

University of Sri Jayewardenepura
Department of Mathematics
B.Sc. Honours Degree in Mathematics
Semester 2 - 2020
MAT 454 2.0 Computational Mathematics

Lecturer-in-Charge	Duration	Lect. Room	Email	Time
Dr. Jayantha Lanel	30 Hours	Math Sp Lab	ghjlanel@sjp.ac.lk	Wed: 10.15am-12noon

Course Description and Objectives

The aim of this module is to introduce students to the mathematical software packages Maple and Matlab, and to provide students with a competency to apply those software as a tool for problem solving.

Intended Learning Outcomes(ILOs)

On successful completion of this module, the student should be able to

1. visualize and present data attractively,
2. create procedures, scripts and functions,
3. understand and apply basic programming techniques to numerical and symbolic mathematics problems.

Syllabus

1. Introduction
 - 1.1. Mathematical Software
 - 1.2. Maple
 - 1.3. MATLAB
2. Programming in Mathematical Software
3. Maple Procedures

- 3.1. Defining and Executing a Procedure
- 3.2. Procedure Components (Formal Parameters, Variables, Procedure Options/Description/Body Statements)
- 3.3. Procedure Interpretation
- 3.4. Procedure Return Values (Explicit Returns, Error Returns, Returning Values through Parameters)
- 3.5. Formatting Code for Readability, Adding Comments, Including a Procedure Description
- 3.6. Saving and Retrieving Procedures
- 4. MATLAB Functions
 - 4.1. Basics of Structured Programming
 - 4.2. Basic Input and Output
 - 4.3. Flow of Control in a Program
 - 4.4. Writing MATLAB Functions

References

- 1. *MATLAB Programming* by David C. Kuncicky
- 2. *MATLAB Programming for Engineers* by Stephen J. Champan
- 3. *Maple Programming Guide* by L. Bernardian, P. Chin, etc.

Assessment Criterion

Continuous Assessment (Assignments, Projects, and Attendance) (AS1)	40%
Final Examination (AS2)	60%

Personal Web: <http://scholar.sjp.ac.lk/lanel>

Course Blueprint (ILO-PLO-AS Map)

PLOs	ILO1	ILO2	ILO3
1	✓ AS1,AS2	✓ AS1,AS2	✓ AS1,AS2
2	✓ AS1,AS2	✓ AS1,AS2	✓ AS1,AS2
2	✓ AS1,AS2	✓ AS1,AS2	✓ AS1,AS2
3	✓ AS1,AS2	✓ AS1,AS2	✓ AS1,AS2
4	✓ AS1,AS2	✓ AS1,AS2	✓ AS1,AS2
5	✓ AS1,AS2	✓ AS1,AS2	✓ AS1,AS2
6	✓ AS1,AS2	✓ AS1,AS2	✓ AS1,AS2
7	✓ AS1,AS2	✓ AS1,AS2	✓ AS1,AS2

Teaching Learning Activities (TLA)

1. Teacher-Student interaction/ lectures (TLA1)
2. Student-Centered learning (TLA2)
3. Problem Solving/Practice on critical thinking (TLA3)
4. Discussions (TLA4)

ILO-TLA-AS Map

ILOs	TLA1	TLA2	TLA3	TLA4
1	✓ AS1,AS2	✓ AS1,AS2	✓ AS1,AS2	✓ AS1,AS2
2	✓ AS1,AS2	✓ AS1,AS2	✓ AS1,AS2	✓ AS1,AS2
2	✓ AS1,AS2	✓ AS1,AS2	✓ AS1,AS2	✓ AS1,AS2
3	✓ AS1,AS2	✓ AS1,AS2	✓ AS1,AS2	✓ AS1,AS2
4	✓ AS1,AS2	✓ AS1,AS2	✓ AS1,AS2	✓ AS1,AS2
5	✓ AS1,AS2	✓ AS1,AS2	✓ AS1,AS2	✓ AS1,AS2
6	✓ AS1,AS2	✓ AS1,AS2	✓ AS1,AS2	✓ AS1,AS2
7	✓ AS1,AS2	✓ AS1,AS2	✓ AS1,AS2	✓ AS1,AS2

