Department of Mathematics

Advanced Diploma Courses (PG)

Preamble:

Mathematical computation has today become integral part of Mathematical research and development. The students in these days are thinking beyond exam and aiming for industry career as well as research opportunities. The syllabus motivates students in gradual way. The focus of the course is both on theoretical developments of ideas as well as algorithms.

Program Objectives of the Course:

1) To create understanding of the Scilab.
2) To understand the fundamentals of Scilab and Utilization.
3) To understand graphical representation of mathematical functions.

Program Outcomes:

1. Student knows history of Scilab and how to install Scilab software.
2. Student learns to write equations, matrix and tables.
3. Student learns to quote the references, equation references, citations.
4. Student lists the figures, tables and generating index.

I Year Advanced Diploma Course

1. Title: LateX Software
2. Year of Implementation: 2020
3. Duration: One Year
4. Pattern: Semester
5. Medium of Instruction: English
6. Contact hours: 7 hours/week
8. Structure of Course:

Syllabus Structure (PG)

Year	Semester	Paper No.	Paper Code	Contact Hours	Credits (1Credit=15 H)	Marks			
						Semester Exam	Internal	Attendance	Total
1	I	PT I	ADMT 101	30	2	50	20	5	75
	II	PT II	ADMT 202	30	2	50	20	5	75
	I	PL I	ADML101	60	2	120	20	10	150
	II	PL II	ADML202	60	2	120	20	10	150
		PP I	ADMP101	60	2	150	-		150
		Total		**240**	**10**	**490**	**80**	**30**	**600**
2	III	PT III	ADMT 303	30	2	50	20	5	75
	IV	PT IV	ADMT 404	30	2	50	20	5	75
	III	PL III	ADML303	60	2	120	20	10	150
	IV	PL IV	ADML404	60	2	120	20	10	150
		PP II	ADMP202	60	2	150	-		150
		Industrial/Incubation Training		30	2	-	-		-
		Total		**270**	**12**	**490**	**80**	**30**	**600**
		Total		**510**	**22**	**980**	**160**	**60**	**1200**

Total No. of Papers: Theory: 6, Practical: 3, Project:3
Number of Lectures per week: 08
Theory: Semester, Practical and Project: Annual
PT: Paper Theory, PL: Paper Lab, PP: Paper Project, AD: Advance Diploma, * : Name of Subject,

Semester I

ADMT 101**:**

(Contact Hrs: 30 Credits: 2)
Learning Objectives:

Students will be able to

1. to give working knowledge of Latex typesetting language.
2. student Should use Latex file to define document class and layout options.

Unit I: (15)

1.1 Installation of the software Latex

1.2 Understanding Latex compilation

1.3 Basic Syntax in Latex

1.4 Equation writing in Latex

Unit II: (15)

2.1 Matrix writing in Latex

2.2 Tables representation using Latex.

2.3 Page Layout – Titles, Abstract Chapters

2.4 Sections using Latex

Learning Outcomes:

After completion of the course, Student is able to

1. remember history of Latex and how to install Latex software.
2. explain basic syntax in Latex and understands latex compilation.
3. use Latex codes to write Matrices.
4. create tables and sections in the document

Reference Books:

1. Diller, Latex Line by Line, published by Wiley.
2. Introduction to Latex by Tobias Oetiker.
3. Patrick Daly. Natural Sciences Citations and References, 2006
4. Michael Doenes. Short Math Guide for Latex.

ADML101: **(Practical):**
(Contact Hrs: 60 Credits: 02)

Learning Objectives:

Students will be able to

1. explain and use Tex and Latex.

2. describe the development process of Latex.

3. write documents containing mathematical formulas.

4. prepare presentation using Latex.

List of Practical's (15)

1. Introduction to Latex

2. Installation of Latex

3. Latex Console

4. Basic Latex commands

5. Latex Compilation

6. Page Layout

7. Building a Latex document

8. Previewing first.tex

9. Addition of some text in the.tex file

10. Finding the error and fixing it

11. Type setting of mathematics

12. Writing equations, matrix

13. Include images using graphic package(plots)

14. A caption for the plot

15. A centered graph with a caption

Learning Outcomes:

After completion of the unit, Student is able to

1. remember basic commands in Latex.

2. discuss page layout and latex document building.

3. use typesetting in Latex for finding and fixing the errors.

4.develop latex codes for writing equations, matrices and including images.

Reference Books:

1. Diller, Latex Line by Line, published by Wiley.
2. Introduction to Latex by Tobias Oetiker.
3. Patrick Daly. Natural Sciences Citations and References, 2006
4. Michael Doenes. Short Math Guide for Latex.

Semester II

AD MT 202**:**

(Contact Hrs: 30 Credits: 2)

Learning Objectives:

Students will be able to

1. use various methods to either create or import graphics into Latex document.
2. use tabular and array environments within Latex documents.

Unit I: (15)

1.1 References, Equation references in Latex
1.2 citations using Latex.

1.3 List making environments

1.4 Table of contents

1.5 Generating new commands.

Unit II: (15)

2.1 Figure handling, numbering.

2.2 List of figures, List of tables

2.3 Generating index

2.4 Beamer

Learning Outcomes:

After completion of the unit, Student is able to

1. quote the references, equation references and citations.
2. list the figures, tables and generating index.

Reference Books:

1. Diller, Latex Line by Line, published by Wiley.
2. Introduction to Latex by Tobias Oetiker.
3. Patrick Daly. Natural Sciences Citations and References, 2006
4. Michael Doenes. Short Math Guide for Latex.

DML202: **(Practical):**
(Contact Hrs: 60 Credits: 02)

Learning Objectives:

Students will be able to

1. explain and use Tex and Latex.

2. describe the development process of Latex.

3. write documents containing mathematical formulas.

4. prepare presentation using Latex.

List of Practical's (15)

1. Two figures next to each other

2. Formation of table

3. Typesetting of Textbook using Latex

4. Typesetting of Research Paper using Latex

5. Cross references

6. Citation

7. Bibliography

8. Typesetting with a new chapter heading

9. List of figures

10. List of tables

11. Generating index

12. Printing your document

13. Introduction to Beamer

14. Beamer Console

15. Interactive Presentations using Beamer

Learning Outcsomes:

After completion of the unit, Student is able to

1. include images using graphic package and give captions.

2. make interactive presentations using Beamer

Reference Books:

1. Diller, Latex Line by Line, published by Wiley.
2. Introduction to Latex by Tobias Oetiker.
3. Patrick Daly. Natural Sciences Citations and References, 2006
4. Michael Doenes. Short Math Guide for Latex.

ADMP101 (Project):
(Contact Hrs. 30/60, Credits: ½)

BOS Sub-Committee   Expert Committee
1. Dr. D. R. Hasabe   Chairman   1. Dr. V. V. Kharat
2. Mr. S.S. Nalavade   Member   2. Dr. S. B. Bhalekar