



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,

Recognized by UGC under 2(f) & 12(B) of 1956 Act.,

ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,

Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.

www.amritasai.edu.in, Phone: 0866 2428399.



Course Code	B.Tech	CLOUD COMPUTING-1	L	T	P	C
18CS3T6C	II Year I Sem		3	1	-	3

OBJECTIVES:

- To get familiar with basics of the Internet Programming
- To acquire knowledge and skills for creation of web site
- To gain ability to develop responsive web applications
- To train the fundamental concepts of database management system, database modeling and design, Relational Data Modeling SQL

OUTCOMES:

- Implement interactive web page(s) using HTML, CSS
- Design a responsive web site using HTML5 and CSS3.
- Perform project planning, analysis, design, implementation and testing in group / as an individual for any real time information system with all realistic constraints.
- Solve issues of information systems using the learnt database principles.

Unit 1 : Introduction to Web

Introduction to Web

Introduction to Computers and the Internet, Introduction, The Internet in Industry and Research, HTML5, CSS3, Evolution of the Internet and World Wide Web, Web Basics, Multitier Application Architecture, Client-Side Scripting versus Server-Side Scripting

Unit 2 : HTML

HTML Introduction- HTML Elements, HTML Attributes, HTML Headings, HTML Paragraphs, HTML Formatting, HTML Fonts, HTML Styles, HTML Links, HTML Images, HTML Tables, HTML Lists, HTML Forms, Internal Linking, meta Elements, New HTML5 Form input Types, input and datalist Elements and autocomplete Attribute, Page-Structure Elements, HTML5 Audio, HTML5 Video

Unit 3 : CSS

CSS Introduction, CSS Syntax, Inline Styles, Embedded Style Sheets, Conflicting Styles, Linking External Style Sheets, Positioning Elements: Absolute Positioning, z-index, Positioning Elements: Relative Positioning, span, CSS Selectors, CSS Color, CSS background, CSS Fonts, CSS Text, CSS Links, CSS Lists, CSS Tables, CSS Box Model, CSS Margin, CSS Padding, CSS Border, Text Shadows, Rounded Corners, Box Shadows, CSS Outline, CSS Cursors, CSS Overflow, CSS Display, CSS Visibility, CSS Position, CSS Layers, CSS Float, CSS Alignment, CSS Pseudo-classes, CSS Pseudo-elements CSS Opacity

Unit 4 : DATABASE SYSTEMS DATA MODELING AND RELATIONAL MODEL

DATABASE SYSTEMS



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,

Recognized by UGC under 2(f) & 12(B) of 1956 Act.,

ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,

Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.

www.amritasai.edu.in, Phone: 0866 2428399.



History and motivation for database systems; components of database systems; DBMS functions; database architecture and data independence.

Data modeling: conceptual models; object -oriented model;

RELATIONAL MODEL

Relational data model; relational algebra, relational calculus

Unit 5 : SQL & NORMALIZATION

Relational data model; Database query languages: Overview of database languages; SQL- DDL, DML, DCL, TCL Commands, The Form of Basic SQL Query, Examples on Basic SQL Queries Integrity Constraints, Set operations, Aggregate Operators, Joins, Nested Queries, Triggers

Purpose of Normalization or schema refinement, concept of functional dependency, normal forms based on functional dependency(1NF, 2NF and 3 NF), concept of surrogate key, Boyce-codd normal form(BCNF)

Unit-6: CLOUD COMPUTING

TEXT BOOKS

1. A. Silberschatz, H. F. Korth & S. Sudershan, Database system concepts, McGraw Hill, 6th Edition 2010.
2. R. Elmasri & S. B. Navathe, Fundamentals of database systems, Addison Wesley, 6th Edition, 2011.
3. Internet & World Wide Web How to Program, 5/e- Paul J. Deitel, Harvey M. Deitel, Abbey Deitel- Prentice Hall India
4. Programming the World Wide Web (8th ed)- ROBERT W. SEBESTA, Pearson

Reference Books:

1. C. J. Date, An introduction to database systems, Addison Wesley, 8 Edition, 2003.
2. H. Garcia et al., Database system implementation, Prentice Hall, 2

Web References :

1. <https://www.dataversity.net/brief-history-database-management/>
2. https://link.springer.com/chapter/10.1007/978-1-349-14931-5_11
3. <https://www.studytonight.com/dbms/architecture-of-database.php>
4. <https://www.w3schools.com/html/>
5. <https://www.coursera.org/learn/html>
6. <https://bitshifters0.files.wordpress.com/2015/03/programming-the-world-wide-web-sebesta-robert.pdf>
7. <https://sureshvcetit.files.wordpress.com/2017/10/prentice-hall-internet-and-world-wide-web-how-to-program-5th-edition-0132151006.pdf>
8. <https://www.w3schools.com/css/>
9. <https://www.tutorialrepublic.com/css-tutorial/>



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,
Recognized by UGC under 2(f) & 12(B) of 1956 Act.,
ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,
Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.
www.amritasai.edu.in, Phone: 0866 2428399.



Course Code	B.Tech	ELECTIVE-2	L	T	P	C
	II Year	CLOUD COMPUTING-2	3	1	-	3
	II Sem					

OBJECTIVES:

- The student will learn about the cloud environment.
- Building software systems and components that scale to millions of users in modern internet, cloud concepts capabilities across the various cloud service models including IaaS, PaaS, SaaS, and developing cloud based software applications on top of cloud platforms

OUTCOMES:

- Understanding the key dimensions of the challenge of Cloud Computing own organization Assessment of the economics , financial, and technological implications for selecting cloud computing for
- Assessing the financial, technological, and organizational capacity of employer's for actively initiating and installing cloud-based applications.
- Assessment of own organizations' needs for capacity building and training in cloud computing-related IT areas.

UNIT I : Cloud Platform Architecture

Architectural Design of Compute and Storage Clouds, Public Cloud Platforms, Inter Cloud Resource Management, Cloud Security and Trust Management. Service Oriented Architecture, Message Oriented Middleware.

UNIT II : Cloud Programming and Software Environments Features of Cloud and Grid Platforms, Parallel & Distributed Programming Paradigms, Programming Support of Google App Engine, Programming on Amazon AWS and Microsoft Azure, Emerging Cloud Software Environments.

UNIT III : Cloud Resource Management and Scheduling Policies and Mechanisms for Resource Management Applications of Control Theory to Task Scheduling on a Cloud, Stability of a Two Level Resource Allocation Architecture, Feedback Control Based on Dynamic Thresholds. Coordination of Specialized Autonomic Performance Managers, Resource Bundling, Scheduling Algorithms for Computing Clouds, Fair Queuing, Start Time Fair Queuing, Borrowed Virtual Time, Cloud Scheduling Subject to Deadlines, Scheduling MapReduce Applications Subject to Deadlines.

UNIT IV: Storage Systems Evolution of storage technology, storage models, file systems and database, distributed file systems, general parallel file systems. Google file system. Apache Hadoop, Big Table, Megastore, Amazon Simple Storage Service (S3)



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,
Recognized by UGC under 2(f) & 12(B) of 1956 Act.,
ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,
Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.
www.amritasai.edu.in, Phone: 0866 2428399.



UNIT V:

Law of Clouonomics,Cloud API's,Open Stack CCloud Architecture,Cloud Deployment Techniques,Service Level Agreements,Security in Cloud

UNIT VI .:

AWS Overview,History and Evolution of AWS,Overview of AWS Products and Services

TEXT BOOKS

- 1.Distributed and Cloud Computing, Kai Hwang, Geoffry C. Fox, Jack J. Dongarra MK Elsevier.
2. Cloud Computing, Theory and Practice, Dan C Marinescu, MK Elsevier.
3. Cloud Computing, A Hands on approach, ArshadeepBahga, Vijay Madiseti, University Press
- 4.Cloudonomics: The Business Value of Cloud Computing + Website
- 5.Cloudonomics: The Business Value of Cloud Computing-A Review

REFERENCE BOOKS:

1. Cloud Computing, A Practical Approach, Anthony T Velte, Toby J Velte, Robert Elsenpeter, TMH
2. Mastering Cloud Computing, Foundations and Application Programming, Raj Kumar Buyya, Christen vecctiola, S Tammaraiselvi, TMH



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,

Recognized by UGC under 2(f) & 12(B) of 1956 Act.,

ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,

Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.

www.amritasai.edu.in, Phone: 0866 2428399.



Cloud Computing – 3 - AWS

AWS Solutions Architect - Associate Level

- Lesson 00 - Course Overview
 - 0.1 Course Overview
- Lesson 01 - AWS Overview
 - 1.1 AWS Overview
 - 1.2 History and Evolution of AWS
 - Knowledge Check
 - 1.4 Overview of AWS Products and Services
 - 1.5 Quiz
 - 1.6 Key Takeaways
- Lesson 02 - Designing Highly Available, Cost-efficient, Fault-tolerant, and Scalable Systems
 - 2.1 Designing Highly Available, Cost-efficient, Fault-tolerant, and Scalable Systems
 - 2.2 How to design Cloud Services
 - 2.3 Knowledge Check
 - 2.4 Planning and Designing
 - 2.5 Knowledge Check
 - 2.6 Monitoring and Logging
 - 2.7 Knowledge Check
 - 2.8 Hybrid IT architectures
 - 2.9 Knowledge Check
 - 2.10 Practice Assignment Designing Hybrid Storage
 - 2.11 Quiz
 - 2.12 Key Takeaways
- Lesson 03 - Identity Access Management (IAM)
 - 3.1 Identity and Access Management (IAM)
 - 3.2 IAM Overview and Policies
 - 3.3 Knowledge Check
 - 3.4 IAM Users, Groups, and Roles
 - 3.5 Knowledge Check
 - 3.6 IAM Best Practices
 - 3.7 Practice Assignment Configuring IAM Access
 - 3.8 Quiz
 - 3.9 Key Takeaways
- Lesson 04 - Amazon Virtual Private Cloud (VPC)
 - 4.1 Amazon Virtual Private Cloud (VPC)
 - 4.2 Amazon VPC and Subnets
 - 4.3 Knowledge Check
 - 4.4 Networking
 - 4.5 Knowledge Check



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,

Recognized by UGC under 2(f) & 12(B) of 1956 Act.,

ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,

Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.

www.amritasai.edu.in, Phone: 0866 2428399.



- 4.6 Using Security Groups and Network ACLs
- 4.7 Knowledge Check
- 4.8 Amazon VPC Best Practices and Costs
- 4.9 Practice Assignment Designing a Custom VPC
- 4.10 Quiz
- 4.11 Key Takeaways
- Lesson 05 - Elastic Compute Cloud (EC2)
 - 5.1 Cloud Compute with AWS
 - 5.2 Amazon EC2 Overview
 - 5.3 Amazon Machine Images (AMI)
 - 5.4 Launch and connect to an EC2 Linux instance Demo 1
 - 5.5 Launch and connect to an EC2 Windows instance Demo 2
 - 5.6 Create an AMI Demo 3
 - 5.7 Knowledge Check
 - 5.8 Introduction to EC2 Instance Types
 - 5.9 Knowledge Check
 - 5.10 Overview of Amazon EBS
 - 5.11 Knowledge Check
 - 5.12 EC2 Pricing
 - 5.13 Knowledge Check
 - 5.14 Elastic Load Balancing (ELB)
 - 5.15 Knowledge Check
 - 5.16 Auto Scaling
 - 5.17 Knowledge Check
 - 5.18 AWS Services
 - 5.19 AWS Lambda Demo
 - 5.20 Amazon Elastic Container Service
 - 5.21 Knowledge Check
 - 5.22 EC2 Best Practices and Costs
 - 5.23 Practice Assignment Configure ELB
 - 5.24 Quiz
 - 5.25 Key Takeaways
- Lesson 06 - Amazon Simple Storage Service (S3)
 - 6.1 Amazon Simple Storage Service (S3)
 - 6.2 S3 Overview and Buckets
 - 6.3 Knowledge Check
 - 6.4 Version Control and Lifecycle Management
 - 6.5 Knowledge Check
 - 6.6 Cloud Front and CDNs
 - 6.7 Knowledge Check
 - 6.8 Security and Encryption
 - 6.9 Knowledge Check
 - 6.10 Amazon Import - Export Snowball



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY (AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,
Recognized by UGC under 2(f) & 12(B) of 1956 Act.,
ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,
Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.
www.amritasai.edu.in, Phone: 0866 2428399.



- 6.11 Knowledge Check
- 6.12 S3 Best Practices and Costs
- 6.13 Practice Assignment Create an Amazon S3 bucket
- 6.14 Quiz
- 6.15 Key Takeaways
- Lesson 07 - Amazon Route 53
 - 7.1 Amazon Route 53
 - 7.2 Amazon Route 53 Concepts
 - 7.3 Knowledge Check
 - 7.4 Amazon Route 53 Best Practices and Costs
 - 7.5 Practice Assignment Amazon Route 53 Hosted Zone
 - 7.6 Quiz
 - 7.7 Key Takeaways
- Lesson 08 - Databases
 - 8.1 Databases
 - 8.2 Databases Overview
 - 8.3 Knowledge Check
 - 8.4 Amazon Relational Database Service (RDS)
 - 8.5 Knowledge Check
 - 8.6 AMI Databases
 - 8.7 Knowledge Check
 - 8.8 Amazon Dynamo DB
 - 8.9 Knowledge Check
 - 8.10 Amazon Redshift
 - 8.11 Knowledge Check
 - 8.12 Amazon Elastic Cache
 - 8.13 Knowledge Check
 - 8.14 Amazon Aurora
 - 8.15 Knowledge Check
 - 8.16 AWS Database Migration Services (DMS)
 - 8.17 Knowledge Check
 - 8.18 Database Best Practices and Costs
 - 8.19 Practice Assignment Amazon RDS
 - 8.20 Quiz
 - 8.21 Key Takeaways
- Lesson 09 - Application Services
 - 9.1 Application Services
 - 9.2 AWS Application Services
 - 9.3 Knowledge Check
 - 9.4 Amazon Elastic Transcoder
 - 9.5 Knowledge Check
 - 9.6 Amazon Workspaces
 - 9.7 Knowledge Check



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY (AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,
Recognized by UGC under 2(f) & 12(B) of 1956 Act.,
ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,
Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.
www.amritasai.edu.in, Phone: 0866 2428399.



- 9.8 Application Services Best Practices and Costs
- 9.9 Practice Assignment Amazon SNS
- 9.10 Quiz
- 9.11 Key Takeaways
- Lesson 10 - Security Practices for optimum Cloud Deployment
 - 10.1 Security Practices for Optimum Cloud Deployment
 - 10.2 AWS Responsibilities and Security Attributes
 - 10.3 Knowledge Check
 - 10.4 AWS CloudFormation and Design patterns
 - 10.5 Practice Assignment AWS CloudWatch
 - 10.6 Quiz
 - 10.7 Key Takeaways
- Lesson 11 - Disaster Recovery
 - 11.1 Disaster Recovery
 - 11.2 Overview and Products for Disaster Recovery
 - 11.3 Practice Assignment Disaster Recovery
 - 11.4 Quiz
 - 11.5 Key Takeaways
- Lesson 12 - Troubleshooting
 - 12.1 Troubleshooting
 - 12.2 Troubleshooting and Support
 - 12.3 Quiz
 - 12.4 Key Takeaways
- Lesson 13 - AWS Solutions Architect Exam
 - 13.1 AWS Solutions Architect Exam
 - 13.2 Exam Overview and Study Tips
 - 13.3 Knowledge Check
- 13.4 Key Takeaways



**Amrita Sai Institute of Science and Technology
(Autonomous)**

Approved by AICTE, New Delhi; Permanently Affiliated to JNTUK, Kakinada
ISO 9001:2015 Certified Institution, Accredited by NAAC with 'A' grade
Recognized by UGC under 2(f) and 12(B) of 1956 Act
Amrita Sai Nagar, Paritala, Krishna District, Andhra Pradesh-521180
www.amritasai.org.in, 0866-2428399



Department of Computer science and Engineering

Course Code	B.Tech	CYBER SECURITY - I	L	T	P	C
18CS3T6E	II Year		3	1	-	3
	I Sem					

OBJECTIVES:

- Introduction to Scripting Language
- Exposure to various problems solving approaches of computer science

OUTCOMES:

- Making Software easily right out of the box
- Experience with an interpreted Language
- To build software for real needs
- Prior Introduction to testing software

Unit I : Introduction

History of Python, Need of Python Programming, Applications Basics of Python Programming, Python in statistics context, Python in machine learning context, Python in Cyber security context, installation in windows/linux/mac, Using the REPL(Shell), Running Python Scripts, Variables, Assignment, Keywords, InputOutput, Indentation.

Types - Integers, Strings, Booleans; Operators, Control Flow- if, if-elif-else, for, while, break, continue

Unit II : Data Structures and Functions

Lists - Operations, Slicing, Methods; Tuples, Sets, Dictionaries, Sequences. Comprehensions

Defining Functions, Calling Functions, Passing Arguments, Keyword Arguments, Default Arguments, Variable-length arguments, Anonymous Functions, Fruitful Functions (Function Returning Values), Scope of the Variables in a Function - Global and Local Variables.

Modules: Creating modules, import statement, from. Import statement, Python packages, Introduction to PIP, Installing Packages via PIP, Using Python Packages - decorators, collections, generators File I/O: File opening, reading, writing, appending, merging, processing

Unit III : OOP in Python & Brief Tour of the Standard Library

Classes, 'self variable', Methods, Constructor Method, Inheritance, Overriding Methods, Data hiding, Error and Exceptions: Difference between an error and Exception, Handling Exception,

try except block, Raising Exceptions, User Defined Exceptions
Advanced Python Objects : numbers, strings, lists, tuples, dictionaries

Pandas: introduction, installation, Jupyter notebook, loading CSV, JSON, text, excel files, set header row, set column names, updating, deleting columns, rows, Numpy: introduction, installation, numpy arrays, image and video processing with Open CV : displaying, sizing, resizing images, face detection, video capture, Interactive data visualization : Bokeh, Bokeh with pandas, web scrapping

Unit IV : COMPUTER NETWORKS

Computer networks Introduction, Types of computer networks, OSI reference model and its layered tasks, TCP/IP reference model and its layered tasks, **Physical layer** - introduction, Data transfer in physical layer, Devices in physical layer, Analog and Digital data, Analog and digital signals, **Data Link layer** - Framing - bit stuffing, character stuffing, Flow and error control mechanisms – introduction, Stop and Wait protocol, Go Back N, Selective Repeat protocol, Error Detection/ Error Correction codes – introduction, Hamming code, CRC, Check Sum, Multiple access methods, Switching, **Network layer** – introduction, Host to Host or End to End delivery, Class-full address, Class-less address, IPV4 addressing mechanism, IPV6 addressing mechanism, Public and private IP addresses, **Routers, Routing algorithms** – introduction, Shortest Path routing algorithm, Distance vector routing algorithm, **Transport Layer**- introduction, Process to Process delivery, UDP(User Datagram Protocol), TCP(Transmission Control Protocol), SCTP(Stream Control Transmission Protocol), Congestion Control policies, **Application Layer**– introduction, Domain Name System(DNS), World Wide Web(WWW), Uniform Resource Locator(URL), Hyper Text Transfer Protocol(HTTP), File Transfer Protocol(FTP)

Unit V : ETHICAL HACKING

Introduction to ethical hacking, Information security overview, Information security threats and attack vectors, Hacking concepts, Ethical hacking concepts, information security controls, penetration testing concepts, information security laws and standards, **Footprinting and Reconnaissance** – Footprinting concepts, footprinting through search engines, foot printing through web services, footprinting through social networking sites, website footprinting, email footprinting, competitive intelligence, whois footprinting, DNS footprinting, network footprinting, footprinting through social engineering, footprinting tools, footprinting countermeasures, footprinting penetration testing

Unit VI :

Scanning Networks – network scanning concepts, scanning tools, scanning beyond IDS and firewall, banner grabbing, draw network diagrams, scanning pen testing, **Enumeration** – Enumeration concepts, NetBIOS Enumeration, SNMP enumeration, LDAP enumeration, NTP enumeration, SMTP and DNS enumeration, other enumeration techniques, enumeration counter measures, enumeration pen testing, **Vulnerability analysis** – vulnerability assessment concepts, vulnerability assessment solutions, vulnerability scoring systems, vulnerability assessment

tools, vulnerability assessment reports

TEXT BOOKS

1. Python Programming:A Modern Approach, Vamsi Kurama, Pearson
2. LearningPython, MarkLutz, Orielly
3. introduction to Data Communications and Networking by B. Fourouzen, 4 edition
4. computer networks 4 edition. Tanenbaum

ReferenceBooks:

1. Think Python,Allen Downey, Green TeaPress
2. CorePython Programming, W.Chun, Pearson.
3. Introduction to Python, Kenneth A.Lambert, Cengage

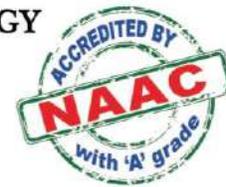
Dr. K Sahadeevaiah Professor, CSE, JNTUKU		Sri. P Bhargava Senior Software Engineer, Smart Net IT Solutions	
Dr. M Babu Reddy, Professor CS, KU		Sri. S Venkateswrlu Asst. Prof, HCW, Hyd	
Dr. A Vijaya Krishna Professor, CSE, PMU		Sri. Dr. N Sujatha Assoc. Prof. & Head	



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,
Recognized by UGC under 2(f) & 12(B) of 1956 Act.,
ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,
Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.
www.amritasai.edu.in, Phone: 0866 2428399.



Course Code	B.Tech	ELECTIVE-2	L	T	P	C
18CS4T5E	II Year II Sem	CYBER SECURITY - 2	3	1	-	3

OBJECTIVES:

- Introduction to Scripting Language
- Exposure to various problems solving approaches of computer science

OUTCOMES:

- Making Software easily right out of the box
- Experience with an interpreted Language
- To build software for real needs
- Prior Introduction to testing software

Unit I : System Hacking:

System Hacking Concepts, Cracking Passwords, Escalating Privileges, Executing Applications, Hiding Files, Covering Tracks, Penetration Testing

Malware Threats : Malware Concepts ,Trojan Concepts,VirusandWormConcepts,MalwareAnalysis,Countermeasures,Anti-MalwareSoftware,MalwarePenetration Testing

Unit II : Sniffing: Sniffing Concepts, Sniffing Technique: MAC Attacks ,Sniffing Technique: DHCP Attacks Sniffing Technique :ARP Poisoning, Sniffing Technique :Spoofing Attacks, Sniffing Technique: DNS Poisoning ,Sniffing Tools, Counter measures, Sniffing Detection Techniques ,Sniffing Pen Testing

Social Engineering: Social Engineering Concepts, Social Engineering Techniques, Insider Threats, Impersonation on Social Networking Sites, Identity Theft ,Counter measures ,Social Engineering Pen Testing

Denial-of-Service :DoS / DDoS Concepts, DoS/DDoS Attack Techniques, Botnets, DDoS CaseStudy, DoS/DDoS Attack Tools, Counter measures, DoS/DDoS Protection Tools, DoS/DDoS Penetration Testing

UnitIII: Session Hijacking: Session Hijacking Concepts, Application Level Session Hijacking, Network Level Session Hijacking, Session Hijacking Tools, Countermeasures, Penetration Testing.

Evading IDS, Firewalls, and Honey pots: IDS, Firewall and Honey pot Solutions, Evading IDS, Evading Firewalls, IDS/Firewall Evading Tools, Detecting Honey pots, IDS/Firewall Evasion Counter measures ,Penetration Testing

Hacking Web Servers: Web Server Concepts, Web Server Attacks, Web Server Attack



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,
Recognized by UGC under 2(f) & 12(B) of 1956 Act.,
ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,
Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.
www.amritasai.edu.in, Phone: 0866 2428399.



Methodology, Web Server Attack Tools, Counter measures, Patch Management, Web Server Security Tools, Web Server Pen Testing

Unit IV: Hacking Web Applications: Web App Concepts Web App Threats ,Hacking Methodology, Web App Hacking Tools, Counter measures, Web App Security Testing Tools, Web App Pen Testing

SQL Injection: SQL Injection Concepts, Types of SQL Injection , SQL Injection Methodology, SQL Injection Tools Evasion Techniques, Counter measures

Hacking Wireless Networks: Wireless Concepts, Wireless Encryption, Wireless Threats, Wireless Hacking Methodology, Wireless Hacking Tools, Bluetooth Hacking ,Counter measures, Wireless Security Tools

Unit V : Hacking Mobile Platforms: Mobile Platform Attack Vectors, Hacking Android OS, Hacking ,iOS ,Mobile Spyware ,Mobile Device Management ,Mobile Security Guidelines and Tools, Mobile Pen Testing

IoT Hacking: IoT Concepts, IoT Attacks, IoT Hacking Methodology, IoT Hacking Tools, and Counter measures IoT Pen Testing.

Unit VI : Cloud Computing: Cloud Computing Concepts, Cloud Computing Threats, Cloud Computing Attacks, Cloud Security, Cloud Security Tools, Cloud Penetration Testing

Cryptography: Cryptography Concepts, Encryption Algorithms ,Cryptography Tools, Public Key Infrastructure (PKI),Email Encryption, Disk Encryption ,Cryptanalysis, Countermeasures

TEXT BOOKS

1. Python Programming:A Modern Approach, Vamsi Kurama, Pearson
2. LearningPython, MarkLutz, Orielly
3. introduction to Data Communications and Networking by B. Fourouzen, 4 edition
4. computer networks 4 edition. Tanenbaum

REFERENCEBOOKS:

1. Think Python,Allen Downey, Green TeaPress
2. CorePython Programming, W.Chun, Pearson.
3. Introduction to Python, Kenneth A.Lambert, Cengage

Dr. K Sahadeevaiah Professor, CSE, JNTUKU		Sri. P Bhargava Senior Software Engineer, Smart Net IT Solutions	
Dr. M Babu Reddy, Professor CS, KU		Sri. S Venkateswrlu Asst. Prof, HCW, Hyd	
Dr. A Vijaya Krishna Professor, CSE, PMU		Sri. Dr. N Sujatha Assoc. Prof. & Head	



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,
Recognized by UGC under 2(f) & 12(B) of 1956 Act.,
ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,
Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.
www.amritasai.edu.in, Phone: 0866 2428399.



Course Code	B.Tech	ELECTIVE-1	L	T	P	C
18CS3T	II Year I Sem	DATA ANALYTICS-1 Statistics with R	3	1	-	3

UNIT-1: Regression

Introduction to Statistics, **Data Preprocessing:** Importing dataset, Handling missing data, Categorical data, Splitting the dataset into Training set and Test set, Feature Scaling, **Regression:** Simple Linear Regression, Multiple Linear Regression, Polynomial Regression, Support Vector Regression (SVR), Decision Tree Regression, Random Forest Regression, **Regression model evaluation:** R-Squared Intuition, Adjusted R-Squared Intuition, Interpreting Linear Regression Coefficients **Classification** Classification: Logistic Regression, K-Nearest Neighbors (K-NN), Support Vector Machines (SVM), Kernel SVM, Naïve Bayes, Decision Tree Classification, Random Forest Classification,

UNIT-2: Association rules and Deep learning

Evaluating Classification Models: False Positives & False Negatives, Confusion Matrix, Accuracy Paradox, CAP Curve, CAP Curve Analysis. **Clustering:** K-Means Clustering, Hierarchical Clustering. **Associate Rule Learning:** Apriori, ECLAT, **Reinforcement Learning:** Upper Confidence Bound, Thompson Sampling, Natural Language Processing, **Deep Learning:** Artificial Neural Networks, Convolutional Neural Networks, **Dimensionality Reduction:** Principal Component Analysis (PCA), Kernel PCA, Linear Discriminant Analysis (LDA), **Model Selection & Boosting:** Model Selection, XG Boost.

UNIT-3:

Introduction: What is R-Evaluation of R-R features-R Applications-R in statistical context-R in Machine learning context-R installation on windows/MAC/Linux-Development environment overview-R SDK and R studio-**R Basics:** Introduction-Arithmetic in R-Variables-Variable assignment-Finding variables-Basic data types. **Introduction to vectors**-Vector operations-Matrices and arrays as vectors-Declarations-Comparison operators-Vector indexing and selecting-Vector recycling and repetition-Vector functions-NA and NULL values-Subscripts and generating sequence-Generating random numbers and sampling-Help in R and R studio.

UNIT-4:

R Matrices: Introduction-Creating a Matrix-Matrix arithmetic-Matrix operations-Matrix selection and Indexing-Factors and categorical matrices. **R Arrays:**



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,
Recognized by UGC under 2(f) & 12(B) of 1956 Act.,
ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,
Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.
www.amritasai.edu.in, Phone: 0866 2428399.



Introduction-Array arithmetic-Array indexing. **R Data Frames:** Introduction-Data frame basics-Data frame indexing and selection-Data frame operations-Merging data frames-Applying functions on data frames. **R Lists:** List introduction-List operations-List indexing-Adding and deleting list elements-Functions on lists-Recursive lists.

UNIT-5:

Data input and output in R- Introduction-CSV files with R-Excel files with R-SQL with R-Web scraping with R. **R Programming:** programming basics-Logical operators-If else and else if statements-while loop-FOR loop-Functions-Tables-Strings.

UNIT-6

R Packages: Installing and loading packages-Built-in package list and purpose explanation. **Advanced R Programming:** Introduction-Built-in R features-apply-Math functions-Regular expressions-Dates and time stamp. **Data Manipulation with R:** Introduction-DPLYR-Pipe operator-TIDYR. **Visualization with R:** ggplot2-Histograms-scatter plots-Bar plots-Box plots-2 variable plotting-coordinates and facing-Themes. **Interactive visualization with Plotly:** Introduction-plotly and ggplot2.

Suggested Readings

1. R for Every one by Jared P Lander
2. The Art of R programming by Norman Matloff
3. R Cook Book by Paul Teetor
4. Hands on Programming with R by Garrett Gloremond
5. R programming for Data Science by Roger Peng
6. Data manipulation with R by Jaynal Abedin



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,
Recognized by UGC under 2(f) & 12(B) of 1956 Act.,
ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,
Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.
www.amritasai.edu.in, Phone: 0866 2428399.



Course Code	B.Tech	ELECTIVE-2	L	T	P	C
18CS4T5B	II Year II Sem	DATA ANALYTICS-2	3	1	-	3

OBJECTIVES:

- Introduction to Scripting Language
- Exposure to various problems solving approaches of computer science
- Introduction to Big Data
- The limitations of the traditional solutions for Big Data problems
- Solving Hadoop Big Data problems

OUTCOMES:

- Making Software easily right out of the box
- Experience with an interpreted Language
- To build software for real needs
- Prior Introduction to testing software
- Anatomy of File Read and Write & how Map Reduce works

Unit I : SystemHacking:

SystemHacking Concepts, Cracking Passwords, Escalating Privileges, Executing Applications, Hiding Files, Covering Tracks, Penetration Testing

Malware Threats: Malware Concepts, Trojan Concepts, Virus and Worm Concepts, Malware Analysis, Countermeasures, Anti Malware Software, Malware Penetration Testing

Unit II : Sniffing:

Sniffing Concepts, Sniffing Technique: MAC Attacks, Sniffing Technique: DHCP Attacks, Sniffing Technique: ARP Poisoning, Sniffing Technique: Spoofing Attacks, Sniffing Technique: DNS Poisoning, Sniffing Tools, Countermeasures, Sniffing Detection Techniques, Sniffing Pen Testing

Social Engineering:

Social Engineering Concepts, Social Engineering Techniques, Insider Threats, Impersonation on Social Networking Sites, Identity Theft, Countermeasures, Social Engineering Pen Testing

Denial-of-Service:

DoS/DDoS Concepts, DoS/DDoS Attack Techniques, Botnets, DDoS Case Study, DoS/DDoS Attack Tools, Countermeasures, DoS/DDoS Protection Tools, DoS/DDoS Penetration Testing

Unit III : Session Hijacking:

Session Hijacking Concepts, Application Level Session Hijacking, Network Level Session Hijacking, Session Hijacking Tools, Countermeasures, Penetration Testing.



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,
Recognized by UGC under 2(f) & 12(B) of 1956 Act.,
ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,
Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.
www.amritasai.edu.in, Phone: 0866 2428399.



Evading IDS, Firewalls, and Honeypots:

IDS, Firewall and Honeypot Solutions, Evading IDS, Evading Firewalls, IDS/Firewall Evading Tools, Detecting Honeypots, IDS/Firewall Evasion Countermeasures, Penetration Testing

Hacking Web Servers:

Web Server Concepts, Web Server Attacks, Web Server Attack Methodology, Web Server Attack Tools, Countermeasures, Patch Management, Web Server Security Tools, Web Server Pen Testing

Unit IV: Introduction to Big Data & Big Data Challenges, Limitations & Solutions of Big Data Architecture, Hadoop & its Features, Hadoop Ecosystem, Hadoop 2.x Core Components.

Unit V Hadoop Storage: HDFS (Hadoop Distributed File System) Hadoop Processing: MapReduce Framework, Different Hadoop Distributions, Hadoop Architecture and HDFS, Hadoop MapReduce Framework.

Unit VI : Advanced Hadoop MapReduce, Apache Pig, Apache Hive, Advanced Apache Hive and HBase, Advanced Apache HBase Processing, Distributed Data with Apache Spark, Oozie .

TEXT BOOKS

1. Python Programming: A Modern Approach, Vamsi Kurama, Pearson
2. Learning Python, Mark Lutz, Orielly
3. Programming Pig by Gates Alan & Daniel Doi. ...
4. The Definitive Guide by Tom White. ...
5. **Hadoop** in Practice by Alex Holmes. ...

REFERENCE BOOKS:

1. Think Python, Allen Downey, Green Tea Press
2. Core Python Programming, W. Chun, Pearson.
3. Introduction to Python, Kenneth A. Lambert, Cengage
4. Professional **Hadoop** Solutions by Boris Lublinksy, Kevin Smith, and Alexey Yakubovich.
5. Programming Hive by Dean Wampler, Edward Capriolo & Jason Rutherglen.



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,
Recognized by UGC under 2(f) & 12(B) of 1956 Act.,
ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,
Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.
www.amritasai.edu.in, Phone: 0866 2428399.



Course Code	B.Tech III Year I Sem	ELECTIVE-3 DATA ANALYTICS-3	L	T	P	C
18CS T			3	1	-	3

COURSE OBJECTIVES :

- conceptualization and summarization of big data and machine learning, trivial data versus big data
- Big data computing technologies, machine learning techniques, and scaling up machine learning approaches.
- Develop skills to both design and critique visualizations
- Understand why visualization is an important part of data analysis

LEARNING OUTCOMES:

- Ability to identify the characteristics of datasets and compare the trivial data and big data for various applications.
- Ability to select and implement machine learning techniques and computing environment that are suitable for the applications under consideration.
- Ability to prepare data for visualization
- Ability to design visualizations
- Ability to use web technology to create visualizations

Unit I : INTRODUCTION TO BIG DATA: What is Big Data, Big data features and challenges, Problems with Traditional Large-Scale System, Sources of Big Data , 3 V's of Big Data, Types of Data.

HDFS CONCEPTS: HDFS Design & Goals , Understand Blocks and Configuration of block size ,Block replication and replication factor , Understand Hadoop Rack Awareness and configure racks in Hadoop ,File read and writes in HDFS.

Unit II : History of Hadoop , Available version Hadoop ,Available Distributions of Hadoop (Cloudera, Hortonworks) ,Architecture of Hadoop & Planning for cluster , The Hadoop Distributed File System (HDFS) Hadoop Components , Modes of Hadoop ,Installation of Hadoop Cluster, **MAP-REDUCE:** Introduction to MapReduce , Architecture of Map-Reduce , Understanding the concept of Mappers & Reducers MapReduce: Word Count Example , Phases of a MapReduce program ,Data-types in Hadoop MapReduce ,Driver, Mapper and Reducer classes , InputSplit and RecordReader ,Input format and Output format in Hadoop , Concepts of Combiner and Partitioner.



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,
Recognized by UGC under 2(f) & 12(B) of 1956 Act.,
ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,
Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.
www.amritasai.edu.in, Phone: 0866 2428399.



Unit III : [Hadoop](#) & linux shell and commands

PIG: Introduction to Pig , Pig installation , Pig Running Modes , Data Types in Pig , Pig: Word Count Example ,Pig Scripting , Pig Scripting: Word Count Example

Unit IV: Overview of Data Visualization, Introduction to Web Technologies, The Shapes of Data, Marks and Channels, Encoding Data with Marks and Channels,Rendering Marks and Channels with D3.js and SVG,Introduction to D3 Scales,Creating a Scatter Plot with D3.js, Common Visualization Idioms

Unit V : Visualization of Spatial Data, Networks, and Trees, Encoding Data using Color,Encoding Data using Size,Stacked & Grouped Bar Chart,Stacked Area Chart & Streamgraph Line Chart with Multiple Lines, Using Color and Size in Visualization, Interaction Techniques, Adding interaction with Unidirectional Data Flow,Using UI elements to control a scatter plot,Panning and Zooming on a Globe.

Unit VI : Small Multiples,Linked Highlighting with Brushing,Linked Navigation: Bird's Eye Map, Multiple Linked Views, Data Reduction, Histograms,Aggregating Data with Group-By,Hexbin Mapping,Crossfiltering,Building a Migrant Deaths Dashboard

TEXT BOOKS

- 1.Hadoop – The Definitive Guide by Tom White. ...
- 2.Hadoop for Dummies by Dirk Deroos. ...
- 3.Hadoop in Action by Chuck Lam. ...
- 4.Hadoop Operations by Eric Sammers. ...
- 5.Map Reduce Design Patterns: Building Effective Algorithms and Analytics for Hadoop by Donald Miner.Information Dashboard Design: Displaying **Data** for At-a-glance Monitoring” by Stephen Few. ...
- 6."Beautiful **Visualization**, Looking at **Data** Through the Eyes of Experts by Julie Steele, Noah Iliinsky"

REFERENCEBOOKS:

1. Learning Spark: Lightning-Fast Big Data Analysis” by Holden Karau
2. Data Science and Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data” by EMC Education Services
3. The Visual Display of Quantitative Information” by Edward R. Tufte. ...
4. “Storytelling With Data: A Data Visualization Guide for Business Professionals” by Cole Nussbaumer Knaflic. ...
5. “Data Visualization – A Practical Introduction” by Kieran Healy.



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,
Recognized by UGC under 2(f) & 12(B) of 1956 Act.,
ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,
Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.
www.amritasai.edu.in, Phone: 0866 2428399.



Course Code	B.Tech III Year II Sem	ELECTIVE-4 DATA ANALYTICS-4	L	T	P	C
18CS T			3	1	-	3

COURSE OBJECTIVES :Make more effective visualizations for data. Understand how fundamental principles of design and human cognition inform effective

- Visualizations. Utilize popular visualization applications such as Tableau and Excel.
- Develop web pages that allow others to interact with data.
- Create visualizations using interactive web graphics programming in SVG format, javascript, and D3.js.
- Perceive Analytics with SAS
- Explain SAS GUI, datasets, import/export of manipulated data
- Gain in-depth knowledge of integrating and refining datasets

LEARNING OUTCOMES:

- At the end of the course, students will be able to:
- Employ best practices in data visualization to develop charts, maps, tables, and other visual representations of data.
- Use Tableau’s visualization tools to conduct data analysis, especially exploration of an unfamiliar dataset
- Create compelling, interactive dashboards to combine several visualizations into a cohesive and functional whole.
- Utilize advanced Tableau features including parameters, data blending, custom SQL, very large datasets, custom date hierarchies, and others.
- Use data visualizations, dashboards, and Tableau Stories to support relevant communication for diverse audiences.

Unit I : What Tableau can and cannot do well” , Debug and troubleshoot installation and configuration of the software, Discussion of workflow Configuring Data Environment , Connecting to Data , Metrics vs dimensions , Data types and defaults ,Aliases and names , Data Visualization Concepts

Unit II : Exploratory Visualization , Data Joins , Best Practices ,Creating visualizations with Tableau , Sorting, Top N, bottom N ,Filtering , Maps, Visual Analytics ,Optimal visualization types , Binning values ,Calculated fields ,Table calculations , Level of Detail calculations, Dashboard development ,Dashboard design principles , Dashboard interactivity , Connected “drill-down” dashboards



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,

Recognized by UGC under 2(f) & 12(B) of 1956 Act.,

ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,

Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.

www.amritasai.edu.in, Phone: 0866 2428399.



Unit III : Advanced Tableau , Large datasets ,Fiscal Year Calculations ,Parameters, Working with stakeholders and creating analytical products , Stakeholder categories , Receiving feedback , Performing design iterations

Unit IV: Introduction to SAS program, SAS Data types and Libraries, Data Steps and Proc Steps, Format & In format, Creating Output Proc Print, Proc Contents, Output Delivery System (ODS), Reading Raw data – Column input Understanding Data step processing, Formatted Input and List input, Reading date and Time format, Reading Instream data, Creation of raw data file from dataset

Unit V : Managing Variables in dataset Assignment and Cumulative statement, Subsetting data, drop and keep option, If-else, if-else with do statement, Select When, Do-loop Statement, Managing SAS Dataset using set statement,SAS functions Overview String Functions, Conversion Functions, Date Functions, Mathematical Functions

Unit VI : Descriptive statistics-Proc means and proc freq Proc report-column, define, headline, head skip, compute, order and group, Proc tabulate, Proc transpose,Combining data set-one to one reading, concatenation and merge Array-single and multi dimensional array, Proc printto, proc import and proc export

TEXT BOOKS

1. Data Visualization – A Practical Introduction” by Kieran Healy
2. “The Visual Display of Quantitative Information” by Edward R. Tufte
3. Storytelling With Data: A Data Visualization Guide for Business Professionals” by Cole Nussbaumer Knaflic
4. Step-by-Step Programming with Base SAS® Software
5. The little SAS Enterprises Guide Book
6. SAS Certification Prep Guide: Base Programming for SAS 9
7. Learning SAS by Example: A Programmer’s Guide

REFERENCEBOOKS:

1. SAS Certification Prep Guide: Base Programming for SAS 9
2. Building Business Intelligence Using SAS: Content Development Examples
3. Survival Analysis Using SAS: A Practical Guide
4. Statistical Graphics Procedures by Example: Effective Graphs Using SAS



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,
Recognized by UGC under 2(f) & 12(B) of 1956 Act.,
ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,
Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.
www.amritasai.edu.in, Phone: 0866 2428399.



Course Code	B.Tech	WEB AND MOBILE DEVELOPMENT-1	L	T	P	C
18CS T	II Year I Sem		3	1	-	3

OBJECTIVES:

- To train the fundamental concepts of database management system, database modeling and design, Relational Data Modeling SQL
- To get familiar with basics of the Internet Programming
- To acquire knowledge and skills for creation of web site
- To gain ability to develop responsive web applications

OUTCOMES:

- Perform project planning, analysis, design, implementation and testing in group / as an individual for any real time information system with all realistic constraints.
- Solve issues of information systems using the learnt database principles.
- Implement interactive web page(s) using HTML, CSS
- Design a responsive web site using HTML5 and CSS3.

Unit 1: DATABASE SYSTEMS DATA MODELING AND RELATIONAL MODEL

DATABASE SYSTEMS

History and motivation for database systems; components of database systems; DBMS functions; database architecture and data independence.

Data modeling: conceptual models; object -oriented model;

RELATIONAL MODEL

Relational data model; relational algebra, relational calculus

Unit 2: SQL

Relational data model; Database query languages: Overview of database languages; SQL- DDL, DML, DCL, TCL Commands, The Form of Basic SQL Query, Examples on Basic SQL Queries Integrity Constraints, Set operations, Aggregate Operators, Joins, Nested Queries, Triggers

Unit 3: Introduction to Web

Introduction to Web

Introduction to Computers and the Internet, Introduction, The Internet in Industry and Research, HTML5, CSS3, Evolution of the Internet and World Wide Web, Web Basics, Multitier Application Architecture, Client-Side Scripting versus Server-Side Scripting

Unit-4: HTML and HTML 5

HTML Introduction- HTML Elements, HTML Attributes, HTML Headings, HTML Paragraphs, HTML Formatting, HTML Fonts, HTML Styles, HTML Links, HTML Images, HTML Tables, HTML Lists, HTML Forms, Internal Linking, meta Elements



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,
Recognized by UGC under 2(f) & 12(B) of 1956 Act.,
ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,
Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.
www.amritasai.edu.in, Phone: 0866 2428399.



HTML-5

Introduction, New HTML5 Form input Types, input and datalist Elements and autocomplete Attribute, Page-Structure Elements, HTML5 Audio, HTML5 Video

Unit-5: Introduction to CSS

Introduction to CSS

CSS Introduction, CSS Syntax, Inline Styles, Embedded Style Sheets, Conflicting Styles, Linking External Style Sheets, Positioning Elements: Absolute Positioning, z-index, Positioning Elements: Relative Positioning, span, CSS Selectors, CSS Color, CSS background, CSS Fonts, CSS Text, CSS Links, CSS Lists, CSS Tables

Unit 6 : CSS Box Model & CSS 3

CSS Box Model:CSS Box Model, CSS Margin, CSS Padding, CSS Border, Text Shadows, Rounded Corners, Box Shadows, Linear Gradients; Introducing Vendor Prefixes, Radial Gradients, Text Stroke, Multiple Background Images, Reflections, Image Borders, Animation; Selectors, Transitions and Transformations

CSS3:CSS Outline, CSS Cursors, CSS Overflow, CSS Dimension, CSS Units, CSS Visual Formatting, CSS Display, CSS Visibility, CSS Position, CSS Layers, CSS Float, CSS Alignment, CSS Pseudo-classes, CSS Pseudo-elements, CSS Opacity

TEXT BOOKS

1. A. Silberschatz, H. F. Korth & S. Sudershan, Database system concepts, McGraw Hill, 6th Edition 2010.
2. R. Elmasri & S. B. Navathe, Fundamentals of database systems, Addison Wesley, 6th Edition, 2011.
3. Internet & World Wide Web How to Program, 5/e- Paul J. Deitel, Harvey M. Deitel, Abbey Deitel- Prentice Hall India
4. Programming the World Wide Web (8th ed)- ROBERT W. SEBESTA, Pearson

Reference Books:

1. C. J. Date, An introduction to database systems, Addison Wesley, 8 Edition, 2003.
2. H. Garcia et al., Database system implementation, Prentice Hall, 2

Web References:

1. <https://www.dataversity.net/brief-history-database-management/>
2. https://link.springer.com/chapter/10.1007/978-1-349-14931-5_11
3. <https://www.studytonight.com/dbms/architecture-of-database.php>
4. <https://www.w3schools.com/html/>
5. <https://www.coursera.org/learn/html>
6. <https://bitshifters0.files.wordpress.com/2015/03/programming-the-world-wide-web-sebesta-robert.pdf>



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,

Recognized by UGC under 2(f) & 12(B) of 1956 Act.,

ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,

Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.

www.amritasai.edu.in, Phone: 0866 2428399.



Course Code	B.Tech	WEB AND MOBILE DEVELOPMENT-2	L	T	P	C
18CS T	II Year II Sem		3	1	-	3

OBJECTIVES:

- To acquire knowledge of basics in java scripting.
- To acquire knowledge of various object models in java script.
- To acquire basics of Angular JS
- To apply Angular JS in developing real-time applications

OUTCOMES:

- Use operators, variables, arrays, control structures, functions and objects in JavaScript.
- Map HTML using the DOM - Document Object Model.
- Use regular expressions for form validation.
- Using Angular JS along with HTML and CSS

Unit 1 : JAVA SCRIPT-INTRODUCTION AND BASICS

Introduction

Overview-Applications-Limitations-Where to place the script?-

Java Script Basics

Syntax-Enabling-Comments-Variables: Local and Global Variables-Datatypes: primitive and non-primitive datatypes –Operators: Arithmetic, Comparison, Bitwise, Logical, Assignment, Special operators-if statement-switch statement-loops: for, while, do-while-functions: syntax, arguments, function object

Unit 2 : JAVA SCRIPT OBJECTS AND MODELS

Java Script Objects

JS Object: ways of creating an object, Defining method in JavaScript Object, JavaScript Object Methods-Array Object-String Object-Date Object-Number Object-Math Object-Boolean Object

Java Script Object Models

Browser Object Models (BOM): Window Object, History Object, Navigation Object, Screen Object

Document Object Model (DOM): introduction- methods-Document-Elements-HTML-CSS-Events-Event Listener-Navigation-Nodes-Node Lists



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,
Recognized by UGC under 2(f) & 12(B) of 1956 Act.,
ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,
Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.
www.amritasai.edu.in, Phone: 0866 2428399.



Unit 3 : JAVA SCRIPT REGULAR EXPRESSIONS, VALIDATIONS & ERROR HANDLING

Java Script Regular Expression And Validations

Syntax-Modifiers-Patterns: Metacharacters, Quantifiers-properties-methods
HTML Form Validation using Java Script-String, Password, Number, Image, Email

Java Script Error Handling

Syntax Errors-Runtime Errors, Logical Errors-try-catch-finally-throw

Unit-4: Angular JS-I

Overview-Environment setup-Angular JS MVC-First Example-Data Binding-Expressions-Directives-Controllers-Modules: Creating a Module, Add controller to a module, Add directive to a module Angular JS Scope-Dependency Injection: value, factory, service, provider, constant-

Unit-5: Angular JS-II

Angular JS Filters:list, how to add filters to directives and expressions-Tables: Displaying table with Angular JS and CSS-select: ng-options vs ng-repeat-DOM-Forms: input controls and events-Validation-Animation

Unit-6: Angular JS-Applications

Angular JS-Notepad Application- Angular JS-Login Application- Angular JS- Upload File Application- Angular JS-Navigating Menu Application- Angular JS-Search Tab- Angular JS-Maps Application- Angular JS-Timer Application

TEXT BOOKS

1. Learning AngularJS: A Guide to AngularJS Development-Ken Williamson-O'Reilly
2. Professional Angular JS-Karpov, Netto- Wiley India Pvt Ltd

Web References:

1. <https://www.javatpoint.com/angularjs-tutorial>
2. <https://www.tutorialspoint.com/angularjs/index.htm>
3. <https://docs.angularjs.org/tutorial>
4. <https://www.w3schools.com/angular/>



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,
Recognized by UGC under 2(f) & 12(B) of 1956 Act.,
ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,
Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.
www.amritasai.edu.in, Phone: 0866 2428399.



Course Code	B.Tech	WEB AND MOBILE DEVELOPMENT-3	L	T	P	C
18CS T	III Year I Sem		3	1	-	3

OBJECTIVES:

- To learn Basics, Installation and architecture of ReactJS
- To learn architecture and various components of ReactJS
- To learn Basics, Installation and architecture of ReactNative
- To learn the components and applications of ReactNative

OUTCOMES:

- Will able to install and use ReactJS for developing apps
- Will able to install and use ReactNative for developing apps

Unit 1 : REACT JS-1

Overview: Features, Advantages, Limitations-Environment setup: Installing ReactJS using create-react-app command- Difference Between AngularJS and ReactJS- React JSX: Use, Attributes, Comments, Styling-React Components: Functional and Class

Unit 2 : REACT JS-2

React State: defining and changing-React Props Overview: using props, default props, state and props-React Props Validation-React Constructor-React Component API: setState(), forceUpdate(), findDOMNode()-React Component Lifecycle- React Forms: Controlled and Uncontrolled- React Events

Unit 3 : REACT JS-3

React Lists: Rendering Lists inside components-React Keys: Using Keys with Component-React Refs-React Fragments-React Router: Installation and Usage-React Map-ReactTable-React Flux Concept- React Flux vs MVC

Unit 4 : REACT NATIVE-1

Overview: Features, Advantages and Limitations- Environment Setup-React Native View-React Native State- React Native Props- React Native Style- React Native Height and width-React Native Flexbox and Layout-

Unit 5 : REACT NATIVE-2

React Native Scroll view- React Native List view- React Native Buttons- React Native Text Input- React Native Images- React Native HTTP-React Native FlatList- React Native SectionList- React Native Touchables- React Native ActivityIndicator-

Unit 6 : REACT NATIVE-3



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,
Recognized by UGC under 2(f) & 12(B) of 1956 Act.,
ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,
Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.
www.amritasai.edu.in, Phone: 0866 2428399.



React Native Alert-React Native Picker- React Native Status Bar- React Native Switch- React Native WebView- React Native ProgressBarAndroid- React Native ProgressBar with Animated
-Developing an example app using React Native

TEXT BOOKS

1. Learning React Native: Building Native Mobile Apps with JavaScript-O-Reilly 2nd Edition
2. React Native Cook Book- by Dan Ward-Packt 2nd Edition

Web References :

1. <https://www.javatpoint.com/reactjs-tutorial>
2. <https://www.tutorialspoint.com/reactjs/index.htm>
3. <https://reactjs.org/tutorial/tutorial.html>
4. <https://www.w3schools.com/react/>



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,

Recognized by UGC under 2(f) & 12(B) of 1956 Act.,

ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,

Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.

www.amritasai.edu.in, Phone: 0866 2428399.



Course Code	B.Tech	WEB AND MOBILE DEVELOPMENT-4	L	T	P	C
18CS T	III Year II Sem		3	1	-	3

OBJECTIVES:

- To learn architecture of .NET Framework and Fundamentals of C#
- To learn OOPS concepts through C#, Debugging
- To learn Basics, Installation and components of XAMARIN
- To learn building apps using XAMARIN

OUTCOMES:

- Will able to build application in C#
- Will able to build GUI apps using XAMARIN

Unit 1 : C# Overview and Basics

Introduction- .Net Framework: Components-What is C#- Java Vs C#- History of C#- Features of C#- C# Variables-C# Constants- C# Datatypes- C# Operators- C# Keywords- C# Type Conversion- C# Control Statements(Decision Making, Loops, break, continue)

Unit 2 : C# Functions, Arrays, Strings,

C# Function: Syntax and Types, Call by value, Call by Reference, Out Parameter- C# Arrays: 1-D, Multi-dimensional, Jagged Arrays, Passing Arrays to functions, Params, using foreach loop- C# Strings

Unit 3 : OOPS in C#, Namespaces , Exception Handling

C# Class and Objects- C# Encapsulation- C# Inheritance- C# Polymorphism- C# Abstraction- C# Namespaces Exception Handling- try, catch, finally- Custom Exception, Checked and Unchecked Exceptions-

Unit 4 : C# Files , Collections, Generics

C# Files- IO Classes: FileStream, StreamWriter, StreamReader, TextWriter, TextReader, BinaryWriter, BinaryReader, StringWriter, StringReader, FileInfo, DirectoryInfo - C# Collections: List<T>, HashSet<T>, SortedSet<T>, Stack<T>, Queue<T>, LinkedList<T>, Dictionary<K,V>, SortedDictionary<K,V>, SortedList<K,V>- C# Generics: Generic class and Generic method

Unit 5 : XAMARIN-1

Overview- Installation-Application Manifest- Android Resources- Android Activity Lifecycle- Permissions: SMS, Camera, Internet, Read Contacts, ReadExternalStorage, Calendars, Locations, Bluetooth- Building the App GUI: TextView, Button, CheckBox, ProgressBar, RadioButton, ToggleButtons, RatingsBar, Autocomplete Textview

Unit 6 : XAMARIN-2



AMRITA SAI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada,

Recognized by UGC under 2(f) & 12(B) of 1956 Act.,

ISO 9001:2015 Certified Institution, Accredited by NAAC "A" Grade,

Paritala, Kanchikacherla, Krishna Dist, Andhra Pradesh- 521180.

www.amritasai.edu.in, Phone: 0866 2428399.



Xamarin Menus: Popup Menu, Options Menu- Layouts: Linear, Relative, Frame, Table-
Android Widgets: Date Picker, Time Picker, Spinner- Android Dialog: Alert- Android View:
List, Grid- Deploying the app

TEXT BOOKS

1. Xamarin Mobile Application Development by Dan Hermes- APress
2. Mastering Xamarin UI Development by Steven F Daniel- Packt

Web References :

1. <https://www.tutorialspoint.com/xamarin/>
2. <https://dotnet.microsoft.com/learn/xamarin>
3. <https://www.dotnettricks.com/learn/xamarin>