

SRI VENKATESWARA UNIVERSITY
BCA (Honours) ARTIFICIAL INTELLIGENCE– W.E.F. 2025-26

Year	Semester	Course	Title of the Course	No. of Hrs /Week	No. of Credits
III	V	12	Mobile application development using ANDROID	3	3
			Mobile application development using ANDROID Lab	2	1
		13	Machine Learning using R	3	3
			Machine Learning using R Lab	2	1
		14	Tableau for Data Visualization	3	3
			Tableau for Data Visualization Lab	2	1
		15	Software Engineering	3	3
			Software Engineering Lab	2	1

SRI VENKATESWARA UNIVERSITY::TIRUPATI

BCA Artificial Intelligence Honours

III Year V Semester

COURSE 12: MOBILE APPLICATION DEVELOPMENT USING ANDROID

(w.e.f. 2025-26)

Theory

Credits: 3

3 hrs/week

COURSE OBJECTIVES:

1. To facilitate students' understanding of the android SDK
2. To help students gain basic understanding of Android application development
3. To instill working knowledge of the Android Studio development tool

COURSE OUTCOMES:

The theory, practical experiences and relevant skills associated with this course are to be taught and implemented, so that the student demonstrates the following industry-oriented Cos associated with the above-mentioned competency:

1. Identify various concepts and features of Android operating system.
2. Configure Android environment and development tools.
3. Develop rich user Interfaces by using layouts and controls.
4. Use User Interface components for android application development.
5. Create Android application using database.
6. Publish Android applications.

UNIT-I

Introduction to Android:- Overview, History, Features of Android, The Android Platform, Understanding the Android Software Stack –Android Development Environment -Android SDK, Android Installation, Building you First Android application.

Case Study:

- i. Give a brief description of Android Architecture and its parts.
- ii. List out the challenges we face while using Android?
- iii. List the new features of Android in the latest version.

UNIT-II

Android Application Design Essentials: Understanding Anatomy of Android Application, Android terminologies, Creating User Interfaces with basic views- Application Context, Activities, Services, Intents, linking activities with Intents, Receiving and Broad casting Intents, Android Manifest File and its common settings, Using Intent Filter, Permissions.

Case Study:

- i. Present an idea that you would like to convert it into an application in the future.

UNIT-III

Android User Interface Design Essentials: User Interface Screen elements, Designing User Interfaces with Layouts, Drawing and Working with Animation. Layouts, RecyclerView, List View, Grid View and Web view

Input Controls: Buttons, Checkboxes, Radio Buttons, Toggle Buttons, Spinners, Input Events, Menus, Toast, Dialogs, Styles and Themes, Creating lists, and Custom lists

Case Study:

- i. Present detail report on the features of Check Boxes, Radio Buttons and Toggle Buttons.

UNIT-IV

Testing Android applications: Publishing Android application, Using Android preferences, Managing Application resources in a hierarchy, working with different types of resources.

Case Study:

1. List out the special features of Android with its counterparts.

UNIT-V

Using Common Android APIs: Internal Storage, External Storage, SQLite Databases, managing data using Sqlite, Sharing Data between Applications with Content Providers, Using Android Networking APIs, Using Android Web APIs.

Case Study:

- i. List out the points to keep in mind to make you application more attractive.
- ii. List the controls that make your application attractive.

REFERENCE BOOKS:

1. Lauren Darcey and Shane Conder, “Android Wireless Application Development”, Pearson Education, 2nd ed. (2011)
2. Google Developer Training, "Android Developer Fundamentals Course – Concept Reference”, Google Developer Training Team, 2017.
3. Reto Meier, “Professional Android 2 Application Development”, Wiley India Pvt Ltd
4. Mark L Murphy, “Beginning Android”, Wiley India Pvt Ltd
5. “Android Application Development All in one for Dummies” by Barry Burd, Edition: I
6. “Android”, Dixit, Prasanna Kumar Vikas Publications, New Delhi 2014, ISBN: 9789325977884
7. Maclean David, Komatineni Satya, Allen Grant, “Pro Android 5”, Apress Publications 2015 ISBN: 978-1-4302-4680-0
8. ”Android Programming for Beginners” by Horton, John, Packet Publication, 2015 ISBN: 978-1-78588-326-2

ONLINE READING/ SUPPORTING MATERIAL:

1. <http://www.developer.android.com>
2. <http://developer.android.com/about/versions/index.html>
3. <http://developer.android.com/training/basics/firstapp/index.html>
4. <http://docs.oracle.com/javase/tutorial/index.htm> (Available in the form of free downloadable ebooks also).
5. <http://developer.android.com/guide/components/activities.html>
6. <http://developer.android.com/guide/components/fundamentals.html>
7. <http://developer.android.com/guide/components/intents-filters.html>.
8. <http://developer.android.com/training/multiscreen/screensizes.html>
9. <http://developer.android.com/guide/topics/ui/controls.html>
10. <http://developer.android.com/guide/topics/ui/declaring-layout.html>
11. <http://developer.android.com/training/basics/data-storage/databases.html>

BCA Artificial Intelligence Honours

III Year V Semester

COURSE 12: MOBILE APPLICATION DEVELOPMENT USING ANDROID

Practical

Credits: 1

2hrs/week

LIST OF EXPERIMENTS:

1. Develop a program to implement frame layout, table layout and relative layout.
2. Develop a program to implement Text View and Edit Text.
3. Develop a program to implement Auto Complete Text View.
4. Develop a program to implement Button, Image Button and Toggle Button.
5. Develop a program to implement login window using above UI controls.
6. Develop a program to implement Checkbox.
7. Develop a program to implement Radio Button and Radio Group.
8. Develop a program to implement Progress Bar.
9. Develop a program to implement List View, Grid View, Image View and Scroll View.
10. Develop a program to implement Custom Toast Alert.
11. Develop a program to implement Date and Time Picker.
12. Develop a program to create an activity. Develop a program to implement new activity using explicit intent and implicit intent.
13. Develop a program to implement content provider.
14. Develop a program to implement service.
15. Develop a program to implement broadcast receiver.
16. Develop a program to implement sensors.
17. Develop a program to build Camera.
18. Develop a program for providing Bluetooth connectivity.
19. Perform CRUD operations using SQLite.

MODEL QUESTION PAPER
SRI VENKATESWARA UNIVERSITY::TIRUPATI
BCA Artificial Intelligence
III Year V Semester

COURSE 12: MOBILE APPLICATION DEVELOPMENT USING ANDROID
(w.e.f. 2025-26)

Time : 3 Hrs

Max Marks : 75

SECTION - A

Answer any Five of the following

5 X 3= 15 Marks

1. Short answer question from Unit-1
2. Short answer question from Unit-1
3. Short answer question from Unit-2
4. Short answer question from Unit-2
5. Short answer question from Unit-3
6. Short answer question from Unit-3
7. Short answer question from Unit-4
8. Short answer question from Unit-4
9. Short answer question from Unit-5
10. Short answer question from Unit-5

SECTION - B

Answer any Five of the following

5 X 12= 60 Marks

11. Long answer question from Unit-1
12. Long answer question from Unit-1
13. Long answer question from Unit-2
14. Long answer question from Unit-2
15. Long answer question from Unit-3
16. Long answer question from Unit-3
17. Long answer question from Unit-4
18. Long answer question from Unit-4
19. Long answer question from Unit-5
20. Long answer question from Unit-5

Note: The question paper setter is requested to set question paper based on a model question paper and ensure coverage across all units equally.

SRI VENKATESWARA UNIVERSITY::TIRUPATI
BCA Artificial Intelligence Honours
III Year V Semester
COURSE 13: Machine Learning using R
(w.e.f. 2025-26)

Theory

Credits: 3

3 hrs/week

I. Learning Outcomes: After completing this course, the student will be able to

1. Understand the basic concepts such as decision trees and neural networks.
2. Ability to formulate machine learning techniques to respective problems.
3. Apply machine learning algorithms to solve problems of moderate complexity.
4. Use and program in the programming language R

UNIT – I

INTRODUCTION: Overview of Machine learning, machine learning types, well posed learning algorithms and issues in machine learning. **CLASSICAL DATA ANALYSIS:** Mean, variance, Regression- linear. **CONCEPT LEARNING:** Introduction, a concept learning task and learning as search, version space and candidate elimination algorithm, inductive bias.

UNIT – II

DECISION TREE LEARNING: - introduction, Representation, basic decision tree learning algorithm, space search in decision tree learning algorithm ,cross validation and over fitting.

NEURAL NETWORK LEARNING: Introduction, Perceptrons - Representational power of Perceptrons, Back propagation algorithm.

UNIT – III

INTRODUCTION TO R: Basic features of R, Benefits of R, data types in R, Installing R, Getting started with the RStudio IDE, Running R, Packages in R, variable names and assignment, operators, Input/output functions.

UNIT-IV

Preview of Some Important R Data Structures: Vectors, Character Strings, Matrices, Lists, Data Frames, and Classes.

Control Structure: Conditional statements, Loops, dates and times, functions, String manipulations.

UNIT-V

Vectors: Scalars, Vectors, Arrays and Matrices: Adding and Deleting Vector Elements, Obtaining the Length of a Vector, Vector Indexing, Common vector operations, Generating vector sequences, Repeating vector constants, using `all()` and `any()`, Vectorized operations.

TEXTBOOKS:

1. Tom Michel, Machine Learning, McGraw Hill, 1997.
2. The Art of R Programming by Norman Matloff, No starch press, SAN FRANCISCO, 2011.

REFERENCE BOOKS:

1. Machine Learning Methods in the Environmental Sciences, Neural Networks, William W Hsieh, Cambridge University Press.
2. An Introduction to R for Beginners by SASHA HAFNER, on AUG-2019.

BCA Artificial Intelligence Honours
III Year V Semester
COURSE 13: Machine Learning using R

Practical

Credits: 1

2hrs/week

LIST OF EXPERIMENTS:

1. Write an R-Program to take input from the user.
2. Write an R-Program to compute a product of two integer values.
3. Write an R-Program to demonstrate working with operators (Arithmetic, Relational, Logical, Assignment operators).
4. Write an R Program to Check if a Number is Odd or Even
5. Write an R program to check whether the biggest of two values.
6. Write an R Program to check if the given Number is a Prime Number
7. Write an R Program to Find the Factorial of a Number
8. Write an R Program to Find the Fibonacci sequence Using Recursive Function.
9. Write an R Program to create a Vector and to access elements in a Vector.
10. Write an R Program to create a Matrix from a Vector using dim() function.

MODEL QUESTION PAPER
SRI VENKATESWARA UNIVERSITY::TIRUPATI
BCA Artificial Intelligence Honours
III Year V Semester
COURSE 13: Machine Learning using R
(w.e.f. 2025-26)

Time : 3 Hrs

Max Marks : 75

SECTION - A

Answer any Five of the following

5 X 3= 15 Marks

21. Short answer question from Unit-1
22. Short answer question from Unit-1
23. Short answer question from Unit-2
24. Short answer question from Unit-2
25. Short answer question from Unit-3
26. Short answer question from Unit-3
27. Short answer question from Unit-4
28. Short answer question from Unit-4
29. Short answer question from Unit-5
30. Short answer question from Unit-5

SECTION - B

Answer any Five of the following

5 X 12= 60 Marks

31. Long answer question from Unit-1
32. Long answer question from Unit-1
33. Long answer question from Unit-2
34. Long answer question from Unit-2
35. Long answer question from Unit-3
36. Long answer question from Unit-3
37. Long answer question from Unit-4
38. Long answer question from Unit-4
39. Long answer question from Unit-5
40. Long answer question from Unit-5

Note: The question paper setter is requested to set question paper based on a model question paper and ensure coverage across all units equally.

SRI VENKATESWARA UNIVERSITY::TIRUPATI

BCA Artificial Intelligence Honours

III Year V Semester

COURSE 14: Tableau for Data Visualization

(w.e.f. 2025-26)

Theory

Credits: 3

3 hrs/week

I. Learning Outcomes:

1. Ability to collect and arrange data in a specific manner using visualization tool
2. Ability to analyze data visually with the concepts like filter, sort etc.
3. Able to differentiate different comparison methodologies
4. Able to understand various types of charts in Tableau 4. Ability to generate reports with functions, joins, unions etc.

UNIT-I:

Data Visualization: Definition, importance of data visualization in data science, various visualization tools, History of Visualization, developing a visualization aesthetic – maximizing data link ratio, proper scaling and labeling, effective use of color and shading, the power of repetition.

UNIT-II:

Basics of Tableau: Introduction, Advantages of Tableau, Tableau products, file types in Tableau: Tableau Workbook, Tableau Packaged Workbook, Tableau data source, Tableau Packaged data source, Tableau Data Extract, Installing Tableau software, Tableau Creator, Tableau prep, Tableau Explorer, Tableau Server.

UNIT-III:

Tableau Desktop UI: The Tableau product line, Desktop Architecture, Tableau environment, Data source Page, Workspace, workbooks and sheets, Visual cues and Icons in Tableau, fields in data pane.

Connect to files: Connect to Excel or Text file, Connect to MS-Access, Connect to RData files Connect to Server: Connect to Oracle, Connect to SQL Server, Connect to MySQL.

UNIT-IV:

Tableau Charts: Understanding dimensions and measures, **Chart Types:** Area Chart, bar Chart, Bubble chart, Funnel Chart, Gantt chart, Waterfall chart, Geographic map, Sorting: Sorting on Axis, Sorting on specific fields, Filtering Data.

UNIT-V:

Tableau Reports: Joins: Inner, Left and Right joins, Unions,

Functions used in Tableau: Number functions, logic functions, string functions, aggregate functions.

III. TEXT BOOKS:

- Pro Tableau – A Step-by-Step guide – Seema Acharya, Subhashini Chellappan – Apress
- Learning Tableau 2019 Tools for Business Intelligence, data prep, and visual analytics Joshua N. Milligan - Packt
- Tableau for Dummies – Molly Monsey and Paul Sochan - John Wiley & Sons, Inc.,

IV. Recommended Co-Curricular Activities:

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging).
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data(Individuals or groups as teams))
4. Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity))

BCA Artificial Intelligence Honours
III Year V Semester
COURSE 14: Tableau for Data Visualization

Practical

Credits: 1

2hrs/week

LIST OF EXPERIMENTS:

1. Demonstration of installation of Tableau desktop software
2. Demonstration of start page of Tableau environment.
3. Bringing data from a text file by connecting from Tableau
4. Bringing data from a Excel file by connecting from Tableau
5. Bringing data from a Oracle Database by connecting from Tableau
6. Bringing data from a R-Data file by connecting from Tableau
7. Applying filters on data
8. Joining the data from different data sources
9. Performing union operations on the data source
10. Creating and changing the measures and dimensions of various charts

MODEL QUESTION PAPER
SRI VENKATESWARA UNIVERSITY::TIRUPATI
BCA Artificial Intelligence Honours
III Year V Semester
COURSE 14: Tableau for Data Visualization
(w.e.f. 2025-26)

Time : 3 Hrs

Max Marks : 75

SECTION - A

Answer any Five of the following

5 X 3= 15 Marks

1. Short answer question from Unit-1
2. Short answer question from Unit-1
3. Short answer question from Unit-2
4. Short answer question from Unit-2
5. Short answer question from Unit-3
6. Short answer question from Unit-3
7. Short answer question from Unit-4
8. Short answer question from Unit-4
9. Short answer question from Unit-5
10. Short answer question from Unit-5

SECTION - B

Answer any Five of the following

5 X 12= 60 Marks

11. Long answer question from Unit-1
12. Long answer question from Unit-1
13. Long answer question from Unit-2
14. Long answer question from Unit-2
15. Long answer question from Unit-3
16. Long answer question from Unit-3
17. Long answer question from Unit-4
18. Long answer question from Unit-4
19. Long answer question from Unit-5
20. Long answer question from Unit-5

Note: The question paper setter is requested to set question paper based on a model question paper and ensure coverage across all units equally.

SRI VENKATESWARA UNIVERSITY::TIRUPATI
BCA Artificial Intelligence Honours
III Year V Semester
COURSE 15: Software Engineering
(w.e.f. 2025-26)

Theory

Credits: 3

3 hrs/week

I. Learning Outcomes

- Ability to gather and specify requirements of the software projects.
- Ability to analyze software requirements with existing tools
- Able to differentiate different testing methodologies
- Able to understand and apply the basic project management practices in real life projects
- Ability to work in a team as well as independently on software projects

UNIT I

INTRODUCTION: The Evolving Role of Software – Software and its characteristics – Software Myths – Software Engineering – Components of Software Engineering – Software Engineering – A Layered Technology. Reactive Vs Proactive Risk Strategies – types of Software Risks – Risk Management process

UNIT II

SOFTWARE PROCESS MODELS: Prescriptive Models – The waterfall Model – Incremental Process Models: The Incremental Model, The RAD Model, Evolutionary Process Model: Prototyping Model, The spiral Model

UNIT III

REQUIREMENTS ENGINEERING: Requirements Engineering Tasks, Initiating the Requirement Engineering Process.

BUILDING THE ANALYSIS MODEL: Requirements Analysis, Analysis Modeling Approaches, Data Modeling Concepts, Flow – oriented Modeling: Creating a Data Flow Model.

UNIT IV

SOFTWARE DESIGN: Design Process & Design Quality – Design concepts – Architectural styles & Patterns. Quality Management: Quality Concepts – Software Quality Assurance

UNIT V

SOFTWARE QUALITY AND TESTING : Functional Testing – System Testing – User satisfaction Testing – Test Cases – Test plans.

SOFTWARE PROJECT MANAGEMENT (SPM): Introduction – SPM basics – Project Management –Project Integration Management – Project Life Cycle.

III. References

Text Books:

Roger Pressman S., “Software Engineering: A Practitioner's Approach”, McGraw Hill, 2010.

Reference Books:

1. Software Engineering Principles and Practice by Deepak Jain Oxford University Press
2. Sommerville, “Software Engineering”, Eighth Edition, Pearson Education, 2007
3. Pfleeger, “Software Engineering: Theory & Practice”, 3rd Edition, Pearson Education, 2009
4. Carlo Ghazi, Mehdi Jazayari, Dino Mandrioli, “Fundamentals of Software Engineering”, Pearson Education, 2003

BCA Artificial Intelligence Honours

III Year V Semester

COURSE 15: Software Engineering

Practical

Credits: 1

2hrs/week

LIST OF EXPERIMENTS:

1. Studying various phases of RAD Model.
2. Studying various phases of Water-Fall Model.
3. Prepare SRS for Banking or On line book store domain problem
4. Calculate effort using FP oriented estimation model
5. Analyze the Risk related to the project and prepare RMMM plan.
6. Develop Time-line chart and project table using PERT project scheduling methods.
7. Develop Time-line chart and project table using CPM project scheduling methods.
8. Draw E-R diagram, DFD, CFD and STD for the project.
9. Design of the test cases
10. Prepare FTR. Version control and change control for software configuration item

MODEL QUESTION PAPER
SRI VENKATESWARA UNIVERSITY::TIRUPATI
BCA Artificial Intelligence Honours
III Year V Semester
COURSE 15: Software Engineering
(w.e.f. 2025-26)

Time : 3 Hrs

Max Marks : 75

SECTION - A

Answer any Five of the following

5 X 3= 15 Marks

1. Short answer question from Unit-1
2. Short answer question from Unit-1
3. Short answer question from Unit-2
4. Short answer question from Unit-2
5. Short answer question from Unit-3
6. Short answer question from Unit-3
7. Short answer question from Unit-4
8. Short answer question from Unit-4
9. Short answer question from Unit-5
10. Short answer question from Unit-5

SECTION - B

Answer any Five of the following

5 X 12= 60 Marks

11. Long answer question from Unit-1
12. Long answer question from Unit-1
13. Long answer question from Unit-2
14. Long answer question from Unit-2
15. Long answer question from Unit-3
16. Long answer question from Unit-3
17. Long answer question from Unit-4
18. Long answer question from Unit-4
19. Long answer question from Unit-5
20. Long answer question from Unit-5

Note: The question paper setter is requested to set question paper based on a model question paper and ensure coverage across all units equally.