STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI
Course Schedule: June - November 2024

Department : Mathematics & Computer Science

Names of the Faculty : Dr. A. S. Shanthi, Dr. S. Sarah Surya & Ms. Rajalakshmi

Course Title : MATHEMATICS THROUGH SCIENTIFIC SOFTWARE

Course Code : 19ID/IC/MS55

Shift : I

Week & No. of hours	Units & Topics	Teaching Methodology	Text & References	Method of Evaluation
Jun 19 – 26, 2024 (Day Order 1 - 6) **(3+3)**	**Unit 1** - 1.1 Building Basic Formula **Unit 4: Statistical Software: R** Data Types in R – Numeric, Integer, Complex, Logical, Character	Lecture, Presentation, Demo	Curtis, D. Frye. Microsoft Excel 2013, Step by Step. 2013 https://www.tutorialspoint.com/excel/index.htm	Practical Exercises
Jun 27 – July 4, 2024 (Day Order 1 - 6) **(3+3)**	Working with Charts - Pivot Table **Unit 4: Statistical Software: R** Vectors, Matrices & Arrays, Lists, Data Frames, Factors, Strings	Lecture, Presentation, Demo	Sudhamathy, Jothi Venkateswaran. R Programming An Approach to Data Analytics. Chennai: MJP Publishers, 2018. https://www.tutorialspoint.com/excel/index.htm	Practical Exercises
July 5 – 12, 2024 (Day Order 1 - 6) **(3+3)**	1.2 - Importing Data – Data Cleaning **Unit 4: Statistical Software: R** Graphics using R – Pie	Lecture, Presentation, Demo	https://www.tutorialspoint.com/excel/index.htm https://cran.r-project.org/doc/contrib/Paradis-rdebuts_en.pdf	Practical Exercises

	Chart, Scatter Plot, Line Plot			
July 15 – 23, 2024 (Day Order 1 - 6) **(3+3)**	Data Validation – Creating named ranges and constants **Unit 4: Statistical Software: R** Graphics using R – Histograms, Box Plot, Bar Plot	Lecture, Presentation, Demo	Curtis, D. Frye. Microsoft Excel 2013, Step by Step. 2013 https://www.tutorialspoint.com/excel/index.htm	Practical Exercises
July 24 – 31, 2024 (Day Order 1 - 6) **(3+3)**	1.3 Form Controls **Unit 5: Statistical Analysis using R:** Mean, Median, Mode, Standard Deviation & Variation, Quartile Ranges	Lecture, Presentation, Demo	Norman Matloff. The art of R programming, A tour of Statistical Software Design. 2011 https://www.tutorialspoint.com/excel/index.htm	**THIRD COMPONENT-1 Practicals on Excel – 25 marks**
Aug 1 – 5, 2024 (Day Order 1 - 3) **(1+2)**	1.4 Working with macros and forms **Unit 5: Statistical Analysis using R:** Normal Distribution and Binomial Distribution	Lecture, Presentation, Demo	Roger D. Peng. R Programming for Data Science. 2015. Lean Publishing https://www.tutorialspoint.com/excel/index.htm	Practical Exercises
Aug 6 – 10, 2024	**C.A. Test – I** **(Unit 1: 1.1 – 1.4 & Unit 4)**			

Aug 12 – 14, 2024 (Day Order 4-6) **(2+2)**	1.5 Solver **Unit 5: Statistical Analysis using R:** Correlation Analysis and Regression Analysis	Lecture, Presentation, Demo	Jason van Gumster Robert Shimonski, GIMP Bible, Wiley Publishing, 2010. https://docs.gimp.org/2.10/en/	Practical Exercises
Aug 16 – 23, 2024 (Day Order 1-6) **(3+3)**	/Goal Seek **Unit 5: Statistical Analysis using R:** Analysis of Variance (ANOVA)	Lecture, Presentation, Demo	Sudhamathy, Jothi Venkateswaran. R Programming An Approach to Data Analytics. Chennai: MJP Publishers, 2018. https://docs.gimp.org/2.10/en/	Practical Exercises
Aug 27 – Sep 3, 2024 (Day Order 1-6) **(3+3)**	**Unit 2.1** - GIMP Basics **Unit 5: Statistical Analysis using R:** Chi Square Test and Hypothesis Testing	Lecture, Presentation, Demo	https://www.tutorial spoint.com/r/index.htm https://docs.gimp.org/2.10/en/	Practical Exercises
Sep 4 – 11, 2024 (Day Order 1-6) **(3+3)**	Working with Images **Unit 3: Mathematical Software: MATHCAD:** Creating Mathcad Worksheets: Working with Math, text regions	Lecture, Presentation, Demo	User's Guide Manual, USA: Parametric Technology Corporation, 2007. https://docs.gimp.org/2.10/en/	Practical Exercises
Sep 12 - 20, 2024 (Day Order 1- 6) **(3+3)**	Transformations: Global and Local **Unit 3: Mathematical Software: MATHCAD:** Computational Features: Calculations –	Lecture, Presentation, Demo	Olivier Lecarme, Karine Delvare, The Book of GIMP: A Complete Guide to Nearly Everything, No Starch Press, 2013. https://docs.gimp.org/2.10/en/	Practical Exercises

	Operators – Built-in functions – Vectors, Matrices and Data Arrays			
Sep 23 - 26, 2024 (Day Order 1-4) **(3+1)**	2.2 Drawing and Illustration **Unit 3: Mathematical Software: MATHCAD:** Symbolic Calculations	Lecture, Presentation, Demo	Larsen W Ronald, Introduction to Mathcad 13, New Jersey: Pearson Prentice Hall, 2007 https://docs.gimp.org/2.10/en/	Practical Exercises
Sep 27 – Oct 3, 2024	**C.A. Test – II** **(Unit 2: 2.1, 2.2 & Unit 5)**			
Oct 4 – 5, 2024 (Day 5 & 6) **(2)**	Logos and Textures **Unit 3: Mathematical Software: MATHCAD:** Graphing: 2D plots	Lecture, Presentation, Demo	Jason van Gumster Robert Shimonski, GIMP Bible, Wiley Publishing, 2010. https://docs.gimp.org/2.10/en/	**THIRD COMPONENT-2 Project on R-programming – 25 marks**
Oct 7 - 15, 2024 (Day Order 1 to 6) **(3+3)**	Using Animation Tools **Unit 3: Mathematical Software: MATHCAD:** Graphing: 3D plots	Lecture, Presentation, Demo	Larsen W Ronald, Introduction to Mathcad 13, New Jersey: Pearson Prentice Hall, 2007 https://docs.gimp.org/2.10/en/	Practical Exercises
Oct 16 - 22, 2024 (Day Order 1 to 6) **(3+3)**	Using GAP **Unit 3: Mathematical Software: MATHCAD:** Graphing: 3D plots (contd…)	Lecture, Presentation, Demo	Larsen W Ronald, Introduction to Mathcad 13, New Jersey: Pearson Prentice Hall, 2007 https://docs.gimp.org/2.10/en/	Practical Exercises
Oct 23 - 24, 2024 (Day Order 1 to 2)	**REVISION**			