ADVANCED EXCEL & BASICS OF PYTHON
23MBSE507

(COURSE HANDBOOK)

MBA

COURSE HEAD: Asst. Prof. Ramya Bharadwaj B S

1. GENERAL INFORMATION

Welcome to Advanced Excel & Basics of Python!

We are excited to have you on this learning journey where you will explore powerful tools that are essential for data analysis, automation, and problem-solving in the business world. This course will equip you with the necessary skills in both Excel and Python, enabling you to tackle real-world challenges with ease and efficiency.

From basic data entry to advanced functions and financial modelling, you will learn how to use Excel for data manipulation, analysis, and creating visually engaging reports. You will start by learning how to effectively navigate and manipulate Excel spread sheets. This includes entering data, applying basic formatting, and using essential features like text wrapping, data sorting, and filtering. You learn how to organize your data into lists and format it for easy analysis, as well as manage cells (inserting, deleting, and merging) and make your workbooks more professional by setting print areas and page layouts. Exercises will guide you to practice these basic Excel functions and lay a strong foundation for data management and presentation.

We will introduce you to Python, one of the most versatile programming languages, which are widely used for automation, data analysis, and more. You will write simple Python programs and gradually progress to solving complex problems. You get better understanding Python syntax, variables, data types, and basic operators. We will cover the building blocks of programs and help you understand program structure. You will also be introduced to Python's interpreter, the basic environment where you will write and execute your programs. You can begin writing simple Python programs, focusing on syntax and basic programming concepts.

This course focuses on practical applications. By the end of the course, you will be capable of applying your skills to automate tasks, analyze data, and create professional reports or dashboards.

We are excited to guide you through this dynamic and practical course. With the knowledge of Excel and Python, you will gain the confidence and expertise to handle a wide variety of data-related tasks, automate processes, and improve decision-making. This is just the beginning of your journey into the world of data analysis and programming.

Let’s embark on this journey together!

1.1.Course Objectives

- **Basic Excel & Python Proficiency:** Impart the knowledge on basic to advanced Excel functions, data visualization techniques, and business applications**.**
- **Application in Business:** Familiarize with tools and techniques in Excel for business decision-making and programming for automation and data analysis.
- **Python Programming:** Familiarize with fundamental Python programming concepts and use Python to solve simple problems.

1.2.Course Outcomes

- CO1: Understand the basics of Excel & Python.
- CO2: Apply Excel Macros to solve simple problems.
- CO3: Apply Python programs to solve simple problems

1.3.Set Text and Suggested Sources

All the below mentioned books are available in the 1st Floor Library.

Key Text Books:

1. Allen B Downey, Think Python, 2nd edition, Shroff Publishers and Distributors Pvt. Ltd. 2021
2. Michael Alexander, Excel Macros for Dummies, 2nd Edition, Wiley India, 2015
3. Charles Severance, Python for Everybody-Exploring data in Python 3, First edition, Shroff Publishers and Distributors Pvt. Ltd, 2018

Reference Books:

1. Allen Downey, Jeffrey Elkner, Chris Meyers, Learning with Python 2nd edition, Dream Tech Press, 2016
2. E. Balaguruswamy, Programming in C, 7th edition, McGraw Hill Education, 2017
3. Jake Vander Plas, Python Data Science Handbook, 6th edition, Shroff Publishers and Distributors Pvt. Ltd, 2022

1.4. Self-Study Course

In this course, students can take up Excel From Beginner to Advance by Udemy Inc which will help them to enhance their knowledge along with the curriculum. This digital literacy program will provide students with valuable skills that complement the traditional learning methods employed in our course. By engaging with the course, students can enhance their understanding of Python and its benefits which is increasingly important in today's academic and professional environments. This preparatory work will support their success throughout the course and beyond.

Note: The above link directly leads to the courses to be undertaken by the students. Please register using the same links or stay logged in to be able to access the courses.

2. THE COURSE

2.1.Course Description

ADVANCED EXCEL AND BASICS OF PYTHON			
Semester	**I**	CIE Marks	**50**
Course Code	**23MBSE507**	SEE Marks	**50**
Teaching Hrs/Week (L:T:P)	**1:0:2**	Exam Hrs	**1.5**
Total Hrs	**37 (13+24)**	Credits	**02**

The Advanced Excel & Basics of Python course is designed to provide students with foundational knowledge of Excel Macros & Python Programming. The course will run for 13 weeks during Semester 1 and consists of 5 modules that cover essential topics of Excel & Python. Each week includes 1 lecture hour and 2 laboratory hours, delivered by Ms. Ramya Bharadwaj B S, focusing on theoretical concepts, practical applications, and course-related activities. Spanning a total of 37 hours, this 2-credit course is assessed through Continuous Internal Evaluation (CIE) for 50 marks and a Semester-End Examination (SEE) for 50 marks, with 1.5-hour exam duration. This structure ensures a balanced and engaging learning experience for students.

2.2.Initiating Contact with Staff and Other Students

We welcome your questions and encourage open communication about the course. Due to the large number of students, please use email and office hours thoughtfully. Before reaching out with administrative inquiries, check previous communications and the materials in this handbook and on our website. We also encourage you to collaborate with your peers, as this will deepen your understanding and strengthen our academic community.

2.3.Resources

Along traditional books, resources to students include a variety of dynamic tools such as digital libraries, e-learning platforms, and research databases. These modern learning environments provide 24/7 access to academic materials, interactive courses, and the latest research, empowering students to delve into knowledge and excel in their fields. Students can find a wealth of resources on the college website, such as the VTU Consortium, various e-learning platforms, and open-access repositories. Additionally, government portals like NPTEL and NDLI offer access to e-books, research papers, video lectures, and interactive tutorials, creating flexible and comprehensive learning opportunities.

E-learning and digital library can be accessed via the college website https://mite.ac.in/ (Campus Life section > Library > VTU Consortium/e-learning platforms/additional sources).

2.4.Staff

Course Faculty: Prof. Ramya Bharadwaj B S
Cabin: 3rd floor, PG Block
Email: ramya@mite.ac.in

2.5. Topics and Reading materials for each module

Module 1 *No. of Hours: 2+4*

- **Topic: Introduction to spread sheets**
  - Includes understanding the Data entry, formatting (text wrapping, merging cells), lists, and managing objects (insert, delete).Page layout features (freeze panes, page breaks, orientation, print areas, etc.).Hyperlinks, images, and symbols.
- **Activities:**
  - **Lab Component:** Practical exercises related to the above
- **Essential Readings:**
  - Michael Alexander, Excel Macros for Dummies, 2nd Edition, Wiley India, 2015, Chapter 1.

Module 2 *No. of Hours: 3+4*

- **Topic: Advanced Excel Functions**
  - Statistical functions (SUM, AVERAGE, COUNTIF, MEDIAN, MODE, etc.).
  - Date and time functions, logical functions (IF, AND, OR), and textual functions (TRIM, UPPER, LOWER).
  - Advanced data manipulation (LOOKUP, INDEX, MATCH, SUMIFS, and COUNTIFS).
  - Financial functions (e.g., time value of money, NPV, IRR, PMT, etc.).
  - Scenario analysis, data visualization (charts: bar, pie, line, etc.).
- **Activities:**
  - **Lab Component:** Practical exercises on advanced Excel functions and data visualization
- **Essential Reading:**
  - Michael Alexander, Excel Macros for Dummies, 2nd Edition, Wiley India, 2015, Chapter 1 and 2.

Module 3 *No. of Hours: 2+4*

- **Topic: Introduction to Python Program**
  - Python programming basics (reserved words, writing simple programs).
  - Introduction to variables, expressions, statements, operators, and comments.
  - Program structure and debugging basics.
- **Activities:**
  - **Lab Component:** Exercises related to variables, expressions, and basic programming concepts.
- **Essential Reading:**
  - Allen B Downey, Think Python, 2nd edition, Shroff Publishers and Distributors Pvt. Ltd. 202, Chapter 1and 2.
- **Additional Reading:**
  - Allen Downey, Jeffrey Elkner, Chris Meyers, Learning with Python 2nd edition, Dream Tech Press, 2016,Chapter 1.

Module 4 *No. of Hours: 3+6*

- **Topic: Python Programming Basics**
  - Control flow and loops (if-else, while, for loops, break, continue).
  - Boolean operators and conditional logic.
- **Activities:**
  - **Lab Component:** Practical exercises to reinforce control flow and loops in Python.
- **Essential Reading**:
  - Charles Severance, Python for Everybody-Exploring data in Python 3, First edition, Shroff Publishers and Distributors Pvt. Ltd, 2018, Chapter 5 and 6.
- **Additional Reading:**
  - Jake Vander Plas, Python Data Science Handbook, 6th edition, Shroff Publishers and Distributors Pvt. Ltd, 2022,Chapter1 and 2.

Module 5 *No. of Hours: 3+6*

- **Topic: Functions and Arrays**
  - Function basics: defining functions, parameters, local vs global scope, and recursion.
  - Python arrays: Access, string slicing, string functions, and string immutability.
- **Activities:**
  - **Lab Component:** Exercises on creating functions and working with arrays.

- **Essential Reading:**
    - Charles Severance, Python for Everybody-Exploring data in Python 3, First edition, Shroff Publishers and Distributors Pvt. Ltd, 2018, Chapter 4, 8, 9 and 10

- **Additional Reading:**
    - Jake Vander Plas, Python Data Science Handbook, 6th edition, Shroff Publishers and Distributors Pvt. Ltd, 2022,Chapter 2.

3. ASSESSMENT

The assessment for the Advanced Excel and Basics of Python course is divided into two components: Continuous Internal Evaluation (CIE) and Semester End Examination (SEE), each accounting for 50% of the total marks.

Continuous Internal Evaluation (CIE) comprises two internal tests (lab only), scheduled for 8^{th} and 14^{th} week, which together contribute 20% of the total marks. Additionally, students can earn 30% through the Conduction of lab experiments, maintaining the record book & attending viva time to time during lab sessions (CRV-Conduction, Record & Viva)

Semester End Examination (SEE) constitutes the remaining 50% of the total marks & this will be a completely lab examination. . Key information regarding examination dates and related details can be accessed via the college website (Academics and Courses section > Calendar of Events > PG Odd Sem).

Rubrics for CIE (50 marks):

Criteria	**Conduction of 10 Experiments (5 Excel + 5 Python)**	**Lab Test, Conduction and Viva**	**Record Book**
Marks	**10**	**20**	**20**