law Enforcement - Computer Forensic Technology - Types of Business Computer Forensic Technology Computer Forensics Evidence and Capture: Data Recovery Defined - Data Back-up and Recovery - The Role of Back-up in Data Recovery - The Data - Recovery Solution

UNIT 2 MOBILE AND SMART PHONE FORENSICS

9 Hrs.

Introduction to Mobile Malware : Types of Attacks Taxonomy of Mobile Malware, Phishing, SMishing, and Vishing Malware Attack and Defense : Mobile Malware, Visual Payloads, Timeline of Mobile Malware, Hoaxes, and Threats, Overview of Mobile Malware Families, Taxonomy of Mobile Malware Threats, Hacking and Viruses in Mobile :Introduction and Overview of Mobile Communication, Attacks in Mobile, Man in the Middle, Denial of Service, Wireless Spoofing, Prevention Techniques in Mobile System, Intrusion detection in wireless, Access Control and Authentication in Mobile

UNIT 3 NETWORK SECURITY

9 Hrs.

IPSec Protocol - IP Authentication Header - IP ESP - Key Management Protocol for IPSec . Transport layer Security: SSL protocol, Cryptographic Computations - TLS Protocol.SIM Security, Security of Mobile Networks, Security of GSM Networks, Security of 3G Networks, Security of Wireless Local Area Networks, Security of Ad-hoc Networks, Security Techniques for Mobile Services, End-to-End Security Services in Mobile Communications, Inter-system Roaming and Internetworking Security, Securing Mobile E-Services, Security of Satellite Services, Security of Mobile Sensor Networks, Application Level Security, Security of IP Based Applications, Security of Mobile Payments, Security of Multimedia Communications, Security of Mobile Voice Communication

UNIT 4 EVIDENCE COLLECTION AND FORENSICS TOOLS

9 Hrs.

Forensics - Investigating Dead Virtual Environments Install Files, Remnants, Registry, Microsoft Disk Image Formats, Data to Look for, Investigator Tips Forensics - Investigating Live Virtual Environments: Artifacts, Processes and Ports, Log Files, VM Memory Usage, Memory Analysis, ESXi Analysis, Microsoft Analysis Tools Processing Crime and Incident Scenes - Working with Windows and DOS Systems. Current Computer Forensics Tools: Software/ Hardware Tools.

UNIT 5 ANALYSIS AND VALIDATION

9 Hrs.

Current Computer Forensic tools: evaluating computer forensic tool needs, validating and testing forensics software computer forensics hardware tools, validating and testing forensics software Cell phone and mobile device forensics: Understanding mobile device forensics, understanding acquisition procedures for cell phones and mobile devices.

Max. 45 Hours

TEXT / REFERENCE BOOKS

1. Man Young Rhee, "Internet Security: Cryptographic Principles", "Algorithms and Protocols", Wiley Publications, 2003.
2. Nelson, Phillips, Einfinger, Steuart, "Computer Forensics and Investigations", Cengage Learning, India Edition, 2008
3. John R.Vacca, "Computer Forensics", Cengage Learning, 2005.
4. Richard E.Smith, "Internet Cryptography", 3rd Edition Pearson Education, 2008.
5. Marjie T.Britz, "Computer Forensics and Cyber Crime": An Introduction", 3rd Edition, Prentice Hall, 2013.

END SEMESTER EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration: 3 Hrs.

PART A: 10 questions of 2 marks each - No choice

20 Marks

PART B : 2 Questions from each unit with internal choice, each carrying 12 marks

80 Marks

B.E. / B. Tech REGULAR

99

REGULATIONS 2015

S I T 1 6 0 4	VIRTUALIZATION TECHNIQUES	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES

OS-level and language-level virtual machines.Virtual networking, Virtual machine mobility, Virtualization for cloud and grid computing, Virtualization for distributed system security.Virtualization for autonomic service provisioning and power management.

UNIT 1 OVERVIEW OF VIRTUALIZATION

8 Hrs.

Basics of Virtualization - Virtualization Types - Desktop Virtualization - Network Virtualization - Server and Machine Virtualization - Storage Virtualization - System-level or Operating Virtualization - Application Virtualization - Virtualization Advantages - Virtual Machine Basics - Taxonomy of Virtual machines - Process Virtual Machines - System Virtual Machines - Hypervisor - Key Concepts

UNIT 2 SERVER CONSOLIDATION

8 Hrs.

Hardware Virtualization - Virtual Hardware Overview - Server Virtualization - Physical and Logical Partitioning - Types of Server Virtualization - Business cases for Server Virtualization - Uses of Virtual server Consolidation - Planning for Development - Selecting server Virtualization Platform

UNIT 3 NETWORK VIRTUALIZATION

10 Hrs.

Design of Scalable Enterprise Networks - Virtualizing the Campus WAN Design - WAN Architecture - WAN Virtualization - Virtual Enterprise Transport Virtualization - VLANs and Scalability - Theory Network Device Virtualization Layer 2 - VLANs Layer 3 VRFInstances Layer 2 - VFI's Virtual Firewall Contexts Network Device Virtualization - Data - Path Virtualization Layer 2: 802.1q - Trunking Generic Routing Encapsulation - IPsec L2TPv3 Label Switched Paths - Control - Plane Virtualization - Routing Protocols - VRF - Aware Routing Multi-Topology Routing.

UNIT 4 VIRTUALIZING STORAGE

10 Hrs.

SCSI - Speaking SCSI - Using SCSI buses - Fiber Channel - Fiber Channel Cables - Fiber Channel Hardware Devices - iSCSI Architecture - Securing iSCSI - SAN backup and recovery techniques - RAID - SNIA Shared Storage Model - Classical Storage Model - SNIA Shared Storage Model - Host based Architecture - Storage based architecture - Network based Architecture - Fault tolerance to SAN - Performing Backups - Virtual tape libraries.

UNIT 5 VIRTUAL MACHINES PRODUCTS

9 Hrs.

Xen Virtual machine monitors - Xen API - VMware - VMware products - VMware Features - Microsoft Virtual Server - Features of Microsoft Virtual Server.

Max. 45 Hours

TEXT / REFERENCE BOOKS

William von Hagen, Professional Xen Virtualization, Wrox Publications, January, 2008.

Chris Wolf, Erick M. Halter, Virtualization: From the Desktop to the Enterprise, APress 2005

Kumar Reddy, Victor Moreno, Network virtualization, Cisco Press, July, 2006.

James E. Smith, Ravi Nair, Virtual Machines: Versatile Platforms for Systems and Processes, Elsevier/Morgan Kaufmann, 2005.

David Marshall, Wade A. Reynolds, Advanced Server Virtualization: VMware and Microsoft Platform in the Virtual Data Center, Auerbach Publications, 2006.

COURSE OUTCOMES

On completion of the course, student will be able to

CO1 - Understand about Computing Virtualization tools, applications and techniques.

CO2 – Deploy hypervisors and demonstrate hypervisor compatibility and configuration.

CO3 – Create a virtual machine and install a guest OS and management tools.

CO4 – Identify the components of virtual networking, create virtual switches and manage VLANs.

CO5 – Configure storage at the hypervisor and VM layer.

CO6 – Demonstrate and understanding of different components of the virtual machine products.

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks : 100 Exam Duration : 3 Hrs.

PART A: 10 questions of 2 marks each - No choice -

20 Marks

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80 Marks



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Minutes of Board of Studies Meeting

Date: 14.12.2020

Time: 11.00 am

Mode: Virtual

Minutes of the BOS Meeting -2020 held on 14-12-2020.

Agenda:

1. Review of 2015 and 2019 curriculum.
2. Updating the course contents of Existing Courses and Introduction of new courses

The Minutes of Meeting

The commencement of the meeting was inaugurated by Prof.Dr.T.Sasikala, Convener, Board of Studies. The board of members reviewed the 2015 and 2019 curriculum and decisions were made to incorporate the following changes in the curriculum.

- Contents of the following courses have been changed based on the feedback given by students and faculty members and students.

1.Data Structures

2.Data Structures lab

3.Data Communication and Computer Networks

4.Design and Analysis of algorithms

5.Networking Lab

- The following new courses have been introduced based on the suggestions given by Board of Studies External members and the stakeholders - Alumni and Employer.

1. SCSA1204-Python programming

2. SAIC4003-Society 5.0

3. SCSA2402-Code Optimization and Debugging-II

- In 2019 curriculum, Industry 4.0 is replaced with Society 5.0

Convener: Dr.T.Sasikala, Dean School of Computing



External Members:

Academic Expert

- Dr.T.G.Sambanthan, Professor & Head, Department of Computer Science & Engineering NITTTR, Chennai.
- Mr.SingaraveluEkambaram, Sr.Vice President, Cognizant Technology Solutions, Chennai.
- Mr. Somasundaram, Vice President, Maveric Systems, Chennai.

Internal Members:

- Dr.R.Subashini, Prof. and Head, IT
- Dr.P.Jeyanthi, Associate Professor, IT
- Dr.Maria Anu ,Associate Professor, IT
- Dr.S.Revathy, Associate Professor, IT

R-EM

A rectangular stamp containing a handwritten signature in blue ink. Below the signature, the text reads: "Dr. P. Jeyanthi".

Ms.

A rectangular stamp containing a handwritten signature in blue ink. Below the signature, the text reads: "Dr. S. Revathy".

List of New Courses Introduced in the Academic Year 2020-2021

EVEN SEM

S.No	Course Code	Name of the Course
1	SCSA1204	Python Programming
2	SAIC4002	Society 5.0
3	SCSA2402	Code Optimization and Debugging-II

SCSA1204	PYTHON PROGRAMMING	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES

- To understand why Python is a useful scripting language for developers.
- To learn how to use lists, tuples, and dictionaries in Python programs.
- To build and package Python modules for reusability.
- To understand how to read and write files in Python.
- To learn how to use exception handling in Python applications for error handling.
- To design and program Python applications.

UNIT 1 INTRODUCTION**9Hrs.**

History of Python- Introduction to the IDLE interpreter (shell) - Data Types - Built-in function - Conditional statements - Iterative statements- Input/output functions - Compound Data Types - Nested compound statements – Introduction to Object Oriented Concepts.

UNIT 2 FILES AND EXCEPTIONS HANDLING, MODULES, PACKAGES**9Hrs.**

File Operations –Iterators - Exception handling - Regular Expressions- Creating Modules-Import Statement- Introduction to PIP-Installing Packages via PIP-Using Python Packages.

UNIT 3 GUI PROGRAMMING**9 Hrs.**

GUI Programming in Python - Introduction to GUI library - Layout management - Events and bindings - Fonts – Colours - Canvas - Widgets (frame, label, button, check box, entry, listbox, message, radiobutton, text, spinbox).

UNIT 4 DATABASE AND NETWORK**9Hrs.**

Database (using NoSQL): Connector Module –Cursor – Statements - Exceptions in database. Network connectivity: Socket module - Client – Server – Email – URLAccess.

UNIT 5 CASE STUDY**9Hrs.**

Web Programming using Python Image Processing – Facebook Analysis – Twitter Analysis.

Max. 45 Hrs.**COURSE OUTCOMES**

- CO1: Describe the Numbers, Math functions, Strings, List, Tuples and Dictionaries in Python.
- CO2: Do the decision making and write functions in Python.
- CO3: Explain how to design GUI Applications in Python and evaluate different database operations.
- CO4: Design and develop Client Server network applications using Python.
- CO5: Ability to design real life situational problems and think creatively about solutions of them.
- CO6: Apply the best features of mathematics, engineering and natural sciences to program real life problems.

TEXT /REFERENCE BOOKS

1. Y. Daniel Liang, "Introduction to Programming Using Python", Pearson, 2013.
2. Python Notes for Professionals by Stack Overflow Documentation (<https://books.goalkicker.com/PythonBook/>)
3. Dr. Charles R. Severance, "Python for Everybody- Exploring Data Using Python 3", 2016.
4. Paul Gries, Jennifer Campbell, Jason Montojo, "Practical Programming: An Introduction to Computer Science using Python 3", Pragmatic Bookshelf, 2nd Edition, 2014.
5. Magnus Lie Hetland, "Beginning Python: From Novice to Professional", Apress.

END SEMESTER EXAM QUESTION PAPER PATTERN**Max. Marks : 100****Exam Duration : 3 Hrs.****PART A : 10 Questions of 2 marks each-No choice****20 Marks****PART B : 2 Questions from each unit with internal choice, each carrying 16 marks****80 Marks**

SAIC4002	SOCIETY 5.0	L	T	P	Credits	Total Marks
		2	0	2	2	100

COURSE OBJECTIVES

- To understand the society 5.0, Cyberspace and Physical Space to solve
- To Provide knowledge and overview about Big data, IoT and Artificial Intelligence for Society 5.0.
- Discuss To understand Augmented Reality and Virtual Reality, Next Generation Sensors
- To discuss about Challenges and Technologies towards Society 5.0, Security of Cyber Physical Systems
- Discuss to apply society 5.0 Innovation with Future Trends with Applications

UNIT 1 INTRODUCTION TO SOCIETY 5.0**9hrs**

Introduction –Schema of society 5.0-Characteristics of Society 5.0. Introduction to communication technologies: Artificial Intelligence – robotics - 3D Printing. People: Centric Society -Knowledge Sharing- Physical space- Cyberspace – Humanity VS Society 5.0 – Elements of Society 5.0-Data Driven to Society- Modeling real world Issues.

UNIT 2 EMERGING TECHNOLOGIES WITH SOCIETY 5.0**9hrs**

Introduction to Big Data – Issues and Challenges in the traditional systems –Intelligent Data Analysis –Big Data Storage Statistical Concepts: Sampling Distributions - Re-Sampling - Prediction Error – Random Sampling– Artificial Intelligence – - Foundations of AI - Intelligent agent - Types of agents - Structure - Problem solving agents -Internet of Things- Introduction to IoT- Basic Architecture of an IoT, From M2M to IoT, M2M towards IoT-Robotics- Robotics system components - Robot classification Coordinate frames - degree of freedom - dynamic stabilization of robots

UNIT III INTRODUCTION TO INDUSTRY 4.0**9hrs**

Introduction-Globalization and Emerging Issues, LEAN Production Systems, Smart and Connected Business Perspective, Cyber Physical Systems and Next Generation Sensors, Augmented Reality and Virtual Reality, Artificial Intelligence, Big Data and Advanced Analysis- An emerging industrial structure for IoT -Cyber security in Industry 4.0-Basics of Industrial IoT. Common Issues in Industry 4.0 and Society 5.0.

UNIT IV CHALLENGES AND TECHNOLOGIES TOWARDS SOCIETY 5.0**9hrs**

Overcome with Economic Development and Solution to Social Problems in Society 5.0- Security of Cyber Physical Systems -Embedded and CPS security - attacks and countermeasures, authentication, identification, confidentiality, data integrity, authorization, access control, malware attacks and counter-measures, security protocols- Social Issues in Society 5.0 - human-centered society (Society 5.0)- Sustainable Development Goals-Economic Advancement- Resolution to Social Problems.

UNIT V INNOVATION WITH FUTURE TRENDS WITH APPLICATIONS**9hrs**

Mobility – Health Care –Agriculture- Food Products – Disaster Prevention.

MAX.45 Hours**COURSE OUTCOMES**

On completion of the course the student will be able to

- CO1: Understand the Social Problems By A System That Highly Integrates Cyberspace and Physical Space to solve
- CO2: Get Skills for Economic Development and A Human-Centered Society That Balances Economic Advancement
- CO3: Achieve a High Degree of Convergence Between Cyberspace (Virtual Space) And Physical Space (Real Space)
- CO4: Use of Emerging Technologies with Society 5.0 To Achieve More Production / Avoid Loss of Productions
- CO5: Internet and IoT, Big data for production lines to be adaptive, intelligent, and flexible enough to meet the updated requests.
- CO6: Design and apply in Health Care, Agriculture, Food Products, Disaster Prevention

SCSA2402	CODE OPTIMIZATION AND DEBUGGING - II	L	T	P	Credits	Total Marks
		0	0	2	1	100

COURSE OBJECTIVES

- To analyze the programming logic and apply the appropriate design approach.
- To optimize the speed of the program by using proper utilization of available memory.
- To make use of performance tools for tracking the application.
- To have a capacity to analyze and design software systems, components to meet desired needs.
- To have a working ability and grasping attitude to design and conduct object-oriented analysis.

SUGGESTED LIST OF EXPERIMENTS

1. Implement minimum heap allocation in java.
2. Implement string builder in java.
3. Implement concurrency control using java.
4. Checking the current log level using java.
5. Implement Garbage collection using java.
6. Implement grid line in object oriented analysis and design.
7. Implement grid with two sets of diagonal lines in object oriented analysis and design.
8. Implement concurrency in object oriented analysis and design.
9. Implement design optimization for removing non usable associations in object oriented analysis and design.
10. Implement sparing and storing derived attributes associations in object oriented analysis and design.

COURSE OUTCOMES

On completion of the course, student will be able to

CO1 - Understand the impact of performance hits during application runtime. CO2 - Implement optimal functions for improving the performance.

CO3 - Analyze the proper utilization of memory for code.

CO4 - Design experiments using UML, as well as to analyze and evaluate their models.

CO5 - Discussing and understanding analysis and design heuristics that are involved in the course.

CO6 - Students will learn and understand how to map one style of diagrammatic notations into another.