20BSM210T					Programming with Python and Matlab					
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs. / Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	0	0	3	3	25	50	25			100

COURSE OBJECTIVES

- Understanding the MATLAB environment.
- Performing simple calculations using Matlab.
- Implementation of object oriented programming concepts in PYTHON.
- Ability to carry out simple numerical computations and analysis using MATLAB and PYTHON

UNIT 1 INTRODUCTION TO MATLAB **9 Hrs.**

MATLAB Environment: Defining Variables, Functions, Display Formats, Saving the variables stored in Memory, Complex Numbers, Matrices and Vectors, Strings, Input and Output Statements: MATLAB Programmed output, MATLAB programmed input, Plotting in MATLAB, Introducing MATLAB build-in functions.

UNIT 2 MATLAB CONTROL FLOW **10 Hrs.**

IF-END, IF-ELSE-END, ELSE-IF, SWITCH-CASE, FOR Loops: Single FOR loops, Nested FOR-Loops, Special Case of the FOR Loop, WHILE Loops, Functions: General Structure of a function, Scope of Variables, Passing Parameters, Global Variables, The RETURN Statement, Recursive functions.

UNIT 3 INTRODUCTION TO PYTHON **10 Hrs.**

The basic elements of Python, Branching programs, Strings and Input, Iteration Functions and Scoping, Specifications, Recursion, Global variables, Modules,Testing, Debugging

UNIT 4 STRUCTURED TYPES, MUTABILITY **11 Hrs.**

Tuples, Lists and Mutability, Functions as Objects, Strings, Tuples and Lists, Dictionaries,Handling exceptions, Exceptions as a control flow mechanism, Assertions, Abstract Data Types and Classes, Inheritance, encapsulation.

40 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

CO1 – Explain the scripts and functions using MATLAB.

CO2 – Demonstrate the capacity of problem solving and programming capability.

CO3 – Apply data structures available in Python libraries.

CO4 – Analyze simple algorithms to solve problems.

CO5 – Evaluate scientific/ mathematical problems by writing simple programs in MATLAB.

CO6 – Design and program Python applications.

TEXT/REFERENCE BOOKS

1. Rudra Pratap**:** Getting Started with MATLAB: A Quick Introduction for Scientists & Engineers, Oxford, 2010.
2. Marc E. Herniter: Programming in MATLAB, 1st Ed., Cengage Learning, 2000.
3. John V Guttag, Introduction to Computation and Programming Using Python, Prentice Hall of India.
4. Allen Downey, Jeffrey Elkner and Chris Meyers, How to think like a Computer Scientist, Learning with Python, Green Tea Press.
5. Swaroop C H., A Byte of Python,, http://www.swaroopch.com/notes/python.

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

Max. Marks : 100 **Exam duration: 3 Hrs.**

Part A: 6 questions of 4 marks each 24 Marks

Part B: 6 questions of 8 marks each 48 Marks

Part C: 2 questions of 14 marks each 28 Marks