



B.Sc. (Information Technology)
(Semester-VIII) (Without Research)

Course Code	US08HMABIT01	Title of the Course	Basics of Mobile Application Development
Total Credits Of the Course	4	Hours per Week	4

Course Objectives:	1. To understand the fundamentals of mobile application development. 2. To learn Android architecture and development environment. 3. To design user interfaces using Android activities and layouts. 4. To understand data storage mechanisms in Android applications.
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Course Content		
Unit	Description	Weightage (%)
1.	Introduction to Android • Android History and Versions • Android Features • Android Architecture • Android SDK • Android Development Tools • Android Core Building Components	25
2.	Android Application Fundamentals • Creating a Simple Android Application • Android Project Structure • The manifest file • Externalizing String and Colour Resources • Activities and Activity Life Cycle • Toast messages	25
3.	User Interface Design • Introduction to Layout • Layout types: Linear, Relative • Views and View Groups • User Interface Components: Button, TextView, EditText, ImageView, CheckBox, Radio Button • Adapter-based Views: Spinner and ListView	25
4.	Enhancing user experience • Introduction to Intent • Implicit and Explicit Intent • Creating and Using Option Menu • Working with Notifications • Overview of Publishing Android Applications on App Store	25





Teaching- Learning Methodology	Blended learning approach incorporating both traditional classroom teaching as well as usage of ICT tools
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Evaluation Pattern		
Sr.No.	Details of the Evaluation	Weightage
1.	Internal Written Examination Internal Continuous Assessment in the form of Quizzes, Seminars, Assignments, Attendance	50%
2.	University Examination	50%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Understand Android architecture and development tools.
2.	Develop simple Android applications using activities and intents.
3.	Design user interfaces using views, layouts, and UI components.
4.	Implement data storage using files, SQLite database, and content providers.

Suggested References:	
Sr.No.	References
1.	Mark L Murphy, "Beginning Android", Wiley India Pvt Ltd, 2009.
2.	Rick Boyer, Kyle Mew, Android Application Develop, PACKT Publications, 2016.
3.	Pradeep Kothari: Android Application Development (Black Book), Dreamtech Press Publication, 2014.
4.	Kamil Ajmal Khan and Manisha M.S.: Android Programming, Nirali Prakashan Publication, 2019.
5.	Hardik Trivedi: Android Application Development with Kotlin, BPB Publications, 2020.

On-line resources to be used if available as reference material	
On-line Resources	
1.	https://developer.android.com
2.	https://www.geeksforgeeks.org/android/
3.	https://www.tutorialspoint.com/android





B.Sc. (Information Technology)
(Semester-VIII) (Without Research)

Course Code	US08HMABIT02	Title of the Course	Network Security
Total Credits Of the Course	4	Hours per Week	4

Course Objectives:	1. To understand fundamental concepts of network security and security architecture. 2. To study different types of network attacks, security services, and mechanisms used to protect networks. 3. To learn secure communication protocols used in web and transport layer security.
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Course Content		
Unit	Description	Weightage (%)
1.	Introduction to Network Security • Network security concepts • Need for security • OSI security architecture • Security attacks, Security services and Security mechanisms • Model for network security • Network security standards	25
2.	Transport Level Security • Web security threats • SSL / TLS basics • HTTPS • Secure Shell (SSH)	25
3.	Wireless and Internet Security • Wireless LAN security (802.11 basics) • PGP (email security) • MIME (secure email basics) • Introduction to IP security (IPSec)	25
4.	Advanced Security Concepts • Intruders • Intrusion detection • Password management • Malicious software: Viruses, Worms, Backdoor, Logic Bomb, Trojan Horses, Zombie • Virus Countermeasures • Firewalls: Design principles of firewall, Characteristics of firewall, Types of firewalls • Firewall location and configuration • Trusted systems.	25





Teaching- Learning Methodology	Blended learning approach incorporating both traditional classroom teaching as well as usage of ICT tools
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Evaluation Pattern		
Sr.No.	Details of the Evaluation	Weightage
1.	Internal Written Examination Internal Continuous Assessment in the form of Quizzes, Seminars, Assignments, Attendance	50%
2.	University Examination	50%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Understand fundamental concepts of network security and security architecture.
2.	Identify different types of network threats and security mechanisms used to prevent them.
3.	Explain transport layer and web security protocols such as SSL, TLS, and HTTPS.
4.	Analyze wireless and internet security mechanisms including PGP, MIME, and IP security.
5.	Understand advanced security concepts like intrusion detection systems, malware, and firewalls.
6.	Understand fundamental concepts of network security and security architecture.

Suggested References:	
Sr.No.	References
1.	William Stallings: Network Security Essentials: Applications and Standards: 4th Edition, Pearson Publication, 2018.
2.	Atul Kahate: Cryptography and Network Security: 2nd Edition, Tata McGraw Hill Education Private Limited, 2011.
3.	Behrouz A. Forouzan and Debdeep Mukhopadhyay: Cryptography and Network Security: 3rd Edition, McGraw Hill Education (India) Publication, 2015.
4.	S. K. Mandal: Network Security: Principles and Practices: 1st Edition, Wiley India Publication, 2015.





On-line resources to be used if available as reference material

On-line Resources

1. <https://www.tutorialspoint.com/cryptography/index.htm>
2. <https://www.geeksforgeeks.org/computer-networks/network-security/>
3. <https://owasp.org/www-project-top-ten/>





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Course Code	US08HMABIT03	Title of the Course	Practical based on US08HMABIT01
Total Credits Of the Course	4	Hours per Week	8

Course Objectives:	To provide hands-on experience in developing basic Android applications using Android Studio, including user interface design, activity management, and implementation of intents, menus, and notifications.
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Course Content		
Unit	Description	Weightage (%)
1.	Practical based on Mobile Application Development using Android Studio	100

Teaching- Learning Methodology	Practical-based learning in small groups and Hands-on training through required ICT tools.
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Practical Examination Internal Continuous Assessment in the form of Practical, Viva-voce, Attendance	50%
2.	University Examination	50%

Course Outcomes: Having completed this course, the learner will be able to	
1.	create a basic Android project and Design simple user interfaces using layouts and common UI components such as buttons, text fields, and images.
2.	Implement activity lifecycle concepts and display messages using toast notifications.
3.	Develop Android applications using explicit and implicit intents and option menus.





B.Sc. (Information Technology)
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Course Code	US08HMIBIT04	Title of the Course	Data Analytics Using R Language
Total Credits of the Course	2	Hours per Week	2

Course Objectives:	1. To introduce the basic concepts of Data Analytics and its importance in decision making. 2. To familiarize students with the R programming environment and RStudio. 3. To develop understanding of data structures and data handling techniques in R. 4. To enable students to perform basic statistical analysis and data manipulation using R. 5. To provide practical knowledge of data visualization and simple analytical techniques.
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Course Content		
Unit	Description	Weightage (%)
1	Introduction to Data Analytics and R Programming (Basic Fundamentals) • Introduction to Data Analytics • Need and Importance of Data Analytics • Types of Data Analytics: Descriptive, Predictive, Prescriptive • Overview, Features and Advantages of R Programming Language • Introduction to RStudio • Basic Syntax of R: Variables, Constants, Data Types, Operators	50
2.	Data Structures and Basic Data Handling in R • Introduction to Data Structures in R: vectors, lists, matrices, arrays and data frames • Importing Data from External Files (CSV, Excel) • Exporting Data from R • Basic Data Manipulation • Handling Missing Values • Basic Statistical Functions (Mean, Median, Standard Deviation, Summary)	50





SARDARPATELUNIVERSITY
Vallabh Vidyanagar, Gujarat
(Reaccredited with 'A' Grade by NAAC(CGPA3.11))
Syllabus with effect from the Academic Year 2026-2027

Teaching-Learning Methodology	Blended learning approach incorporating traditional classroom teaching and online /ICT-based teaching practices.
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written Examination Internal Continuous Assessment in the form of Quizzes, Seminars, Assignments, Attendance	50%
2.	University Examination	50%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Understand the fundamental concepts and applications of Data Analytics.
2.	Use R programming language and RStudio environment for basic data analysis tasks.
3.	Work with different data structures such as vectors, lists, matrices, arrays, and data frames.
4.	Import, manipulate, and analyze datasets using basic statistical functions in R.

Suggested References:	
Sr.No.	References
1.	Seema Acharya: Data Analytics Using R: 1st Edition, McGraw Hill Education Publication, 2018.
2.	Jeeva Jose: Beginner's Guide for Data Analysis Using R Programming: 1st Edition, Khanna Book Publishing Publication, 2018.
3	Bharti Motwani: Data Analytics with R: 1st Edition, Wiley India Publication, 2016.
4	V. K. Jain: Data Science and Analytics (with Python, R and SPSS Programming): 1st Edition, Khanna Publishing Publication, 2023.

On-line resources to be used if available as reference material	
On-line Resources	
1.	https://www.r-project.org/
2.	https://www.tutorialspoint.com/r/index.htm
3.	https://www.geeksforgeeks.org/r-programming-language-introduction/





B.Sc. (Information Technology)
(Semester-VIII) (Without Research)

Course Code	US08HMIBIT05	Title of the Course	Practical based on US08HMIBIT04
Total Credits Of the Course	2	Hours per Week	4

Course Objectives:	To introduce the fundamental concepts of Data Analytics and provide basic programming knowledge using R and RStudio for data handling, analysis, and simple statistical operations.
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Course Content		
Unit	Description	Weightage (%)
1.	Practical based on Data Analytics using R Language.	100

Teaching- Learning Methodology	Practical-based learning in small groups and Hands-on training through required ICT tools.
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Practical Examination Internal Continuous Assessment in the form of Practical, Viva-voce, Attendance	50%
2.	University Examination	50%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Use R and RStudio to write simple programs for data analysis.
2.	Work with different data structures such as vectors, lists, matrices, arrays, and data frames.
3.	Import, export, and manipulate datasets and perform basic statistical analysis using R functions.





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Course Code	US08HSEBIT06	Title of the Course	On Job Training
Total Credits of the Course	6	Hours per Week	12

Course Objectives:	To enhance employability through industry exposure.
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Course Content		
	Description	Weightage (%)
	practical experience in an industry by applying theoretical knowledge to real-world tasks and projects.	100

Teaching-Learning Methodology	Project-based learning and hands-on training through required ICT tools.
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Evaluation Pattern		
Sr.No.	Details of the Evaluation	Weightage (%)
1.	Internal Project Examination Internal Continuous Assessment in the form of Practical, Viva-voce, Attendance	50%
2.	University Examination	50%

Course Outcomes: Having completed this course, the learner will be able to develop	
1.	Technical proficiency (e.g., coding, networking), Problem-solving, Teamwork, Professional ethics etc.

