



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)

Accredited "A" Grade by NAAC | 12B Status by UGC | Approved by AICTE
www.sathyabama.ac.in

SCHOOL OF COMPUTING

DEPARTMENT OF INFORMATION TECHNOLOGY

ACADEMIC YEAR 2021-2022_ELECTIVES



ACCREDITED 'A' GRADE BY NAAC | 10B STATUS BY UGC | APPROVED BY AICTE
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SCHOOL OF COMPUTING
DEPARTMENT OF INFORMATION TECHNOLOGY
STUDENT CIRCULAR 2018 BATCH

04.05.2021

This is to inform you that it is mandatory to select Two elective subjects for the VII semester of Academic year 2020-2021 based on your area of interest. You can select one of the following subjects

1. SITA3011 – Block Chain Technology
2. SITA3008 – Internet of Things
3. SCSA3009 – Soft Computing

Confirm the elective Confirm the elective subject through your counselors to the HOD on or before 11-12-2021


HOD-IT
(Dr.R.Subhashini)

SITA3011	BLOCK CHAIN TECHNOLOGIES	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES

- To introduce Bit coin and other crypto currencies.
- To study the algorithms and techniques in block chain.
- To understand the practical aspects in the design of crypto currency
- To understand the function of Block chains as a method of securing distributed ledgers.
- To design, code, deploy and execute a smart contract.

UNIT 1 INTRODUCTION TO BLOCKCHAIN

9Hrs.

Basics of blockchain-Public Ledgers-Block Chain as Public Ledgers-Types of Block chains- Pillars of Block chain-Government Initiatives of BlockChain-Bitcoin-SmartContracts

UNIT 2 ARCHITECTURE AND CONCEPTUALIZATION OF BLOCK CHAIN, CRYPTO CURRENCIES

9Hrs

Block in a Block chain-find Transactions-Distributed Consensus-Proof of work, Stake, Space-Attacks on POW-Ethereum-Pos/POW Hybrids-Crypto currency to block chain 2.0, Model of Blockchain-Algorand

UNIT 3 CRYPTO PRIMITIVES, SECURING AND INTERCONNECTING PUBLIC AND PRIVATE BLOCK CHAINS

9Hrs.

Hash Function and Merle Tree-Security Properties-Security Considerations for block chain-Digital Signature-Public Key Cryptography-Bit coinblock chain incentive structures- Nash Equilibriums- evolutionary stable strategies,-and Pareto→ efficiency (game theory) Weaknesses and news Points of Failure→ Mitigation Methods→ Redundancies and fall-back methods

UNIT 4 MINING AND CRYPTO CURRENCIES - HOW TO USE AND INTERACT

9Hrs.

Mining-Pools-Impact of CPU and GPU-Transaction in Bit coin Network- Block Mining-Block propagation and block relay

UNIT 5 USE CASES-APPLICATIONS IN DIFFERENT AREAS

9 Hrs.

Industry applications of Blockchain-Blockchain in Government-Government use cases-Preventing Cybercrime through block chain-Block Chain in defense, tax payments

COURSE OUTCOMES :

On completion of the course the student will be able to

CO1: Explain the structure of a block chain.

CO2 :Analyze the incentive structure in a block chain based system.

CO3 :Judge the scenario where “smart” contract is most appropriate.

CO4 :Identify Basic knowledge of Bitcoin, Ethereum.

CO5 :Apply Blockchain in future use cases for security.

CO6 :Understand the various Block Chain applications.

TEXT / REFERENCE BOOKS :

1. Mastering Bitcoin: Unlocking Digital Cryptocurrencies, by Andreas Antonopoulos O'Reilly, First Edition, 2014.
2. Blockchain by Melanie Swa, O'Reilly Media 2015
3. Zero to Block chain - An IBM Redbooks course, by Bob Dill, David Smits -

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. marks:100

Exam Duration:3 Hrs.

Part A: 10 question of 2 marks each – No choice

20 marks

Part B: 2 questions from each unit of internal choice, each carrying 16 marks

80 marks

Name List: Block Chain Technologies

Name	RegNo.
Aakash S	39120001
Adhithya V	39120004
G Ajay	39120006
J. ANUBAMA	39120010
Anvesh N	39120012
Boomesh.M	39120016
Charan v	39120018
DHINAKARAN B	39120023
Dinesh Kumar.S	39120025
Evangelin E	39120030
Ferose Moosha F	39120031
GOBIGA B	39120032
Gokul Kumar S	39120033
gokul krishshna	39120034
Iniyadharsini.S	39120040
JACOB RAJA.T	39120041
S.L.Jaya pradeesh	39120043
Jebin earnest	39120046
Jushwanth Kumaar T	39120049
M.kalaivani	39120050
Kaveyha.G	39120052
Kishore kumar.A	39120056
KUMARAN B	39120058
Lokesh.N	39120062
Madeshwaran Baskar	39120064
R.manoj kumar	39120066
Manu Roy	39120067
K.Mohan	39120071
Mythili V	39120072
NITHISH KUMAR C.M	39120077
K.pradeesh	39120082
Praveen	39120083
Prithiviraj M	39120085
M.Rahuman	39120089
Raja Ganesh	39120090
Ramanan.B	39120091
M.D.Ravi shankar	39120093
ROJAR BENNY K	39120097
Sakthi Ganesh	39120099
Sakthivel	39120100
Samritha.A.R	39120101
Sankari k	39120102

Sarath L	39120104
V sathish kumar	39120105
Shajith Ahamed s	39120106
Siranjeevi	39120113
Sivapriya P	39120114
Lakku Snehalatha reddy	39120115
Sowmiya S	39120117
Srirangaprasanth.V	39120121
Sujay R	39120122
R.M. SUSIL KUMAR	39120126
VASANTH P	39120132
Vignesh S	39120134
Vijay.S	39120135
Vijay Krishnan M	39120136
S.Vijay Ragav	39120137
Vishal.s	39120138
Yaswanthan S R	39120139
A Yogeshwari	39120140
Sanjay K	39120142

SECA4002	DEEP LEARNING NEURAL NETWORKS	L	T	P	Credits	Total Marks
		3	0	0	3	100

Course Objectives

- To present the mathematical, statistical and computational challenges of building neural networks
- To study the concepts of deep learning
- To introduce dimensionality reduction techniques
- To enable the students to know deep learning techniques to support real-time applications
- To examine the case studies of deep learning techniques

UNIT-1: INTRODUCTION TO DEEP LEARNING

Introduction to machine learning- Linear models (SVMs and Perceptrons, logistic regression)- Intro to Neural Nets: What a shallow network computes- Training a network: loss functions, back propagation and stochastic gradient descent- Neural networks as universal function approximates

UNIT-2: DEEP NETWORKS

History of Deep Learning- A Probabilistic Theory of Deep Learning- Backpropagation and regularization, batch normalization- VC Dimension and Neural Nets-Deep Vs Shallow Networks Convolutional Networks- Generative Adversarial Networks (GAN), Semi-supervised Learning

UNIT-3: DIMENTIONALITY REDUCTION

Linear (PCA, LDA) and manifolds, metric learning - Auto encoders and dimensionality reduction in networks - Introduction to Convnet - Architectures – AlexNet, VGG, Inception, ResNet - Training a Convnet: weights initialization, batch normalization, hyperparameter optimization

UNIT-4: OPTIMIZATION AND GENERALIZATION

Optimization in deep learning– non-convex optimization for deep networks- Stochastic Optimization Generalization in neural networks- Spatial Transformer Networks- Recurrent networks, LSTM Recurrent Neural Network Language Models- Word-Level RNNs & Deep Reinforcement Learning - Computational & Artificial Neuroscience

UNIT-5: APPLICATIONS OF DEEP LEARNING

Imagenet- Detection-Audio WaveNet-Natural Language Processing Word2Vec - Joint Detection BioInformatics- Face Recognition- Scene Understanding- Gathering Image Captions

TEXT / REFERENCE BOOKS

1. Cosma Rohilla Shalizi, Advanced Data Analysis from an Elementary Point of View, 2015.
2. Deng & Yu, Deep Learning: Methods and Applications, Now Publishers, 2013.
3. Ian Goodfellow, Yoshua Bengio, Aaron Courville, Deep Learning, MIT Press, 2016.
4. Michael Nielsen, Neural Networks and Deep Learning, Determination Press, 2015

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. marks:100

Exam Duration:3 Hrs.

Part A: 10 question of 2 marks each – No choice

20 marks

Part B: 2 questions from each unit of internal choice, each carrying 16 marks

80 marks

Name List: Deep Learning Neural Networks

Name	RegNo.
Nihal Khan	39120070
Sharin sathiq	39120108
Shilp gohil	39120112



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STUDENT CIRCULAR 2019 BATCH

03.12.2021

This is to inform you that it is mandatory to select Two elective subjects for the VI semester of Academic year 2020-2021 based on your area of interest. You can select one of the following subjects

1. SITA3004 – User Interface Design
2. SCSA3016 – Data Science
3. SBAA1603 – Entrepreneurship Essentials

Confirm the elective Confirm the elective subject through your counselors to the HOD on or before 11-12-2021


HOD-IT
(Dr. R. Subashini)

SITA3011	BLOCK CHAIN TECHNOLOGIES	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES

- To introduce Bit coin and other crypto currencies.
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4. Mastering Bitcoin: Unlocking Digital Cryptocurrencies, by Andreas Antonopoulos O'Reilly, First Edition, 2014.
5. Blockchain by Melanie Swa, O'Reilly Media 2015
6. Zero to Block chain - An IBM Redbooks course, by Bob Dill, David Smits -

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Max. marks:100

Exam Duration:3 Hrs.

Part A: 10 question of 2 marks each – No choice

20 marks

Part B: 2 questions from each unit of internal choice, each carrying 16 marks

80 marks

Name List: Block Chain Technologies

Register Number	Name of the Student
38120002	ABHISHEK KUMAR
38120020	BALSUM DIWAN
38120028	HAMID HUSSAIN
38120050	MOHAMED ASHIK. N
38120093	VINOTH. V

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

COURSE OBJECTIVES

- To understand the concepts of IoT
- To identify the various elements of an IoT System
- To understand the various means of communication from Node / Gateway to Cloud Platforms
- To understand Cloud Computing & its relevance in IoT
- 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, ApacheStorm, 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 Hours

COURSE OUTCOMES:

On Completion of course the 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.

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. marks:100

Exam Duration:3 Hrs.

Part A: 10 question of 2 marks each – No choice

20 marks

Part B: 2 questions from each unit of internal choice, each carrying 16 marks

80 marks

Name List: Internet of Things

Reg. Number	Student Name
38120001	AARTHY. G
38120003	ABHISHEK SINGH
38120004	ABINAYA. A
38120005	ABIRAMI. M
38120006	ABIRAMI. R
38120007	AHILA. R R
38120008	AISHWARYA. R
38120009	ANNA GREETA TITUS T
38120010	ARCHANA. B
38120011	ARCHANA. C
38120012	ARTHEESWARI. P
38120014	ASHMITA SINGH
38120015	ASWIN KUMAR. K
38120016	BAKYA. B
38120017	BALABHARATHI. P
38120018	BALAJI. P
38120019	BALAMURUGAN. R
38120022	CATHERINE JENIFER
38120023	DIVYA DHARSHINI. V
38120024	GAYATHRI. M
38120025	GNANA SOUNTHARIYA. S
38120027	GOWTHAM. S
38120030	HEMANTH REDDY. M
38120032	JAYAROSHINI. M
38120033	JEEVITHA. D
38120034	JOHNWILIFREDDAVID
38120035	JOTHIKA. K
38120036	JOTHILAKSHMI. V
38120038	KAMEPALLI NITHISH
38120039	KARTHIKEYAN. N
38120040	KARTHIYAYINI. S
38120041	KAVIYA. S

38120042	KEERTHIGA. N
38120044	LAKSHMI PRIYA. M
38120046	LOGANAYAGI. S
38120047	MADHAN. L
38120049	MEERADEVI. L
38120051	MOKITHA. B
38120052	MUSKAN FIRDOUSI
38120053	NANDHINI. V
38120054	NITHYA. B
38120055	NITHYA. M
38120056	PAVITHRAPRIYA. K
38120057	PIYUSH SINHA
38120058	POOJA BALAKRISHNAN
38120059	PRADYOTAN RAJU. V
38120060	PRAGADEESWARI. M
38120061	PRAKASH. S
38120062	PRAVIN. I
38120063	PREETHI. S
38120064	PRIYADHARSHINI. P
38120065	RAHUL RAJ
38120066	Ramanujam VK
38120067	ROHINI. M
38120068	ROHIT. V
38120069	ROSHAN CHRISTY. R
38120070	SABITHRA. D
38120071	SAKTHIVARSHINI. K
38120072	SANDHIYA. V
38120073	SANGEETHA. K K
38120074	SANJUDHA. M
38120075	SANTHOSH KUMAR. M
38120076	SANTOSH KUMAR
38120077	SARAH PHILOMIN. V
38120078	SHIVA. M
38120079	SMRITHI. R
38120080	SOLAPURI MANMOHAN

38120081	SOUNDHARYA. S
38120082	SWETHA. V
38120083	T RAGHUL SUDHARSAN
38120084	TEKKI DEEPAK
38120085	THILAK DARSHAN. V
38120086	Thomson yeswanth
38120087	VAIBHAV VISHAL
38120088	Vaishnavy P
38120089	VASAN. S K
38120090	VIGNESH. G
38120091	VINAYAK SUBODH RANJAN
38120092	VINITHA. S
38120094	VISHNU. P
38120095	YAHYA IBRAHIM IMTIAZ
38120096	YASHSWI KAUSHIK
38120097	YUVASRI. J
38120098	SIVAKUMAR. S
38120099	YADAV MANISH UDAY
38120901	PRAMOTH. R

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STUDENT CIRCULAR 2018 BATCH

03.12.2021

This is to inform you that it is mandatory to select Two elective subjects for the VIII semester of Academic year 2020-2021 based on your area of interest. You can select one of the following subjects

1. SITA3005-Social Network Analysis
2. SITA3004 – User Interface Design
3. SCSA3016 – Data Science

Confirm the elective Confirm the elective subject through your counselors to the HOD on or before
11-12-2021


HOD-IT
(Dr.R.Subhashini)

SITA3004	USER INTERFACE DESIGN AND IMPLEMENTATION	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES

- To explain hypertext and style sheet languages.
- To apply Responsive Web Design Framework and features.
- To illustrate the basics of JavaScript, jQuery and allied scripting languages for Web design.
- To build Server side JS frameworks
- To design client side JS frameworks

UNIT 1 UI DESIGN

9Hrs.

HTML5: What is HTML5 - Features of HTML5 – Semantic Tags – New Input Elements and tags - Media tags (audio and video tags) – Designing Graphics using Canvas API - Drag and Drop features – Geolocation API - Web storage (Session and local storage).
CSS3: What is CSS3 – Features of CSS3 – Implementation of border radius, box shadow, image border, custom web font, backgrounds - Advanced text effects(shadow) - 2D and 3D Transformations - Transitions to elements - Animations to text and elements.

UNIT 2 RESPONSIVE WEB DESIGN (RWD)

9 Hrs.

Responsive Design: What is RWD – Introduction to RWD Techniques – Fluid Layout, Fluid Images and Media queries - Introduction to RWD Framework.
Twitter Bootstrap – Bootstrap Background and Features - Getting Started with Bootstrap - Demystifying Grids – OffCanvas - Bootstrap Components - JS Plugins – Customization.

UNIT 3 INTRODUCTION TO JAVASCRIPT AND JQUERY

9 Hrs.

Introduction - Core features - Data types and Variables - Operators, Expressions and Statements - Functions & Scope - Objects - Array, Date and Math related Objects - Document Object Model - Event Handling – Browser Object Model - Windows and Documents - Form handling and validations. Object-Oriented Techniques in JavaScript - Classes – Constructors and Prototyping (Sub classes and Super classes) – JSON – Introduction to AJAX. Introduction – jQuery Selectors – jQuery HTML - Animations – Effects – Event Handling – DOM – jQuery DOM Traversing, DOM Manipulation – jQuery AJAX.

UNIT 4 INTRODUCTION TO SERVER-SIDE JS FRAMEWORK – NODE.JS

9 Hrs.

Introduction - What is Node JS – Architecture – Feature of Node JS - Installation and Setup - Creating web servers with HTTP (Request & Response) – Event Handling - GET & POST implementation - Connect to SQL Database using Node JS – Implementation of CRUD operations.

UNIT 5 INTRODUCTION TO CLIENT-SIDE JS FRAMEWORK

9 Hrs.

Introduction to Angular 4.0 - Needs & Evolution – Features – Setup and Configuration – Components and Modules – Templates – Change Detection – Directives – Data Binding - Pipes – Nested Components. Template - Model Driven Forms or Reactive Forms - Custom Validators. Introduction to ReactJS - React Components- Build a simple React component- React internals -Component inter communication- Component composition- Component styling.

Max. 45 Hours

COURSE OUTCOMES :

On Completion of course the student will be able to

- CO1:Develop web pages and style sheets using HTML and CSS3 respectively.
- CO2:Design responsive websites with RWD techniques.
- CO3:Apply JavaScript and allied scripting languages for implementing object models and functions.
- CO4:Demonstrate Serve Side JS Framework for application development.
- CO5:Use Client Side JS Framework for redefining the application development.
- CO6:Develop User Interface Designs using the frameworks

TEXT/REFERENCE BOOKS:

1. Harvey & Paul Deitel & Associates, Harvey Deitel and Abbey Deitel, "Internet and World Wide Web - How to Program", Fifth Edition, Pearson Education, 2011.
2. Achyut S Godbole and Atul Kahate, "Web Technologies", Second Edition, Tata McGraw Hill, 2012.
3. Thomas A Powell, Fritz Schneider, "JavaScript: The Complete Reference", Third Edition, Tata McGraw Hill, 2013.

4. David Flanagan, "JavaScript: The Definitive Guide, Sixth Edition", O'Reilly Media, 2011
5. Bear Bibeault and Yehuda Katz, "jQuery in Action", January 2008
6. Web link for Responsive Web Design - <https://bradfrost.github.io/this-is-responsive/>
7. Ebook link for JavaScript - https://github.com/jasonzhuang/tech_books/tree/master/js
8. Krasimir Tsonev, "Node.js by Example Paperback", May 2015
9. Web link for Node.js : <https://nodejs.org/en/>
10. Artemij Fedosejev "React.js Essentials" (<http://pepa.holla.cz/wp-content/uploads/2016/12/React.js-Essentials.pdf>).

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. marks:100

Exam Duration:3 Hrs.

Part A: 10 question of 2 marks each – No choice

20 marks

Part B: 2 questions from each unit of internal choice, each carrying 16 marks

80 marks

Name List: User Interface Design And Implementation

39120002	Aarthi N
39120005	Aishwaryalakshmi.k
39120010	J. Anubama
39120013	Arjun. A
39120019	Darshan DS
39120025	Dinesh Kumar.S
39120028	E.srivalli
39120029	Esther D
39120039	Irla Hemanth Kumar
39120046	Jebin earnest.A
39120049	Jushwanth Kumaar T
39120050	Kalaivani.M
39120051	M.Karthik reddy
39120053	Keshihaa M
39120055	Kishore D
39120057	Kontemukkula Komal
39120058	Kumaran.B
39120060	K.lakshminarayana
39120062	Lokesh.N
39120063	B.Madan Mohan Reddy
39120064	Madeshwaran B
39120065	Madhumithaa.N
39120066	R.Manoj Kumar
39120067	Manu Roy
39120068	Mari Muthu T
39120069	Mary Nancy .R
39120073	K.Nagasrisai
39120075	Kokkonda NIKhil
39120076	Nitheshwer V.S
39120077	Nithish Kumar C.M
39120083	Praveen
39120085	Prithiviraj M
39120087	Agarala Rahul
39120089	M.Rahuman
39120090	Raja Ganesh
39120091	RAMANAN
39120093	M.D.Ravi Shankar
39120094	D.Ravisankar
39120096	Rithwik.e
39120097	Rojar Benny K
39120098	SANGARAJU SAIHANEESH
39120099	Sakthi Ganesh
39120101	Samritha.A.R
39120103	Saranya M

39120104	Sarath.L
39120105	Sathish Kumar v
39120106	Shajith ahamed s
39120107	Sham venkat
39120113	Siranjeevi
39120114	Sivapriya
39120118	Sowmya sree.T
39120121	Srirangaprasanth.V
39120122	Sujay.R
39120123	Surya S
39120126	R.M. SUSIL KUMAR
39120128	S.Thendral
39120129	Tilak Chauhan
39120130	Balaganivamshi
39120138	Vishal.s
39120140	A.Yogeshwari
39120141	yuvanesh raj.B
39120059	Bezawada Lakshmi Vignesh

SCSA3016	DATA SCIENCE	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES

- To understand the mathematical foundations required for data science
- To describe a flow process for data science problems
- To introduce basic data science algorithms and data visualization
- To learn machine tools and techniques.
- To learn the ideas and tools for data visualization.

UNIT1 LINEAR ALGEBRA

9Hrs.

Algebraic view – vectors 2D, 3D and nD, matrices, product of matrix & vector, rank, null space, solution of over determined set of equations and pseudo-inverse.

Geometric view - vectors, distance, projections, eigenvalue decomposition, Equations of line, plane, hyperplane, circle, sphere, Hypersphere.

UNIT2 PROBABILITY AND STATISTICS9Hrs.

Introduction to probability and statistics, Population and sample, Normal and Gaussian distributions, Probability Density Function, Descriptive statistics, notion of probability, distributions, mean, variance, covariance, covariance matrix, understanding univariate and multivariate normal distributions, introduction to hypothesis testing, confidence interval for estimates

UNIT3 EXPLORATORY DATA ANALYSIS AND THE DATA SCIENCE PROCESS

9 Hrs.

Exploratory Data Analysis and the Data Science Process - Basic tools (plots, graphs and summary statistics) of EDA - Philosophy of EDA - The Data Science Process - Data Visualization - Basic principles, ideas and tools for data visualization - Examples of exciting projects- Data Visualization using Tableau

UNIT4 MACHINE LEARNING TOOLS, TECHNIQUES AND APPLICATIONS

9 Hrs.

Supervised Learning, Unsupervised Learning, Reinforcement Learning, Dimensionality Reduction, Principal Component Analysis, Classification and Regression models, Tree and Bayesian network models, Neural Networks, Testing, Evaluation and Validation of Models

UNIT5 INTRODUCTION TO PYTHON

9Hrs.

Data structures-Functions-Numpy-Matplotlib-Pandas- problems based on computational complexity-Simple case studies based on python (Binary search, common elements in list), Hash tables, Dictionary

Max. 45 Hours

COURSE OUTCOMES: On completion of the course, student will be able to

- CO1** :Explain the basic terms of Linear Algebra and Statistical Inference.
- CO2** :Describe the Data Science process and its components interaction.
- CO3** :Apply EDA and the Data Science process in a case study.
- CO4** :Classify Data Science problems.
- CO5** :Analyse and correlate the results to the solutions.
- CO6** :Simulate Data Visualization in exciting projects.

TEXT / REFERENCE BOOKS :

1. Cathy O'Neil and Rachel Schutt. Doing Data Science, Straight Talk From The Frontline. O'Reilly. 2014.
2. Introduction To Linear Algebra - By Gilbert Strang, Wellesley-Cambridge Press, Fifth Edition.2016.
3. Applied Statistics And Probability For Engineers – By Douglas Montgomery.2016.
4. Jure Leskovek, Anand Rajaraman and Jeffrey Ullman. Mining of Massive Datasets. v2.1, Cambridge University Press. 2014. (free online)
5. Avrim Blum, John Hopcroft and Ravindran Kannan. Foundations of Data Science.
6. Jiawei Han, Micheline Kamber and Jian Pei. Data Mining: Concepts and Techniques, Third Edition. ISBN 0123814790. 2011.
7. Trevor Hastie, Robert Tibshirani and Jerome Friedman. Elements of Statistical Learning, Second Edition. ISBN 0387952845. 2009. (free online)
8. LEARN PYTHON 3 THE HARD WAY, Third Edition, Zed A. Shaw
9. Python for Data Analysis Oreilly, Wes McKinney

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. marks:100

Exam Duration:3 Hrs.

Part A: 10 question of 2 marks each – No choice

20 marks

Part B: 2 questions from each unit of internal choice, each carrying 16 marks

80 marks

Name List: Data Science

39120001	S.Aakash
39120003	Abhinav Kumar
39120007	Aman Gupta
39120008	Amirneni Krishna Teja
39120009	Angu Kaushik
39120015	Balaji Manchi
39120017	B.Durga Sumanth Mani
39120024	Diganta Panda
39120026	D Diya Mary
39120027	Durga Prasad Kode
39120030	Evangelin
39120032	GOBIGA B
39120035	Sreerangam Gokulnath
39120037	Harish Dharan. P
39120038	HEMALATHA. V
39120042	jagadees M
39120043	S.L. Jaya pradeesh
39120044	Bobba Jayadeep
39120045	Arava Jayaram
39120047	JESTIN JOSE
39120048	joshva j
39120070	Mohammed Nihal Khan
39120074	NANDANA. S. NAIR
39120078	Pallavi Kumari
39120079	Partha pratim halder
39120084	Preethi.S
39120092	raushan kumar
39120095	Richa Sharma
39120102	K SANKARI
39120108	Sharin sathiq
39120110	Shaurya Sameer
39120111	Keshapally Sheshasena Reddy
39120112	Shilp Gohil
39120119	AKULA SRAVANTH SATYA RAMKI
39120124	Sushant Kumar
39120127	Taniya Verma
39120131	Vamsi Mogalipuri
39120133	P.uma maheswara rao



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SCHOOL OF COMPUTING

DEPARTMENT OF INFORMATION TECHNOLOGY

STUDENT CIRCULAR 2019 BATCH

04.05.2021

This is to inform you that it is mandatory to select one elective subject for the V semester of Academic year 2021-2022 based on your area of interest. You can select one of the following subjects

1. SITA3011 – Block Chain Technology
2. SECA4002 – Deep Learning Neural Networks
3. SCSA3014 – Open Source Systems

Confirm the elective subject through your counselors to the HOD on or before 12-05-2021

HOD-IT
(Dr.R.Subhashini)

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

UNIT 1

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 - Interpretation of Network Data - Social Network Analysis in the Social and Behavioral Sciences - Metrics in social network analysis.

UNIT 2

9 Hrs.

Modeling and aggregating social network data: Ontological representation of social individuals - Ontological representation of social relationships - Aggregating and reasoning with social network data - Advanced representations. Social network analysis software - Tools - Libraries.

UNIT 3

9 Hrs.

Components and Sub graphs: Sub graphs - Ego Networks, Triads, Cliques, Hierarchical Clustering, Triads, Network Density and conflict. Density: Egocentric and Socio centric - 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

9 Hrs.

Development of Social Network Analysis - Understanding and predicting human behavior for social communities - User data management - 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

9 Hrs.

Medium data - Tradition, Big Data, Small Data - Flat File Representations, Medium Data - Data Representation, Working with 2-Mode Data, Social Networks and Big Data, Big Data at work. Visualizing online social networks, Advances in Network Visualization - Elites, Communities and Influence, Applications of Social Network Analysis.

Max. 45 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to:

- CO1 : Outline the importance of Social Network Analysis.
- CO2 : Classify the social network models
- CO3 : Describe cliques, clusters and components
- CO4 : Predict the human behavior of the different communities
- CO5 : Explain policies for privacy and trust
- CO6 : Visualize data using visualization tools.

TEXT / REFERENCE BOOKS

1. John Scott, "Social Network Analysis", Third Edition, SAGE Publications Ltd 2013.
2. Maksim Tsvetovat, Alexander Kouznetsov, "Social Network Analysis for Startups", First Edition, O'Reilly Media, 2011.
3. Peter Mika, "Social Networks and the Semantic Web", First Edition, Springer 2007.
4. David Knoke, Song Yang, "Social Network Analysis", First Edition, SAGE Publication Ltd 2007.
5. Borko Furht, "Handbook of Social Network Technologies and Applications", 1st Edition, Springer, 2010.
6. Guandong Xu, Yanchun Zhang and Lin Li, "Web Mining and Social Networking - Techniques and applications", First Edition Springer, 2011.
7. John G. Breslin, Alexander Passant and Stefan Decker, "The Social Semantic Web", Springer, 2009
Van.C.Warington, "Protective Relays-their Theory and Practice", Vol I & II, Champ Man and Hall Ltd, London, 2014.

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

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

80 Marks

Name List: Social Network Analysis

38120002	ABHISHEK KUMAR
38120003	ABHISHEK SINGH
38120004	ABINAYA. A
38120005	ABIRAMI. M
38120006	ABIRAMI. R
38120007	AHILA. R R
38120008	AISHWARYA. R
38120011	ARCHANA. C
38120014	ASHMITA SINGH
38120015	ASWIN KUMAR. K
38120016	BAKYA. B
38120017	BALABHARATHI. P
38120018	BALAJI. P
38120019	BALAMURUGAN. R
38120020	BALSUM DIWAN
38120021	BARANIDARAN. G T
38120023	DIVYA DHARSHINI. V
38120027	GOWTHAM. S
38120028	HAMID HUSSAIN
38120030	HEMANTH REDDY. M
38120033	JEEVITHA. D
38120034	JOHNWILIFREDDAVID J
38120035	JOTHIKA. K
38120036	JOTHILAKSHMI. V
38120037	KAMAL SHARMA. R
38120038	KAMEPALLI NITHISH
38120039	KARTHIKEYAN. N
38120043	KUSHAL GOYAL. M
38120044	LAKSHMI PRIYA. M
38120045	LEELAVATHI. V
38120046	LOGANAYAGI. S
38120047	MADHAN. L
38120050	MOHAMED ASHIK. N
38120052	MUSKAN FIRDOUSI
38120053	NANDHINI. V
38120054	NITHYA. B
38120055	NITHYA. M
38120056	PAVITHRAPRIYA. K
38120057	PIYUSH SINHA
38120058	POOJA BALAKRISHNAN
38120059	PRADYOTAN RAJU. V
38120061	PRAKASH. S
38120062	PRAVIN. I
38120064	PRIYADHARSHINI. P
38120065	RAHUL RAJ
38120066	RAMANUJAM. V K
38120067	ROHINI. M

38120068	ROHIT. V
38120069	ROSHAN CHRISTY. R
38120070	SABITHRA. D
38120071	SAKTHIVARSHINI. K
38120072	SANDHIYA. V
38120073	SANGEETHA. K K
38120074	SANJUDHA. M
38120075	SANTHOSH KUMAR. M
38120076	SANTOSH KUMAR
38120077	SARAH PHILOMIN. V
38120078	SHIVA. M
38120079	SMRITHII. R
38120080	SOLAPURI MANMOHAN
38120081	SOUNDHARYA. S
38120082	SWETHA. V
38120083	T RAGHUL SUDHARSAN
38120084	TEKKI DEEPAK
38120085	THILAK DARSHAN. V
38120086	THOMSON YESHWANTH. J M
38120087	VAIBHAV VISHAL
38120088	VAISHNAVY. P
38120089	VASAN. S K
38120090	VIGNESH. G
38120091	VINAYAK SUBODH RANJAN
38120093	VINOTH. V
38120094	VISHNU. P
38120095	YAHYA IBRAHIM IMTIAZ
38120096	YASHSWI KAUSHIK
38120097	YUVASRI. J
38120098	SIVAKUMAR. S
38120099	YADAV MANISH UDAY
38120901	PRAMOTH. R

SITA3004	USER INTERFACE DESIGN AND IMPLEMENTATION	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES

- To explain hypertext and style sheet languages.
- To apply Responsive Web Design Framework and features.
- To illustrate the basics of JavaScript, jQuery and allied scripting languages for Web design.
- To build Server side JS frameworks
- To design client side JS frameworks

UNIT 1 UI DESIGN

9Hrs.

HTML5: What is HTML5 - Features of HTML5 – Semantic Tags – New Input Elements and tags - Media tags (audio and video tags) – Designing Graphics using Canvas API - Drag and Drop features – Geolocation API - Web storage (Session and local storage).
CSS3: What is CSS3 – Features of CSS3 – Implementation of border radius, box shadow, image border, custom web font, backgrounds - Advanced text effects(shadow) - 2D and 3D Transformations - Transitions to elements - Animations to text and elements.

UNIT 2 RESPONSIVE WEB DESIGN (RWD)

9 Hrs.

Responsive Design: What is RWD – Introduction to RWD Techniques – Fluid Layout, Fluid Images and Media queries - Introduction to RWD Framework.
Twitter Bootstrap – Bootstrap Background and Features - Getting Started with Bootstrap - Demystifying Grids – OffCanvas - Bootstrap Components - JS Plugins – Customization.

UNIT 3 INTRODUCTION TO JAVASCRIPT AND JQUERY

9 Hrs.

Introduction - Core features - Data types and Variables - Operators, Expressions and Statements - Functions & Scope - Objects - Array, Date and Math related Objects - Document Object Model - Event Handling – Browser Object Model - Windows and Documents - Form handling and validations. Object-Oriented Techniques in JavaScript - Classes – Constructors and Prototyping (Sub classes and Super classes) – JSON – Introduction to AJAX. Introduction – jQuery Selectors – jQuery HTML - Animations – Effects – Event Handling – DOM – jQuery DOM Traversing, DOM Manipulation – jQuery AJAX.

UNIT 4 INTRODUCTION TO SERVER-SIDE JS FRAMEWORK – NODE.JS

9 Hrs.

Introduction - What is Node JS – Architecture – Feature of Node JS - Installation and Setup - Creating web servers with HTTP (Request & Response) – Event Handling - GET & POST implementation - Connect to SQL Database using Node JS – Implementation of CRUD operations.

UNIT 5 INTRODUCTION TO CLIENT-SIDE JS FRAMEWORK

9 Hrs.

Introduction to Angular 4.0 - Needs & Evolution – Features – Setup and Configuration – Components and Modules – Templates – Change Detection – Directives – Data Binding - Pipes – Nested Components. Template - Model Driven Forms or Reactive Forms - Custom Valuator. Introduction to ReactJS - React Components- Build a simple React component- React internals -Component inter communication- Component composition- Component styling.

Max. 45 Hours

COURSE OUTCOMES :

On Completion of course the student will be able to

- CO1:Develop web pages and style sheets using HTML and CSS3 respectively.
- CO2:Design responsive websites with RWD techniques.
- CO3:Apply JavaScript and allied scripting languages for implementing object models and functions.
- CO4:Demonstrate Serve Side JS Framework for application development.
- CO5:Use Client Side JS Framework for redefining the application development.
- CO6:Develop User Interface Designs using the frameworks

TEXT/REFERENCE BOOKS:

1. Harvey & Paul Deitel & Associates, Harvey Deitel and Abbey Deitel, "Internet and World Wide Web - How to Program", Fifth Edition, Pearson Education, 2011.
2. Achyut S Godbole and Atul Kahate, "Web Technologies", Second Edition, Tata McGraw Hill, 2012.
3. Thomas A Powell, Fritz Schneider, "JavaScript: The Complete Reference", Third Edition, Tata McGraw Hill, 2013.
4. David Flanagan, "JavaScript: The Definitive Guide, Sixth Edition", O'Reilly Media, 2011

5. Bear Bibeault and Yehuda Katz, "jQuery in Action", January 2008
6. Web link for Responsive Web Design - <https://bradfrost.github.io/this-is-responsive/>
7. Ebook link for JavaScript - https://github.com/jasonzhuang/tech_books/tree/master/js
8. Krasimir Tsonev, "Node.js by Example Paperback", May 2015
9. Web link for Node.js : <https://nodejs.org/en/>
10. Artemij Fedosejev "React.js Essentials" (<http://pepa.holla.cz/wp-content/uploads/2016/12/React.js-Essentials.pdf>).

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. marks:100

Exam Duration:3 Hrs.

Part A: 10 question of 2 marks each – No choice

20 marks

Part B: 2 questions from each unit of internal choice, each carrying 16 marks

80 marks

Name List: User Interface Design and Implementation

Reg. No.	Name
38120001	AARTHY. G
38120009	ANNA GREETA TITUS T
38120010	ARCHANA. B
38120012	ARTHEESWARI. P
38120022	CATHERINE JENIFER
38120024	GAYATHRI. M
38120025	GNANA SOUNTHARIYA. S
38120026	GNANAMANI. CT
38120031	IMMACULATE MARIA FERNANDO
38120032	JAYAROSHINI. M
38120040	KARTHIYAYINI. S
38120041	KAVIYA. S
38120042	KEERTHIGA. N
38120049	MEERADEVI. L
38120051	MOKITHA. B
38120060	PRAGADEESWARI. M
38120063	PREETHI. S
38120092	VINITHA. S



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DEPARTMENT OF INFORMATION AND TECHNOLOGY

ACADEMIC YEAR 2021-2022_CBCS



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DEPARTMENT OF INFORMATION AND TECHNOLOGY

04.05.2021

CIRCULAR

Department of IT, hereby inform you that, we are inviting students from inter disciplinary programmes to Register for the CBCS courses, which is offered by us for the academic year JUNE 2021. The Course code and the Subject names are listed below. The last date of registration is 11/05/2021.

CBCS-CHOICE BASED CREDIT SYSTEM

<u>YEAR/SEMESTER</u> (offered in the Year/Sem by Soc)	<u>COURSE CODE</u>	<u>COURSE NAME</u>	<u>ELIGIBLE STUDENTS</u>
<u>III/IV</u>	SCSA3001	Data Mining & Data warehousing	<u>All Branches</u>
<u>IV/VII</u>	SCSA3016	Data Science	<u>All Branches</u>

Kindly Fill up the Excel sheet with the required details Given.

S.No Name Regno. Student Name Branch Batch

Registered students name are reported to the respective department HOD and the Dean in due course for the Credit updation. The Syllabus for the Subjects is attached herewith for your reference. Kindly See your mail for further details

HOD-IT
(Dr.R.Subhashini)

SCSA3001	DATA MINING AND DATA WAREHOUSING	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES

- Identify the scope and necessity of Data Mining & Warehousing for the society.
- Describe various Data Models and Methodologies in Data Warehousing.
- To understand various Tools and techniques in Data Mining.
- To learn how to analyze the data, identify the problems and choose the relevant algorithms.
- To assess the Pros and Cons of various algorithms and analyze their behavior on real datasets.

UNIT 1 DATA MINING

9 Hrs.

Introduction - Steps in KDD - System Architecture – Types of data -Data mining functionalities - Classification of data mining systems - Integration of a data mining system with a data warehouse - Issues - Data Preprocessing - Data Mining Application

UNIT2 DATA WAREHOUSING

9 Hrs.

Data warehousing components - Building a data warehouse - Multi Dimensional Data Model - OLAP Operation in the Multi-Dimensional Model - Three Tier Data Warehouse Architecture - Schemas for Multi-dimensional data Model - Online Analytical Processing (OLAP) - OLAP Vs OLTP Integrated OLAM and OLAP Architecture

UNIT3 ASSOCIATION RULE MINING

9 Hrs.

Mining frequent patterns - Associations and correlations - Mining methods - Finding Frequent itemset using Candidate Generation - Generating Association Rules from Frequent Itemsets - Mining Frequent itemset without Candidate Generation - Mining various kinds of association rules - Mining Multi-Level Association Rule-Mining MultiDimensional Association Rule-Mining Correlation analysis - Constraint based association mining.

UNIT4 CLASSIFICATION AND PREDICTION9 Hrs.

Classification and prediction - Issues Regarding Classification and Prediction - Classification by Decision Tree Induction - Bayesian classification - Baye's Theorem - Naïve Bayesian Classification - Bayesian Belief Network - Rule based classification - Classification by Backpropagation - Support vector machines - Prediction - Linear Regression

UNIT5 CLUSTERING, APPLICATIONS AND TRENDS IN DATA MINING

9 Hrs.

Cluster analysis - Types of data in Cluster Analysis - Categorization of major clustering methods -Partitioning methods - Hierarchical methods - Density-based methods - Grid-based methods - Model based clustering methods -Constraint Based cluster analysis - Outlier analysis - Social Impacts of Data Mining- Case Studies: Mining WWW- Mining Text Database- Mining Spatial Databases

Max. 45 Hours

COURSE OUTCOMES:

On completion of the course the student will be able to

CO1:Assess Raw Input Data and process it to provide suitable input for a range of data sets.

CO2:Design and Model a Data Warehouse.

CO3:Discover interesting patterns from large amount of data.

CO4:Design and Deploy appropriate Classification Techniques.

CO5:To cluster high dimensional Data.

CO6:Apply suitable data mining techniques for various real time applications.

TEXT / REFERENCE BOOKS :

1. Jiawei Han and Micheline Kamber, "Data Mining Concepts and Techniques", 2nd Edition, Elsevier, 2007
2. Alex Berson and Stephen J. Smith, " Data Warehousing, Data Mining & OLAP", Tata McGraw Hill, 2007.
3. Pang-Ning Tan, Michael Steinbach and Vipin Kumar, "Introduction To Data Mining", Person Education, 2007.
4. K.P. Soman, Shyam Diwakar and V. Ajay, "Insight into Data mining Theory and Practice", Easter Economy Edition, Prentice Hall of India, 2006.
5. G. K. Gupta, "Introduction to Data Mining with Case Studies", Easter Economy Edition, Prentice Hall of India, 2006.

6. Daniel T.Larose, "Data Mining Methods and Models", Wile-Interscience, 2006.

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. marks:100

Exam Duration:3 Hrs.

Part A: 10 question of 2 marks each – No choice

20 marks

Part B: 2 questions from each unit of internal choice, each carrying 16 marks

80 marks

SCSA3016	DATA SCIENCE	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES

- To understand the mathematical foundations required for data science
- To describe a flow process for data science problems
- To introduce basic data science algorithms and data visualization
- To learn machine tools and techniques.
- To learn the ideas and tools for data visualization.

UNIT1 LINEAR ALGEBRA

9Hrs.

Algebraic view – vectors 2D, 3D and nD, matrices, product of matrix & vector, rank, null space, solution of over determined set of equations and pseudo-inverse.

Geometric view - vectors, distance, projections, eigenvalue decomposition, Equations of line, plane, hyperplane, circle, sphere, Hypersphere.

UNIT2 PROBABILITY AND STATISTICS9Hrs.

Introduction to probability and statistics, Population and sample, Normal and Gaussian distributions, Probability Density Function, Descriptive statistics, notion of probability, distributions, mean, variance, covariance, covariance matrix, understanding univariate and multivariate normal distributions, introduction to hypothesis testing, confidence interval for estimates

UNIT3 EXPLORATORY DATA ANALYSIS AND THE DATA SCIENCE PROCESS

9 Hrs.

Exploratory Data Analysis and the Data Science Process - Basic tools (plots, graphs and summary statistics) of EDA - Philosophy of EDA - The Data Science Process - Data Visualization - Basic principles, ideas and tools for data visualization - Examples of exciting projects- Data Visualization using Tableau

UNIT4 MACHINE LEARNING TOOLS, TECHNIQUES AND APPLICATIONS

9 Hrs.

Supervised Learning, Unsupervised Learning, Reinforcement Learning, Dimensionality Reduction, Principal Component Analysis, Classification and Regression models, Tree and Bayesian network models, Neural Networks, Testing, Evaluation and Validation of Models

UNIT5 INTRODUCTION TO PYTHON

9Hrs.

Data structures-Functions-Numpy-Matplotlib-Pandas- problems based on computational complexity-Simple case studies based on python (Binary search, common elements in list), Hash tables, Dictionary

Max. 45 Hours

COURSE OUTCOMES: On completion of the course, student will be able to

- CO1** :Explain the basic terms of Linear Algebra and Statistical Inference.
- CO2** :Describe the Data Science process and its components interaction.
- CO3** :Apply EDA and the Data Science process in a case study.
- CO4** :Classify Data Science problems.
- CO5** :Analyse and correlate the results to the solutions.
- CO6** :Simulate Data Visualization in exciting projects.

TEXT / REFERENCE BOOKS :

1. Cathy O'Neil and Rachel Schutt. Doing Data Science, Straight Talk From The Frontline. O'Reilly. 2014.
2. Introduction To Linear Algebra - By Gilbert Strang, Wellesley-Cambridge Press, Fifth Edition.2016.
3. Applied Statistics And Probability For Engineers – By Douglas Montgomery.2016.
4. Jure Leskovek, Anand Rajaraman and Jeffrey Ullman. Mining of Massive Datasets. v2.1, Cambridge University Press. 2014. (free online)
5. Avrim Blum, John Hopcroft and Ravindran Kannan. Foundations of Data Science.
6. Jiawei Han, Micheline Kamber and Jian Pei. Data Mining: Concepts and Techniques, Third Edition. ISBN 0123814790. 2011.
7. Trevor Hastie, Robert Tibshirani and Jerome Friedman. Elements of Statistical Learning, Second Edition. ISBN 0387952845. 2009. (free online)
8. LEARN PYTHON 3 THE HARD WAY, Third Edition, Zed A. Shaw
9. Python for Data Analysis O'Reilly, Wes McKinney

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. marks:100

Exam Duration:3 Hrs.

Part A: 10 question of 2 marks each – No choice

20 marks

Part B: 2 questions from each unit of internal choice, each carrying 16 marks

80 marks



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SCHOOL OF COMPUTING
DEPARTMENT OF INFORMATION AND TECHNOLOGY

05.12.2021

CIRCULAR

Department of IT, hereby inform you that, we are inviting students from inter disciplinary programmes to Register for the CBCS courses, which is offered by us for the academic year JAN 2020. The Course code and the Subject names are listed below. The last date of registration is 12/12/2021.

CBCS-CHOICE BASED CREDIT SYSTEM

<u>YEAR/SEMESTER</u> (offered in the Year/Sem by Soc)	<u>COURSE CODE</u>	<u>COURSE NAME</u>	<u>ELIGIBLE STUDENTS</u>
<u>IV/VIII</u> <u>III/VI</u> <u>II/IV</u>	SITA3005	SOCIAL NETWORK ANALYSIS	<u>CSE, IT</u>
<u>IV/VIII</u> <u>III/VI</u>	SCSA3015	DEEP LEARNING	<u>CSE, IT, ECE</u>

Kindly Fill up the Excel sheet with the required details Given.

S.No Name Regno. Student Name Branch Batch

Registered students name are reported to the respective department HOD and the Dean in due course for the Credit updation. The Syllabus for the Subjects is attached herewith for your reference. Kindly See your mail for further details

HOD-IT

(Dr.R.Subhashini)

SCSA3015	DEEP LEARNING	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES

- To present the mathematical, statistical and computational basis of neural networks.
- To study the concepts of deep learning.
- To introduce dimensionality reduction techniques.
- To enable the students to know deep learning techniques to support real-time applications.
- To examine the case studies of deep learning techniques.

UNIT1 INTRODUCTION

9 Hrs.

Introduction to machine learning- Linear models (SVMs and Perceptrons, logistic regression)- Intro to Neural Nets: What a shallow network computes- Training a network: loss functions, back propagation and stochastic gradient descent- Neural networks as universal function approximates.

UNIT 2 DEEP NETWORKS

9 Hrs.

History of Deep Learning- A Probabilistic Theory of Deep Learning- Backpropagation and regularization, batch normalization- VC Dimension and Neural Nets-Deep Vs Shallow Networks- Convolutional Networks- Generative Adversarial Networks (GAN), Semi-supervised Learning.

UNIT 3 DIMENTIONALITY REDUCTION

9Hrs. Linear

(PCA, LDA) and manifolds, metric learning - Auto encoders and dimensionality reduction in networks - Introduction to Convnet - Architectures – AlexNet, VGG, Inception, ResNet - Training a Convnet: weights initialization, batch normalization, hyper parameter optimization.

UNIT 4 OPTIMIZATION AND GENERALIZATION

9 Hrs.

Optimization in deep learning– Non-convex optimization for deep networks- Stochastic Optimization- Generalization in neural networks- Spatial Transformer Networks- Recurrent networks, LSTM - Recurrent Neural Network Language Models- Word-Level RNNs & Deep Reinforcement Learning - Computational & Artificial Neuroscience

UNIT 5 CASE STUDY AND APPLICATIONS

9 Hrs.

Imagenet- Detection-Audio WaveNet-Natural Language Processing Word2Vec - Joint Detection- BioInformatics- Face Recognition- Scene Understanding- Gathering Image Captions.

Max. 45 Hours

COURSE OUTCOMES:

On completion of the course, student will be able to

CO1: Understand basics of deep learning.

CO2 :Implement various deep learning models.

CO3 :Realign high dimensional data using reduction techniques.

CO4 :Analyze optimization and generalization in deep learning.

CO5 :Explore the deep learning applications.

CO6 :Design and creation of data models.

TEXT / REFERENCE BOOKS :

1. Cosma Rohilla Shalizi, Advanced Data Analysis from an Elementary Point of View, 2015.
2. Deng & Yu, Deep Learning: Methods and Applications, Now Publishers, 2013.
3. Ian Goodfellow, Yoshua Bengio, Aaron Courville, Deep Learning, MIT Press, 2016.
4. Michael Nielsen, Neural Networks and Deep Learning, Determination Press, 2015.

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. marks:100

Exam Duration:3 Hrs.

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20 marks

Part B: 2 questions from each unit of internal choice, each carrying 16 marks

80 marks

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

UNIT 1

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 - Interpretation of Network Data - Social Network Analysis in the Social and Behavioral Sciences - Metrics in social network analysis.

UNIT 2

9 Hrs.

Modeling and aggregating social network data: Ontological representation of social individuals - Ontological representation of social relationships - Aggregating and reasoning with social network data - Advanced representations. Social network analysis software - Tools - Libraries.

UNIT 3

9 Hrs.

Components and Sub graphs: Sub graphs - Ego Networks, Triads, Cliques, Hierarchical Clustering, Triads, Network Density and conflict. Density: Egocentric and Socio centric - 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

9 Hrs.

Development of Social Network Analysis - Understanding and predicting human behavior for social communities - User data management - 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

9 Hrs.

Medium data - Tradition, Big Data, Small Data - Flat File Representations, Medium Data - Data Representation, Working with 2-Mode Data, Social Networks and Big Data, Big Data at work. Visualizing online social networks, Advances in Network Visualization - Elites, Communities and Influence, Applications of Social Network Analysis.

Max. 45 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to:

- CO1 : Outline the importance of Social Network Analysis.
- CO2 : Classify the social network models
- CO3 : Describe cliques, clusters and components
- CO4 : Predict the human behavior of the different communities
- CO5 : Explain policies for privacy and trust
- CO6 : Visualize data using visualization tools.

TEXT / REFERENCE BOOKS

1. John Scott, "Social Network Analysis", Third Edition, SAGE Publications Ltd 2013.
2. Maksim Tsvetovat, Alexander Kouznetsov, "Social Network Analysis for Startups", First Edition, O'Reilly Media, 2011.
3. Peter Mika, "Social Networks and the Semantic Web", First Edition, Springer 2007.
4. David Knoke, Song Yang, "Social Network Analysis", First Edition, SAGE Publication Ltd 2007.
5. Borko Furht, "Handbook of Social Network Technologies and Applications", 1st Edition, Springer, 2010.
6. Guandong Xu, Yanchun Zhang and Lin Li, "Web Mining and Social Networking - Techniques and applications", First Edition Springer, 2011.
7. John G. Breslin, Alexander Passant and Stefan Decker, "The Social Semantic Web", Springer, 2009
Van.C.Warington, "Protective Relays-their Theory and Practice", Vol I & II, Champ Man and Hall Ltd, London, 2014.

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

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

80 Marks