NEHRU MEMORIAL COLLEGE (Autonomous)
(Nationally accredited with A grade by NAAC)
PUTHANAMPATTI

PG & RESEARCH DEPARTMENT OF MATHEMATICS

VALUE ADDED COURSE

UG - EXTRA CREDIT COURSE STRUCTURE & SYLLABI

(CBCS)

(For the candidates admitted from 2015-2016 onwards)

NEHRU MEMORIAL COLLEGE (Autonomous), PUTHANMPATTI
Under Graduate Programme Course Structure CBCS
(For the candidates admitted from 2015-2016 onwards)

COURSES	NO. OF COURSES	NO. INST. HRS.	MAX. CREDITS	REMARKS
EXTRA CREDIT	6	30 Hrs / Course	12	I - VI SEMESTER

SEM	CODE	TITLE OF COURSE	HRS / WEEK	CREDITS	TOTAL MARKS
I-VI	15EXCI	EXC I -LATEX LAB	2	2	100
	15EXCII	EXC II- MATHEMATICS FOR COMPETITATIVE EXAM	2	2	100
	15EXCIII	EXC III - MATHEMATICAL LOGIC	2	2	100
	15EXCIV	EXC IV - GIMP LAB	2	2	100
	15EXCV	EXC V - GROUP PROJECT	2	2	100
	15EXCVI	EXC VI - CASE STUDY ON OR	2	2	100

OBE ELEMENTS

Programme Educational Objectives (PEO)

PEO 1: To qualify the students to become successful professionals by demonstrating logical and analytical thinking abilities.
PEO 2: To provide knowledge in the breadth and depth of mathematics, including the connections between different areas of mathematics.
PEO 3: Gain experience investigating the real world problems and learn how to apply mathematical ideas and models to those problems.
PEO 4: Analyze the use of computer technology to solve problems and to promote understanding.

Program Outcome (PO)

PO 1: Become knowledgeable in the subject of Mathematics and apply the principles of the same to the needs of the Employer/Institution/Enterprise/Society.
PO 2: Gain analytical skills in the field of Mathematics
PO 3: Understand and appreciate professional ethics, community living and Nation Building initiatives.
PO 4: To develop important analytical and logical skills and problem solving strategies to assess a broad range of issues in real life.
PO 5: To expose a wide range of modern mathematical ideas from pure and applied mathematics to graduate with both technical and quantitative skills that are in demand in the modern world.
PO 6: To acquire mathematical knowledge and understanding in advanced areas of mathematics from the given courses that provides a solid foundation for future learning.

Programme Specific Outcome (PSO)

PSO 1: Apply the knowledge of Mathematics in the domain of Science, Engineering and Technology
PSO 2: Solve the complex problems in the field of mathematics with an understanding of the societal, legal and cultural impacts of the solution.
PSO 3 : Familiar with a variety of examples where mathematics helps accurately explain abstract or physical phenomena.
PSO 4 : Able to independently read mathematical literature of various types, including survey articles, scholarly books, and online sources.
PSO 5 : Life-long learners who are able to independently expand their mathematical expertise when needed, or for interest's sake.
PSO 6 : Recognize the importance and value of mathematical and statistical thinking, training and approach to problem solving, on a diverse variety of disciplines.

Course Code & Title	**15EXCI** **EXC I – LaTeX Lab** **(Value added Course)**		
B.Sc. Mathematics	**Semester : I**	**Credits : 2**	**Hrs/ Wk : 2**
Cognitive Level	**K – 1 –** Acquire **K – 2 –** Understanding **K – 3 –** Apply **K – 4 –** Evaluate **K – 5 –** Analyze		
Course Objectives	**The Course aims to** • know all needed about LaTeX • provide a practical knowledge to the students on LaTeX.		
Entrepreneurship (Value added Course)	**Global need**	**Experiential Learning**	

UNIT	Content	No. of Hours
-	**Programme List** 1. Simple type setting 2. The Document 3. Bibliography 4. Table of contents, Index, Glossary 5. Type setting mathematics 6. Type setting Theorems 7. Cross references	30
Reference	**Text Books:** **1.** Gratzer, George A., Math into LaTeX: an introduction to LaTeX and AMS-LaTeX, Birkhauser Boston, 1996. **2**. Andr´e Heck, Learning LaTeX by Doing, AMSTEL Institute, March 2005.	
Course Outcomes	On completion of the course, students should be able to CO 1: gain knowledge about basic types of LaTeX document. CO 2: understand the use of LaTeX and various templates acquired from the course to compose mathematical documents, presentation and reports. CO 3: apply profession presentation using LaTeX, by using beamer. CO4: analyze the use of tabular and array environment within LaTeX document.	

Course Code & Title	**15EXCII** **EXC II – Mathematics for Competitive Examinations** **(Value added Course)**		
B.Sc. Mathematics	**Semester : II**	**Credits : 2**	**Hrs/ Wk : 2**
Cognitive Level	**K – 1 –** Acquire **K – 2 –** Understanding **K – 3 –** Apply **K – 4 –** Evaluate **K – 5 –** Analyze		
Course Objectives	**The Course aims to** • make the students to crack competitive examinations		
Employability Units : I – V (Value added Course)	**Regional need**	**Problem solving**	

UNIT	Content	No. of Hours
I	Indices and Surds – Vedic Mathematics – Simplification and Approximation – Problems on Ages and Numbers.	6
II	Percentage – Profit, Loss – Average and Discount – Ratio and Proportion.	6
III	Allegation and Mixtures – Time, Work and Wages – Pipes and Cisterns – Area of Plane figure.	6
IV	Partnership and Share – Simple Interest, Compound Interest, Growth and Depreciation – Probability.	6
V	Time and Distance - Trains – Boats and streams – Race – Clocks – Calendar.	6
Reference	**Text Books:** AbhijitGuha, Quantitative Aptitude for Competitive Examinations, McGraw Hill Education (India) Pvt Ltd, New Delhi, 5th Edition, 2014. Unit I :Ch 6,7,8,9 Unit II :Ch 10,11,12,13 Unit III :Ch 15,16,17,26 Unit IV :Ch 14,18,19,33 Unit V :Ch 20,21,22,23,24,25 **Reference Books:** 1. N. K. Singh, Quantitative aptitude Test, UpkarPrakashan. 2. U. Mohan Rao, Quantitative Aptitude for Competitive Examinations, SCITECH Publications, 2012. 3. General Aptitude, G. K. Publications(P) Ltd., 2013.	
Course Outcomes	On completion of the course, students should be able to CO 1: know the basic concepts of Vedic Mathematics. CO 2: understand the concepts of ratio and proportion. CO 3: analyze the concepts of Time, work and wages. CO 4: apply the concepts of growth and depreciation.	

Course Code & Title	**15EXCIII** **EXC III – Mathematical Logic** **(Value added Course)**		
B.Sc. Mathematics	**Semester : III**	**Credits : 2**	**Hrs/ Wk : 2**
Cognitive Level	**K – 1 –** Acquire **K – 2 –** Understanding **K – 3 –** Apply **K – 4 –** Evaluate **K – 5 –** Analyze		
Course Objectives	**The Course aims to** • learn the basics of Mathematical logic.		
Employability **Units : I – V**	**Local need**	**Problem Solving, participative Learning**	

UNIT	Content	No. of Hours
I	**Informal Natural Deduction** Proofs and sequences – Arguments introducing 'and, if, if and only if, not & or'	6
II	**Propositional Logic** LP – Parsing trees – Propositional formulas – Propositional deduction.	6
III	**Propositional Logic Continued** Truth tables – Logical equivalence – substitution – Disjunctive and conjunctive normal forms – Wason's selection task.	6
IV	**Quantifier – free Logic** Terms – Relations and Functions – The language of first – order logic.	6
V	**Quantifier - Logic continued** Proof rules for equality – Interpreting signatures – closed terms and sentences.	6
Reference	**Text Books:** Ian Chiswell and Wilfrid Hodges, Mathematical Logic, Oxford University Press, 2008. Unit I :Ch 1,2 Unit II :Ch 3 (3.1 - 3.4) Unit III :Ch 3 (3.5 - 3.10), Ch 4 Unit IV :Ch 5 (5.1 – 5.3) Unit V :Ch 5 (5.4 – 5.7)	
Course Outcomes	On completion of the course, students should be able to CO 1: know the basic concepts of proofs and sequences. CO 2: understand the concepts of Propositional logic. CO 3: identify the apt usage of quantifiers. CO 4: apply the concepts of logic.	

Course Code & Title	15EXCIV EXC IV – GIMP Lab(Value added Course)		
B.Sc. Mathematics	Semester : III	Credits : 2	Hrs/ Wk : 2
Cognitive Level	**K – 1 –** Acquire **K – 2 –** Understanding **K – 3 –** Apply **K – 4 –** Evaluate **K – 5 –** Analyze		
Course Objectives	**The Course aims to** • know all needed about GIMP • learn and practice the image editing software GIMP.		
Entrepreneurship Units : I – V (Value added Course)	Global need	Experiential Learning	

UNIT	Content	No. of Hours
-	**Programme List** 1. Bit map and Vectors - Pixels and Resolution - RGB and CMYK color models - Color Management-Working environment of Photoshop - Tool Box - Palettes - Opening and Saving les – TIFF format - JPEG format. 2. Image manipulation Techniques - Rotation resizing - resampling - cropping and images color management - painting tools. 3. Editing Tools - Selection Tools - Layers-Layer Properties. 4. Working with type paths - channels and masks - color correction techniques- lters. 5. Web and multimedia images - work with image ready - Animation and rollover- Slicing.	30
Reference	**Text Books:** 1. Karin Kylander and Olof S. kylander, GIMP: The Official Handbook, The Coriolis Group, 1999. 2. Carl Wenczek, Digital Images: GIMP – an introduction, Oxford University, April 2015.	
Course Outcomes	On completion of the course, students should be able to CO 1: gain the knowledge about the basic elements of most photo editing programmes including tools, layers and saving concepts. CO 2: understand the use of the selection tools in GIMP. CO 3: apply animated images using an improved layers method. CO 4: analyze the use of transformation tools in GIMP.	

Course Code & Title	15EXCV EXC V – Group Project (Value added Course)		
B.Sc. Mathematics	Semester : V	Credits : 2	Hrs/ Wk : 2

Objectives:

To do some innovative Mathematics Project.

Course Code & Title	15EXCVI EXC VI – Case study in OR (Value added Course)		
B.Sc. Mathematics	Semester : VI	Credits : 2	Hrs/ Wk : 2

Objectives:

To study a minimum of five case studies in OR.