

NAME OF DEPARTMENT: Computer Applications

Subject Name: Android Programming

Subject Code: TBI 601

Course Name: Bachelor of Science (Information Technology)

1 Contact Hours: 45-48 **L** 3 **T** 0 **P** 0

2 Examination Duration(Hrs): **Theory** 0 3 **Practical** 0 0

3 Relative Weightage: **CWE:** 25 **MTE:** 25 **ETE:** 50

4 Credits: 0 3

5 Semester: ☐ ☒ ☐
Autumn Spring Both

6 Pre-Requisite: Knowledge of 'Java' language

7 Subject Area: Mobile Development

8 Objective: To familiarize students with the App designing and power of Android Programming.

9 Course Outcome:

CO 1 Experiment on Integrated Development Environment for Android Application Development.

CO 2 Make UI-rich apps using all the major UI components.

CO 3 Describe the life cycles of Activities, Fragments and Intent.

CO 4 Design and Implement User Interfaces and Layouts of Android App.

CO 5 Store and manipulate data internally and externally in the Files and also in SQLite Database.

CO 6 Experiment with Bluetooth and Location Based service.

10 Details of the Course:

Unit No.	CONTENT	CONTACT HOURS
1	Introduction to Android: Introduction of Android, OHA, Features of Android, History, versions, Android Architecture, Android core building blocks, Android Emulator, Configuring Android Development Environment: Downloading and installing JDK and Net beans, Downloading and installing Android Studio. Creating First Android App: Creating new Android Project, Creating AVD. Android project files: Android Manifest.xml, MainActivity.java, R.java, activity_main.xml etc.	10
2	Android Tools: DVM, AVD Manager, Android SDK Manager, Android Emulator, DDMS, resource folder. App Components: Activity, Service, Broadcast Receiver, and Content Provider. Fragment: Introduction, needs of fragment and Lifecycle of Fragment. Views: Button, Text View, Edit Text, Radio Button, Image View, Toast, Adapter, Spinner, List View, Grid View, ToggleButton, AutocompleteTextview. Intent: What is Intent, Why Intent? Types of Intent.	12

3	Layouts: Linear, Relative, Tabular, Frame, and Absolute. Events: Event Handling, and Listeners. Multimedia: Playing audio, video file and Camera. Sensors: How sensors work, category of sensors, sensor framework, and classes and interfaces used to access sensor.	8
4	Content Provider: How ContentProvider works, steps to create content provider, URI, CRUD. Files: Internal and External storage. Shared Preference. Storage: Introduction to SQLite Database, SQLiteOpenHelper class, and Cursor.	10
5	Bluetooth: Bluetooth Adapter class, Paired devices, Enable/Disable devices. Maps & Location: What is Google map, Types of Google map, Methods of Google map, Need of Callback methods, and Geocoder class?	8
	TOTAL	48

11 Suggested Books:

Sl. NO.	NAME OF AUTHERS/BOOKS/PUBLISHERS	YEAR OF PUBLICATION
1.	Programming Android: Expert Android application Development and professional Android by Reto Meier.	2014
2.	Android Black Book, programming android by Zigurd Mednieks, Laird Dormin, G. Blake Meike & Masumi Nakamura.	2015
3.	Android Application Development, Black Book by Pradeep Kothari	2014
4.	Hello, Android: Introducing Google's Mobile Development Platform by Ed Burnette.	2013
5.	Beginning Android Games by Mario Zechner, Robert Green.	2014

NAME OF DEPARTMENT: Computer Applications

Subject Name: Computer Graphics

Subject Code: TBI 602

Course Name: BSc IT

1 Contact Hours: 48 **L** 3 **T** 0 **P** 0

2 Examination Duration (Hrs): **Theory** 0 3 **Practical** 0 2

3 Relative Weightage: **CWE:** 25 **MTE:** 25 **ETE:** 50

4 Credits: 0 3

5 Semester: ☐ ☒ ☐
Autumn Spring Both

6 Pre-Requisite: Knowledge of Computers

7 Subject Area: Computer Application

8 Objective: To familiarize students with Computer Graphics

9 Course Outcome:

- CO1** Understand core concepts of computer graphics.
- CO2** Understand and implement algorithms to draw graphic objects.
- CO3** Understand and implement 2 D transformation
- CO4** Understand and implement 3 D transformation
- CO5** Implement Clipping and filling of graphics objects.
- CO6** To describe the importance of viewing and projections.

10 Details of the Course:

Unit No.	CONTENT	CONTACT HOURS
1	Introduction to Computer Graphics: Definition, Applications, Graphics Hardware, Display Devices: Refresh Cathode Ray Tube, Raster Scan Display, Plasma display, Liquid Crystal display, Plotters, Printers.	8
2	Mathematics for Computer Graphics: Point representation, Vector representation, Matrices and operations related to matrices, Vector addition and vector multiplication, Scalar product of two vectors, Vector product of two vectors. Parametric equations of lines and conics.	10
3	Line Drawing Algorithms: DDA algorithms, Bresenham's Line algorithm. Circle and ellipse generation algorithm. Clipping: Point Clipping, Line Clipping. Polygon Clipping. Filling: Inside Tests, Flood fill algorithm, Boundary-Fill Algorithm and scan-line polygon fill algorithm.	10
4	2D Transformation: 2D transformation, Basic Transformations, Composite transformations: Reflection, Shearing, Transformations between coordinate systems. 3D Transformation: 3D transformations, Parallel projection, Perspective	12

	projection, Visible lines and surfaces identification, Hidden surface removal algorithms.	
5	Animation: Introduction to Animation, Principles of Animation, Types of Animation, Types of Animation Systems: Scripting, Procedural, Representational, Stochastic, etc. GKS Standards, GKS Primitives – Polyline, Polymarker, and Fill area, Text, GKS Workstation and Metafiles.	8
	TOTAL	48

11 Suggested Books:

Sl. NO.	NAME OF AUTHERS/BOOKS/PUBLISHERS	YEAR OF PUBLICATION/REPRINT
1	Donald Hearn and M. Pauline Baker, "Computer Graphics", PHI	2008
2	V.K.Pachghare , "Computer Graphics", Second Edition, Laxmi Publications	2011
3	P. K. Singh, Rajendra Kumar, "Computer Graphics (GBTU)", First Edition, Vikas Publishing House Pvt. Ltd.	2010
5	Newman and Sproul, "Principle of to Interactive Computer Graphics", McGraw Hill	2005

NAME OF DEPARTMENT: Computer Applications

Subject Name: Optimization Techniques

Subject Code: TBI 603

Course Name: BSc IT

1 Contact Hours: 48 **L** 3 **T** 1 **P** 0

2 Examination Duration(Hrs): **Theory** 0 3 **Practical** 0 0

3 Relative Weightage: **CWE:** 25 **MTE:** 25 **ETE:** 50

4 Credits: 0 4

5 Semester: ☐ ☒ ☐
Autumn Spring Both

6 Pre-Requisite: Basic Knowledge of mathematics and Algorithms.

7 Subject Area: Computer Application

8 Objective: To familiarize students with Optimization Techniques

9 Learning Outcome: A student who successfully fulfills the course requirements will be able to:

Co1.Ability to formulate a wide range of management problems that can be solved to optimality by classical combinatorial optimization techniques.

Co 2. The knowledge of alternative solution approaches such as metaheuristics that can find nearly optimal solutions.

Co 3. The student should be able to describe and predict the behavior.

Co 4. The student will be able to apply efficient decision-making process.

Co 5. Efficient techniques for representation of time control methods.

10 Details of the Course:

Unit No.	CONTENT	CONTACT HOURS
1	Meaning, Significance and scope of Operation Research, Management Applications of Operations research, Features of Operation Research,	10

	Quantitative technique of OR, Role of Computers in Operation Research.	
2	Formulation of LP problems, Graphical Solution of LP problems, Simplex Method, Two phase method, Big M method, Transportation and Assignment problems, Travelling-Salesman problem.	10
3	Theory Of Games: Types of games, Pure Strategy and mixed strategy. Queuing Theory: Characteristics of queuing system, Classification of Queuing Model Single Channel Queuing Theory, Generalization of steady state M/M/1 queuing models (Model-I, Model-II)	10
4	Replacement Theory: Replacement of item that deteriorates replacement of items that fail , Group replacement and individual replacement Inventory Theory: Cost involved in inventory problem, Single item deterministic model economics, Long size model without shortage and with shortage, Having production rate infinite and finite Sequencing: Processing n jobs through 2 machines, Processing a n jobs through 3 machines, Processing 2 jobs through n machines, Processing a n jobs through m machines.	10
5	PERT and CPM: Application of PERT/CPM Techniques, Basic steps in PERT/CPM techniques, Network diagram representation, Time Estimates in critical path analysis, Critical Path Method, Programme Evaluation and Review Technique, Project time cost trade off, Updating of project, resource allocation, project monitoring.	8
	TOTAL	48

11 Suggested Books:

Sl. NO.	NAME OF AUTHERS/BOOKS/PUBLISHERS	YEAR OF PUBLICAT ION/REPRI NT
1	Hiller, F.s. & Liberman, G.J.: “Introduction to Operations Research”, 2 nd Edn. Holden Day Inc. London	2008
2	Taha, H.A. :”Operations Research”, 3 rd Edn., Mc Millan publishing Company.	2000
3	Beightler, C.S. & Philips, “D.T.: Foundations of Optimization “,2 nd Edn.,PHI.	2005
4	Mc Millan Claude Jr.: “Mathematical programming”, 2 nd Edn, Wiley Series.	2005
5	Srinath, L.S.: “Linear programming”, East – West, New Delhi.	2005

NAME OF DEPARTMENT: Computer Applications

Subject Name: Network Security and Cyber Law

Subject Code: TBI 604

Course Name: BSc IT

1 Contact Hours: 48 **L** 3 **T** 0 **P** 0

2 Examination Duration(Hrs): **Theory** 0 3 **Practical** 0 0

3 Relative Weightage: **CWE:** 25 **MTE:** 25 **ETE:** 50

4 Credits: 0 3

5 Semester: ☐ ☒ ☐
Autumn Spring Both

6 Pre-Requisite:

7 Subject Area: Computer Application

8 Objective: To familiarize students with Network Security

9 Learning Outcome: A student who successfully fulfills the course requirements will be able to:

- a) Identify some of the factors driving the need for network security.
- b) Identify and classify particular examples of attacks.
- c) Understand the concept of Classical and Advanced Encryption techniques.
- d) Understand the concept of Public Key Cryptography.
- e) Understand the concept of Cyber Laws and provisions.
- f) Understand the basics of IT Act 2000.

10 Details of the Course:

Unit No.	CONTENT	CONTACT HOURS
1	Introduction to Network security: Security: Attacks, Services & Mechanisms. Conventional Encryption: Conventional Encryption Model, and Steganography. Modern Techniques: Thoughts of Feistel Design, Block Ciphers and Stream Ciphers, Modern Block Ciphers, Simplified DES, Block Cipher Principles, DES Standard, DES Strength, Differential & Linear Cryptanalysis, Block Cipher Design Principles, Block Cipher Modes Of	10

	Operation.	
2	Public Key Encryption: Public-Key Cryptography: Principles Of Public-Key Cryptosystems, RSA Algorithm, Key Management, Random Number Generators.	8
3	Hash Functions: Message Authentication & Hash Functions: Authentication Requirements, Authentication Functions, Digital Signatures, Digital Signature Standard, Digital Signature Algorithm. Network Security: Authentication Applications- Kerberos, X.509, Electronic Mail Security, Secure Socket Layer & Transport Layer Security.	8
4	Cyber Laws: Introduction of the Cyber Law, Scope of Cyber Laws, Privacy And Freedom Issues In The Cyber World, Cyber-Crimes. Object and Scope of the IT Act: Genesis, Object, Scope of the Act, E-Governance and IT Act 2000 Legal recognition of electronic records, Legal recognition of digital signature, Use of electronic records and digital Signatures in Government and its agencies. IT Act in detail.	12
5	Information Gathering, Scanning: Traceroute, Ping sweeping, Port Scanning, ICMP scanning. DOS Attacks: Ping of Death, Teardrop, SYN flooding, Land Attacks, Smurf Attacks, UDP flooding, Hybrid DOS Attacks, Application Specific, Distributed Dos Attacks.	10
	TOTAL	48

11 Suggested Books:

Sl. NO.	NAME OF AUTHERS/BOOKS/PUBLISHERS	YEAR OF PUBLICAT ION
1	William Stallings, "Cryptography and Network Security: Principles and Practice", Prentice Hall, New Jersey.	2008
2	Johannes A. Buchmann, "Introduction to Cryptography" Springer-Verlag	2000
3	Atul Kahate, "Cryptography and Network Security" TMH	2005
4	Network Security Bible: Eric Cole, Wiley dreamtech India Pvt. Ltd.	2005
5	Practical Cryptography "Bruce Schneier" Wiley dreamtech India Pvt. Ltd.	2005