



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: 22.06.2023

Time: 11.00 am

Mode: Physical

Minutes of the BOS Meeting -2023 held on 22.06.2023.

Agenda:

- Review of 2019 curriculum.
- Updating the course contents of Existing Courses and Introduction of new courses

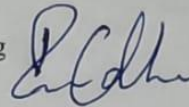
The Minutes of Meeting

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

- Since Object Oriented Programming can make software development more modular, reusable, and maintainable, Mr.Ajay Kumar Suggested to provide OOP using Python in a detailed way.
- In order to develop web application, Enterprise Application and mobile application easily, Mr. Ashish Chopra advised to introduce Advanced Java Programming course in the curriculum
- Dr.T.G.Sambanthan advised to include the topic of "Extraction and Mining Communities in Web Social Networks" because it is an important aspect of social network analysis that focuses on understanding the structure,

relationships, and behaviors within online social networks.

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. *Sambanthan*
- Dr. RiyazAhamed, Senior lecturer, School of Computer Science and Engineering, Taylor's University, Malaysia. *Riyaz Ahamed*

Industry Experts

- Dr.V.Sankaran, Program Manager, Engineering and R&D Services, HCL Technologies *Sankaran*
- Mr. Ajay Kumar, CTO, Cognibot Robotics, Chennai. *Ajay Kumar*

Alumni

- Mr.Johnson S, Project Test Manager, TCS , Chennai. *Johnson*
- Mr.Ashish Chopra, Senior BDE, Freshworks, Chennai. *Ashish Chopra*

Internal Members:

- Dr.R.Subashini , HoD, Department of IT *R.Subashini*
- Dr.Jeberson Retna Raj,Professor,IT *Jeberson Retna Raj*
- Dr.P.Jeyanthi, Associate Professor, Department of IT *P.Jeyanthi*
- Dr.S.Revathy, Associate Professor, Department of IT *Revathy*

SIT1619 (old)	INTERNET OF THINGS	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT 1

9 Hrs.

Introduction to IoT, Current technological trends and future prospects, - Evolution of IoT - IoT and related terms – Business Scope, Relation with embedded system, Introduction to Arduino and Raspberrypi, Overview of Elements of IoT - Basic Architecture of an IoT.

UNIT 2

9 Hrs.

Application Sensors & Actuators - Edge Networking (WSN) – Gateways - IoT Communication Model – WPAN & LPWA, IoT platform for available applications, Hardware Devices: Arduino, Raspberry pi and Smartwifi, etc, Wearable Development Boards, Softwares, Programs and Stacks available for building IoT applications, Installation of various packages necessary for project and list of tools.

UNIT 3

9 Hrs.

IoT Communication Model, Cloud computing in IoT, IoT in cloud architecture, Logging on to cloud, Selecting and Creating cloud service, Managing Cloud Account Credentials and Generating Key Pair, Creating IoT Cloud Service.

UNIT 4

9 Hrs.

Big Data Analytics – Data Exploration, Data Visualization, Visualization tools for IoT.

UNIT 5

9 Hrs.

DIY Kits – Soil moisture monitoring, Weather monitoring, Air quality Monitoring, Movement Detection, etc, IFTTT and other apps.

Max. 45 Hrs.

COURSE OUTCOMES:

On completion of the course, student will be able to

CO1 : Illustrate the technology and current trends in Internet of things.

CO2 : Understand the various elements of IoT system and hardware devices.

CO3 : Learn the programming languages and platforms for building IoT applications

CO4 : Demonstrate cloud computing and its relevance for developing IoT applications.

CO5 : Implement IoT applications that manage big data with data analytics and visualization tools.

CO6 : Implement hands-on projects using an appropriate software and hardware devices in various applications.

TEXT / REFERENCE BOOKS

1. The Internet of Things: Applications and Protocols, Wiley publications. Author(s): Oliver Hersent, David Boswarthick, Omar Elloumi.
2. Architecting the Internet of Things, Springer publications. Author(s):Dieter Uckelmann, Mark Harrison, Florian Michahelles.
3. Internet of Things with Arduino Cookbook, Packt Publications. Author(s): Marco Schwatz.
4. Internet of Things and Data Analytics, Wiley Publications.

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks: 100

Exam Duration: 3 Hrs.

PART A: 2 Questions from each unit, each carrying 2 marks

20 Marks

PART B: 2 Questions from each unit with internal choice, each carrying 16 marks

80 Marks

Deleted Content

SITA3008 (Revised)	INTERNET OF THINGS	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES

- To understand the concepts of Internet of Things
- To identify the various elements of an IoT System.
- To understand the various means of communication from Node / Gateway to Cloud Platforms.
- To identify types of data analytics and data visualization tools.
- To make students aware of security concerns and challenges while implementing IoT solutions.

UNIT 1 INTRODUCTION TO IOT

9 Hrs.

Introduction to IoT, Current technological trends and future prospects, - Evolution of IoT , Business Scope, Relation with embedded system, - Basic Architecture of an IoT, From M2M to IoT, M2M towards IoT, IoT Value Chains, An emerging industrial structure for IoT.

UNIT 2 ELEMENTS OF IOT

9 Hrs.

Application Sensors & Actuators - Edge Networking (WSN) – Gateways - IoT Communication Model – WPAN & LPWA, Overview of IoT supported Hardware platforms such as: Raspberry pi, ARM Cortex Processors, Arduino and Intel Galileo boards, Wearable Development Boards.

UNIT 3 COMMUNICATION AND CONNECTIVE TECHNOLOGIES

9 Hrs.

IoT Communication Model, Cloud computing in IoT, IoT in cloud architecture, Logging on to cloud, Selecting and Creating cloud service , cloud based IoT platforms - IBM Watson, Google cloud.

UNIT 4 DATA ANALYTICS AND IOT PLATFORM

9 Hrs.

Big Data Analytics , Apache Hadoop, Using Hadoop MapReduce for Batch Data Analysis, Apache Storm, Data Visualization, Visualization tools for IoT.

UNIT 5 HANDS-ON PROJECTS

9 Hrs.

Industry 4.0 concepts. Sensors and sensor Node and interfacing using any Embedded target boards (Raspberry Pi / Intel Galileo/ARM Cortex/ Arduino), DIY Kits – Soil moisture monitoring, Weather monitoring, Air quality Monitoring, Movement Detection.

Max. 45 Hrs.

COURSE OUTCOMES

On Completion of the course, student will be able to

- CO1 - To learn and understand the technology and current trends in Internet of things.
- CO2 - To understand the various elements of IoT system and hardware devices.
- CO3 - To learn the programming languages and platforms for building IoT applications.
- CO4 - To understand the cloud computing and its relevance for developing IoT applications.
- CO5 - To design and implement IoT applications that manages big data with data analytics and visualization tools.
- CO6 - To implement hands-on projects using an appropriate software and hardware devices in various applications.

TEXT / REFERENCE BOOKS

1. The Internet of Things: Applications and Protocols, Wiley publications. Author(s): Oliver Hersent, David Boswarthick, Omar Elloumi.
2. Architecting the Internet of Things, Springer publications. Author(s): Dieter Uckelmann, Mark Harrison, Florian Michahelles.
3. Internet of Things with Arduino Cookbook, Packt Publications. Author(s): Marco Schwatz.
4. Internet of Things and Data Analytics, Wiley Publications.

SITA3006 (old)	UNIX INTERNALS	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES

- To understand the design of the UNIX operating system.
- To become familiar with the system architecture.
- To learn the various low-level algorithms used in UNIX.
- To learn process control.
- To learn memory management.

UNIT 1 SYSTEM ARCHITECTURE AND ADMINISTRATION

9 Hrs.

General review of the system - History - System structure - User perspective - Operating system services - Assumptions about hardware - Introduction to the kernel - Architecture of the UNIX operating system - System administration.

UNIT 2 BUFFER CACHE AND DISK BLOCKS

9 Hrs.

The buffer cache - Headers - Buffer pool - Buffer retrieval - Reading and writing disk blocks - Advantages and disadvantages of the buffer cache - Internal representation of files - Inodes - Structure of the buffer pool - Directories - Path name to Inode - Super block - node assignment - Allocation of disk blocks - Other file types.

UNIT 3 FILE SYSTEMS

9 Hrs.

System calls for the file system - Open - Read - Write - Lseek - Close - Create - Special files creation - Change directory and change root - Change owner and change mode - Stat - Fstat - Pipes - Dup - Mount - Unmount - Link - Unlink - File system abstraction - Maintenance.

UNIT 4 PROCESS CONTROL

9 Hrs.

The system representation of processes - States - Transitions - System memory - Context of a process - Saving the context - Manipulation of a process address space - Sleep process control - signals - Process termination - Awaiting - Invoking other programs - The Shell - system Boot and the INIT process - process scheduling.

UNIT 5 MEMORY MANAGEMENT

9 Hrs.

Memory management policies - Swapping - Demand paging - A Hybrid System - I/O subsystem - Driver interfaces - Disk drivers - Terminal drivers - Inter Process Communication.

Max. 45 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

- CO1 - Understand the basic functions of UNIX operating systems.
- CO2 - Analyze the buffers and kernel representation.
- CO3 - Understand the UNIX system structure and system calls.
- CO4 - Demonstrate the UNIX segmentation, scheduling and paging.
- CO5 - Apply the concept of memory management and Inter process communication.
- CO6 - Explore various file systems.

TEXT / REFERENCE BOOKS

1. Maurice J. Bach, "The Design of the Unix Operating System", Pearson Education, 2002.
2. Uresh Vahalia, "UNIX Internals: The New Frontiers", Pearson Education Inc, 2003.
3. John Lion, "Lion's Commentary on UNIX", 6th edition, Peer-to-Peer Communications, 2004.
4. Daniel P. Bovet & Marco Cesati, "Understanding the Linux Kernel", O'REILLY, Shroff Publishers & Distributors Pvt. Ltd, 2000.
5. M. Beck et al, "Linux Kernel Programming", Pearson Education Asia, 2002

SITA3006 (Revised)	UNIX INTERNALS	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES

- To understand the design of the UNIX operating system.
- To become familiar with the system architecture.
- To learn the various low-level algorithms used in UNIX.
- To learn process control.
- To learn memory management.

UNIT 1 SYSTEM ARCHITECTURE AND ADMINISTRATION

9 Hrs.

General review of the system - History - System structure - User perspective - Operating system services - Assumptions about hardware - Introduction to the kernel - Architecture of the UNIX operating system - System administration.

UNIT 2 BUFFER CACHE AND DISK BLOCKS

9 Hrs.

The buffer cache - Headers - Buffer pool - Buffer retrieval - Reading and writing disk blocks - Advantages and disadvantages of the buffer cache - Internal representation of files - Inodes - Structure of the buffer pool - Directories - Path name to Inode - Super block - Inode assignment - Allocation of disk blocks - Other file types.

UNIT 3 FILE SYSTEMS

9 Hrs.

System calls for the file system - Open - Read - Write - Lseek - Close - Create - Special files creation - Change directory and change root - Change owner and change mode - Stat - Fstat - Pipes - Dup - Mount - Unmount - Link - Unlink - File system abstraction - Maintenance I/O subsystem - Driver interfaces - Disk drivers - Terminal drivers - Inter Process Communication.

UNIT 4 PROCESS CONTROL AND MEMORY MANAGEMENT

9 Hrs.

The system representation of processes - States - Transitions - System memory - Context of a process - Saving the context - Manipulation of a process address space - Sleep process control - signals - Process termination - Awaiting - Invoking other programs - The Shell - system Boot and the INIT process - process scheduling - Memory management policies - Swapping - Demand paging

UNIT 5 SIGNALS AND DAEMON PROCESSES

Signals: The UNIX Kernel Support for Signals, signal, Signal Mask, sigaction, The SIGCHLD Signal and the waitpid Function, The sigsetjmp and siglongjmp Functions, Kill, Alarm, Interval Timers, POSIX.1b Timers. Daemon Processes: Introduction, Daemon Characteristics, Coding Rules, Error Logging, Client-Server Model.

9 Hrs.

Max. 45 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

- CO1 - Understand the basic functions of UNIX operating systems.
- CO2 - Analyze the buffers and kernel representation.
- CO3 - Understand the UNIX system structure and system calls.
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8. John Lion, "Lion's Commentary on UNIX", 6th edition, Peer-to-Peer Communications, 2004.
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10. M. Beck et al, "Linux Kernel Programming", Pearson Education Asia, 2002

SITA2701	AI AND MACHINE LEARNING LAB	L	T	P	Credits	Total Marks
		0	0	4	2	100

COURSE OBJECTIVES

- To implement various machine learning algorithms.
- To learn how to build Artificial Neural Network.
- To understand how to learn Data sets with the help of machine learning algorithms.
- To Apply EM algorithm to cluster a set of data stored in a .CSV file.
- To be familiar with PROLOG tool.

SUGGESTED LIST OF PROGRAMS

1. Implement and demonstrate the FIND-S algorithm for finding the most specific hypothesis based on a given set of training data samples. Read the training data from a .CSV file.
2. For a given set of training data examples stored in a .CSV file, implement and demonstrate the Candidate-Elimination algorithm to output a description of the set of all hypotheses consistent with the training examples.
3. Write a program to demonstrate the working of the decision tree based ID3 algorithm. Use an appropriate data set for building the decision tree and apply this knowledge to classify a new sample.
4. Build an Artificial Neural Network by implementing the Back propagation algorithm and test the same using appropriate data sets.
5. Write a program to implement the naïve Bayesian classifier for a sample training data set stored as a .CSV file. Compute the accuracy of the classifier, considering few test data sets.
6. Assuming a set of documents that need to be classified, use the naïve Bayesian Classifier model to perform this task. Built-in Java classes/API can be used to write the program. Calculate the accuracy, precision, and recall for your data set.
7. Write a program to construct a Bayesian network considering medical data. Use this model to demonstrate the diagnosis of heart patients using standard Heart Disease Data Set. You can use Java/Python ML library classes/API.
8. Apply EM algorithm to cluster a set of data stored in a .CSV file. Use the same data set for clustering using k-Means algorithm. Compare the results of these two algorithms and comment on the quality of clustering. You can add Java/Python ML library classes/API in the program.
9. Write a program to implement k-Nearest Neighbour algorithm to classify the iris data set. Print both correct and wrong predictions. Java/Python ML library classes can be used for this problem.
10. Study of PROLOG. Write the following programs using PROLOG.
11. Write a program to solve 8 queens problem.
12. Solve any problem using depth first search.
13. Solve any problem using best first search.
14. Solve 8-puzzle problem using best first search.
15. Solve travelling salesman problem.

COURSE OUTCOMES

On completion of the course, student will be able to

- CO1 - Apply various machine learning algorithms.
- CO2 - Design Java/Python programs for various Learning algorithms.
- CO3 - Apply appropriate data sets to the Machine Learning algorithms.
- CO4 - Identify and apply Machine Learning algorithms to solve real world problems.
- CO5 - Apply EM algorithm to cluster a set of data stored in a .CSV file.
- CO6 - Implement programs with PROLOG.



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Minutes of Board of Studies Meeting

Date: 08.12.2022

Time: 11.00 am

Mode: Physical

Minutes of the BOS Meeting -2022 held on 08-12-2022.

Agenda:

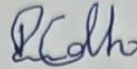
1. Review of 2019 curriculum.
2. Updating the course contents of Existing Courses and Introduction of new courses

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 2019 curriculum and decisions were made to incorporate the following changes in the curriculum.

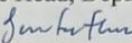
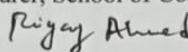
- Contents of Internet of Things course has been have been changed based on the feedback given by Dr.Sivasangari
- Since the Artificial Intelligence (AI) and Machine Learning (ML) technologies are emerging as promising solutions, Dr.V.Sankaran suggested introducing AI and Machine Learning Lab.
- Mr. Johnson suggested to include signals and daemon processes in a Unix internals syllabus since it equips students with practical knowledge and skills that are directly applicable to both software development and system administration roles.

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

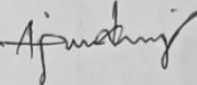


External Members:

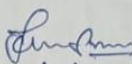
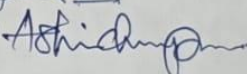
Academic Expert

- Dr.T.G.Sambanthan, Professor & Head, Department of Computer Science & Engineering NITTTR, Chennai. 
- Dr. RiyazAhamed, Senior lecturer, School of Computer Science and Engineering, Taylor's University, Malaysia. 

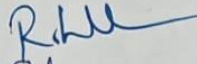
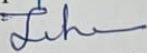
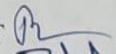
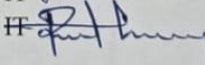
Industry Experts

- Dr.V.Sankaran, Program Manager, Engineering and R&D Services, HCL Technologies 
- Mr. Ajay Kumar, CTO, Cognibot Robotics, Chennai. 

Alumni

- Mr.Johnson S, Project Test Manager, TCS , Chennai. 
- Mr.Ashish Chopra, Senior BDE, Freshworks, Chennai. 

Internal Members:

- Dr.R.Subashini , HoD, Department of IT 
- Dr.Jeberson Retna Raj,Professor,IT 
- Dr.P.Jeyanthi, Associate Professor, Department of IT 
- Dr.S.Revathy, Associate Professor, Department of IT 

SCSA1204 (old)	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

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

Deleted Content

SCSA1211 (Revised)	PYTHON PROGRAMMING	L	T	P	Credits	TotalMarks
		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

9 Hrs.

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

UNIT 2 OBJECT ORIENTED CONCEPTS

9 Hrs.

Class – Objects – Constructors –Getters and Setters- Polymorphism – Encapsulation -Inheritance -Data Abstraction- Method Overloading-Method overriding-Data Hiding-Import Class

UNIT 3 FILES AND EXCEPTIONS HANDLING, MODULES, PACKAGES

9 Hrs.

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

UNIT 4 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, list box, message, radio button, text, spin box).

UNIT 5 DATABASE AND NETWORK

9 Hrs.

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

Max. 45 Hrs.

COURSE OUTCOMES

On Completion of course student will able to

- 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.

Added Content

SITA3005 (old)	SOCIAL NETWORK ANALYSIS	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES

- To understand the concept of semantic web and related applications.
- To learn knowledge representation using ontology.
- To understand human behavior in social web and related communities.
- To learn mining in social network communities.
- To learn visualization of social networks.

UNIT 1 INTRODUCTION

9 Hrs.

Introduction to Semantic Web: Limitations of current Web - Development of Semantic Web - Emergence of the Social Web
Social Network Analysis: Social Networks Perspective - Analysis of Network Data –Key concepts and measurements in network analysis-Interpretation of Network Data - Social Network Analysis in the Social and Behavioral Sciences - Metrics in social network analysis.

UNIT 2 SOCIAL NETWORK ANALYSIS SOFTWARE, TOOLS AND LIBRARIES

9 Hrs.

Modelling and aggregating social network data: Ontological representation of social individuals - Ontological representation of social relationships - Aggregating and reasoning with social network data –(Advanced representations) Multi-Relational characterization of dynamic social network communities -Social network analysis software - Tools - Libraries.

UNIT 3 CLIQUES, CLUSTERS AND COMPONENTS

9 Hrs.

Components and Sub graphs: Sub graphs - Ego Networks, Triads, and Cliques, Hierarchical Clustering, Triads, NetworkDensity and conflict. Density: Egocentric and Sociocentric - Digression on Absolute Density - Community structure and Density, Centrality: Local and Global - Centralization and Graph Centres, Cliques and their intersections, Components and Citation Circles - Positions, Sets and Clusters.

UNIT 4 PREDICTING HUMAN BEHAVIOUR AND PRIVACY ISSUES

9 Hrs.

Development of Social Network Analysis - Understanding and predicting human behavior for social communities - User data management - policy, legal, and technical challenges. Inference and Distribution - Enabling new human experiences - Reality mining - Context - Awareness - Privacy in online social networks - Trust in online environment - Trust models based on subjective logic - Trust network analysis - Trust transitivity analysis - Combining trust and reputation - Trust derivation based on trust comparisons - Attack spectrum and countermeasures.

UNIT 5 VISUALIZATION AND APPLICATIONS OF SOCIAL NETWORKS

9 Hrs.

Graph theory – Centrality – Clustering – Node-Edge Diagrams – Matrix representation – Visualizing online social networks, Visualizing social networks with matrix-based representations – Matrix and Node-Link Diagrams – Hybrid representations – Modeling and aggregating social network data -Applications – Cover networks – Community welfare – Collaboration networks – Co-Citation networks.

Max. 45 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

- CO1 - An ability to identify metrics used in network analysis.
- CO2 - An ability to classify the network related data's.
- CO3 - Identify the aim of graph in computational models.
- CO4 - Apply the knowledge in predicting the user behaviors.
- CO5 - Visualization of a social network using tools.
- CO6 - Ability to analyze metrics in social network analysis.

TEXT / REFERENCE BOOKS

1. Jeffrey C Johnson, Martin G Everett, Stephen P Borgatti - Analyzing Social Networks –sage publication-2013.
2. Guandong Xu ,Yanchun Zhang and Lin Li,-Web Mining and Social Networking – Techniques and applications, 1st Edition, Springer, 2011.
3. Dion Goh and Schubert Foo,-Social information Retrieval Systems: Emerging Technologies and Applications for Searching the Web Effectively, IGI Global Snippet, 2008.
4. Max Chevalier, Christine Julien and Chantal Soulé-Dupuy, Collaborative and Social Information Retrieval and Access: Techniques for Improved user Modelling, IGI Global Snippet, 2009.
5. John Scott, "Social Network Analysis", 3rd Edition, SAGE Publications Ltd 2013.
6. Peter Mika, Social Networks and the Semantic Web, 1st Edition, Springer 2007.
7. Maksim Tsvetovat, Alexander Kouznetsov, " Social Network Analysis for Startups", 1st Edition, O'Reilly Media, 2011.
8. John G. Breslin, Alexander Passant and Stefan Decker, "The Social Semantic Web", Springer, 2009.

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

Max. Marks:100

PART A: 10 Question of 2 marks each – No choice

PART B: 2 Questions from each unit of internal choice, each carrying 16 marks

Exam Duration: 3 Hrs.

20 Marks

80 Marks

SITA3005	SOCIAL NETWORK ANALYSIS	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES

- To understand the concept of semantic web and related applications.
- To learn knowledge representation using ontology.
- To understand human behavior in social web and related communities.
- To learn mining in social network communities.
- To learn visualization of social networks.

UNIT 1 INTRODUCTION

9 Hrs.

Introduction to Semantic Web: Limitations of current Web - Development of Semantic Web - Emergence of the Social Web
Social Network Analysis: Social Networks Perspective - Analysis of Network Data –Key concepts and measurements in network analysis-Interpretation of Network Data - Social Network Analysis in the Social and Behavioral Sciences - Metrics in social network analysis.

UNIT 2 SOCIAL NETWORK ANALYSIS SOFTWARE, TOOLS AND LIBRARIES

9 Hrs.

Modelling and aggregating social network data: Ontological representation of social individuals - Ontological representation of social relationships - Aggregating and reasoning with social network data –(Advanced representations)
Multi-Relational characterization of dynamic social network communities -Social network analysis software - Tools - Libraries.

UNIT 3 EXTRACTION AND MINING COMMUNITIES IN WEB SOCIAL NETWORKS

9 Hrs

Extracting evolution of Web Community from a Series of Web Archive - Detecting communities in social networks - Definition of community - Evaluating communities - Methods for community detection and mining - Applications of community mining algorithms - Tools for detecting communities social network infrastructures and communities - Decentralized online social networks - Multi-Relational characterization of dynamic social network communities.

UNIT 4 PREDICTING HUMAN BEHAVIOUR AND PRIVACY ISSUES

9 Hrs.

Development of Social Network Analysis - Understanding and predicting human behavior for social communities - User data management - policy, legal, and technical challenges. Inference and Distribution - Enabling new human experiences - Reality mining - Context - Awareness - Privacy in online social networks - Trust in online environment - Trust models based on subjective logic - Trust network analysis - Trust transitivity analysis - Combining trust and reputation - Trust derivation based on trust comparisons - Attack spectrum and countermeasures.

UNIT 5 VISUALIZATION AND APPLICATIONS OF SOCIAL NETWORKS

9 Hrs.

Graph theory – Centrality – Clustering – Node-Edge Diagrams – Matrix representation – Visualizing online social networks, Visualizing social networks with matrix-based representations – Matrix and Node-Link Diagrams – Hybrid representations – Modeling and aggregating social network data -Applications – Cover networks – Community welfare – Collaboration networks – Co-Citation networks.

Max. 45 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

- CO1 - An ability to identify metrics used in network analysis.
- CO2 - An ability to classify the network related data's.
- CO3 - Identify the aim of graph in computational models.
- CO4 - Apply the knowledge in predicting the user behaviors.
- CO5 - Visualization of a social network using tools.
- CO6 - Ability to analyze metrics in social network analysis.

TEXT / REFERENCE BOOKS

9. Jeffrey C Johnson, Martin G Everett, Stephen P Borgatti - Analyzing Social Networks –sage publication-2013.
10. Guandong Xu ,Yanchun Zhang and Lin Li,-Web Mining and Social Networking – Techniques and applications, 1st Edition, Springer, 2011.
11. Dion Goh and Schubert Foo,-Social information Retrieval Systems: Emerging Technologies and Applications for Searching the Web Effectively, IGI Global Snippet, 2008.
12. Max Chevalier, Christine Julien and Chantal Soulé-Dupuy, Collaborative and Social Information Retrieval and Access: Techniques for Improved user Modelling, IGI Global Snippet, 2009.
13. John Scott, "Social Network Analysis", 3rd Edition, SAGE Publications Ltd 2013.
14. Peter Mika, Social Networks and the Semantic Web, 1st Edition, Springer 2007.
15. Maksim Tsvetovat, Alexander Kouznetsov, " Social Network Analysis for Startups", 1st Edition, O'Reilly Media, 2011.
16. John G. Breslin, Alexander Passant and Stefan Decker, "The Social Semantic Web", Springer, 2009.

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

Max. Marks:100

PART A: 10 Question of 2 marks each – No choice

PART B: 2 Questions from each unit of internal choice, each carrying 16 marks

Exam Duration: 3 Hrs.

20 Marks

80 Marks

SITA3003	ADVANCED JAVA PROGRAMMING	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES

- To know about Enterprise architecture models.
- To introduce the basics of session tracking.
- To understand JSP and to write Custom Tags.
- To know about the development of Enterprise Java Beans.
- To have knowledge in advanced Java programming concepts.

UNIT 1 INTRODUCTION & DATABASE PROGRAMMING

9 Hrs.

J2EE Platform – Enterprise architecture styles – J2EE run times – J2EE API – J2EE architecture – Containers –Introduction to J2EE technologies – Naming and directory services. Database programming with JDBC – JDBC/ODBC bridge – Establishing a connection – Creating and executing SQL statements – Querying – Report statements – Scrollable and updatable result sets – Java.sql packages – JDBC data sources – Connection pooling.

UNIT 2 SERVLET PROGRAMMING

9 Hrs.

Introduction to Servlet Programming - Servlet Implementations - Servlet configuration - Servlet exceptions - Servlet Life Cycle - Servlet Programming - Servlet Security- Servlet communication - Advanced Servlets : Approach to Session Tracking
- Demonstrating Session - Lifecycle with Cookies - A simple shopping cart using Sessions - Servlet Context Interface - Servlet Collaboration.

UNIT 3 JSP AND JAVA MAIL

9 Hrs.

Java Server Pages : Intro to JSP - JSP Directives - Scripting elements - Standard Auctions - Implicit objects - Scope - JSP pages as XML documents - JSP Sample Program - Design Strategies - JSP tag Extensions-A simple TAG - Writing TAGExtensions. Java Mail API: Introduction to Java Mail - Mail Protocols- Java Mail Overview- Quick, Send me a Email: An example program

UNIT 4 ENTERPRISE JAVA BEANS

9 Hrs.

Overview of EJB-EJB Middleware Architecture - EJB Architecture- EJB Containers and its services - Design of EJB Tier -Session java Beans- Stateless and Stateful Beans, Entity Beans and Persistence - Container Vs Bean Managed Persistence, Message Driven Bean - Relationships, EJB Container Services.

UNIT 5 STRUTS

9 Hrs.

Struts: Development Models-Basic Components of Struts – Struts2 Architecture-Interceptors-Validation- Building simple struts Application.

Max. 45 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

- CO1 - Implement JDBC connectivity.
- CO2 - Implement advanced Servlets.
- CO3 - Implement JSP and Java Mail.
- CO4 - Implement EJB.
- CO5 - Implement Struts.
- CO6 - To develop enterprise java applications thereby meeting the industrial requirements.

TEXT / REFERENCE BOOKS

1. Subrahmanyam Allamaraju and Cedric Buest , "Professional Java Server Programming", A press, J2EE 1.3, 2007.
2. Jim Keogh , "Completer Reference, J2EE", Tata McGraw Hill, 2007.
3. James Holmes-Struts, "The complete Reference", 2nd Edition, Tata McGraw Hill, 2007.
4. <http://www.java.sun.com/tutorial>.