MAS1221   ARITHMETIC AND MATHEMATICAL LOGIC   3HRS

Objective: The course is intended for the students who are not majoring in mathematics as a non-major elective. It develops logical skills and arithmetic ability. The basic algebraic concepts including the principle of mathematical induction are introduced. The basic structure in mathematics called set is introduced by means of real life examples. The idea of truth table and its consequence in resolving situations in which the truth value is either true or false is studied at length.

Unit 1: Odd man out series –Percentage - Profit and Loss -Discount – Data interpretation- Mean – Median – Mode.

Unit 2: Set – Operations on set – Algebra of Sets – Relation – Finite and infinite set – Principle of mathematical induction.

Unit 3: Truth tables – Disjunction – Conjunction – Implication – Laws of Logic – Tautology – Contradiction – Conjunctive and Disjunctive normal forms.

References:
1. R.S Aggarwal, Quantitative Aptitude, S.chand & CompanyLtd, 2014.
2. R.S. Stoll, Set Theory & Logic, Eureka Publishing House, 1997.
3. J.P Trembly & R. Manohar, Discrete Mathematical Structures with application to computer science, Tata McGraw Hill, 2011.
4. M.K Venkataraman, Discrete Mathematics, The National Publishing Company,2000.
5. Seymour Lipschutz, Schaum'sTheory and problems of set theory, McGraw-Hill,1964.

LIFESKILL
MAS1231   MATHEMATICS FOR LIFE   3HRS

Objective: The course is introduced to all the first year students as a life skill course. The course aims at enabling the students to acquire mathematical knowledge for technical proficiency. This course attempts to show what mathematics is, how it has developed from man's efforts to understand and model nature, how the mathematical approach to real problem can be accomplished, to what extent mathematics has modeled on civilization and culture. The topics covered in this course are history of calendar, puzzles, moon, sun and Mathematical models in nature.

Unit 1: History and types of calendar- Various number bases subsist in the history- Number puzzles and Logical puzzles.

Unit 2: Speed arithmetic-Complementation rule - Product near the base 10^k - Division-Square root- Fibonacci sequence in nature- Konigsberg bridge problem- Jordan curve-Planarity-Map coloring.

Unit 3: Synodic month, Sidereal month, Relation between synodic and sidereal month-Elongation of Moon- Phase formula- Lunar eclipse- Types and condition for its occurrence-Partial and total Solar eclipse- Condition for the occurrence of solar eclipse.

References:
1. J. T. Glover, Vedic Mathematics, Mothilal Banarsidass publishers, 1995.
2. P. Galbraith, W. Blurn, G. Booker and Ian D. Hurtles, Mathematical models, Harwood publisher, chichester 1993.
3. Kumaravel and Mrs. Kumaravel, Astronomy, Shri Vishnu arts, Sivakasi, 2004.
4. Arthur berry, Astronomy, Dover publication, 1991.
5. George J. Summer, The great book of puzzles and teasers, Jaico publishing house, 1999.
6. John Clarke & Derek Allan Holton, A first look at Graph Theory, World Scientific Publishing Co. Ltd., 1995.

MAT 3231   MATHEMATICS FOR COMPETITIVE EXAMINATIONS   3h/2Cr

Objectives:

This course is designed for non major students who intent to apply for various competitive examinations . Though, no new concepts in mathematics are introduced whatever the students have learnt till their secondary level are recalled. Adequate training is given so that they will overcome the fear of numbers with the required level of speed and accuracy. This will provide strategies and methods to solve problems in Mathematics section of any competitive examinations.

On successful completion of the course the student will be able to

- appreciate the techniques and tools in mathematics to solve problems in life
- read between the lines and understand the logic behind it
- increase the speed and accuracy in performing problems in competitive examinations
- improve the efficiency in dealing with numbers
- appreciate the techniques and tools in mathematics to solve problems in life

Unit I: Numbers   - problems on   numbers - H.C.F and L.C.M – Divisibility –Simplification.

Unit II: Arithmetic mean - Geometric mean – Harmonic mean.

Unit III: Mathematical logic – conjunction –disjunction – negation – implications – Equivalence of statements – disjunctive and conjunctive normal forms.

Unit IV: Venn diagram – Inclusion and exclusion principle.

Unit V: Measures of standard geometric objects.

References:

1. Aggarwal R.S , Quantitative Aptitude, S. Chand & company Ltd., 2006.
2. Discrete Mathematics, Schaum's outline series, McGraw Hill, 1996.
3. Set theory and Logic,   Schaum's outline series, McGraw Hill, 1996.

MAT 3232   **DEVELOPING QUANTITATIVE APTITUDE**   **3 h/2Cr**

Objectives:

This course will enable the students to develop their quantitative skills that strengthen their edge over others in competitive examinations. This course covers the area related to problems on numbers, logical concepts, alligation and mixture.

On successful completion of the course the student will be able to
- appreciate the techniques and tools in mathematics to solve problems in life

- read between the lines and understand the logic behind it
- increase the speed and accuracy in performing problems in competitive examinations
- improve the efficiency in dealing with numbers
- appreciate the techniques and tools in mathematics to solve problems in life

Unit I: Simple equation - simultaneous simple equations - Number of solution - Application on age –fraction – average - partnership.

Unit II: Ratio and proportion- Variation- Profit and loss.

Unit III: Time and work- Pipes and cistern-Time and distance.

Unit IV: Simple interest- Compound interest-Alligation and mixture.

Unit V: Indices - Surds - Logarithms.

References:

1. Aggarwal R.S.Quantitative Aptitude,S.chand & company Ltd., 2006
2. Sundaresan.V & Jeyaseelan.S.D, An Introduction to Business Mathematics, S.Chand & company Ltd., 2003.

MAT1321   **PROGRAMMING IN C**   **3hrs / 3cr**

Objective:

    This is a supportive course for all students aspiring to complete B.Sc., degree in Mathematics. This course introduces the syntax of the programming in C and develops the skills in writing programs.

On successful completion of the course the student will be able to

- write programs in C related to the problems they encounter in day-to-day life and validate in the computer lab.

Unit I: Introduction to C- History- Identifiers- Keywords- Variables-Data types - Operators and Expressions - Input and Output statements.

Unit II: Conditional statements: simple if, if-else, nested if-else, else if ladder, switch and goto statement-Looping statements: while, do-while and for statements -Nesting of loops.

Unit III: Introduction to Arrays- One dimensional- Two dimensional and Multi dimensional array- Array of Characters - Strings - String functions.

Unit IV: Introduction to Modular Programming: Functions-Call by Value-Call by reference Category of functions-Nesting of functions-Recursion.

Unit V: Introduction to structures and unions- Array of structures-Array within Structures-Structures within Structures-Structures and Functions- Introduction to pointers.

Text Book:

       Balagurusamy. E, Programming in ANSI C, Tata McGraw-Hill, Third Edition, 2013.
             Unit I: sections 1.1-1.10; 2.2-2.14; 3.2-3.16; 4.1-4.5
             Unit II: sections 5.1-5.9; 6.1-6.5
             Unit III: sections 7.1-7.8; 8.1-8.8
             Unit IV: sections 9.1-9.18
             Unit V: sections 10.1-10.13; 11.1-11.5

Reference Books:
1. LesHanCock, Morris Kringer, C Primer, McGrawHill, 1997.
2. Y. Kanetkar, Understanding Pointers in C, 4th Edition, BPB publications, New Delhi.
3. D. M. Ritchie, The C programming language, Prentice Hall of India, 1977.
4. C. Gottfried, Programming in C, Schaum outline series, 1996.
5. P.Pandiyaraja, Programming in C, Vijay Nicole Imprint Private Limited, 2005.

MAT1322   **OBJECT ORIENTED PROGRAMMING IN C++**   **3hrs / 3cr**

Objective:
      This is a supportive course for all students aspiring to complete B.Sc., degree in Mathematics. This course introduces the object oriented programming structure in C++ and develops the skills in writing programs.

On successful completion of the course the student will be able to

- write programs in C++ related to the problems they encounter in day-to-day life and validate in the computer lab.

Unit I: Principles of OOP-Objects- Classes- Inheritance- Reusability- Polymorphism and Overloading- Tokens- Expressions- Conditional statements- Looping statements- Console I/O.

Unit II: Functions in C++ - Function prototyping- Call by reference- Return by reference-Default arguments- Constant arguments- Function overloading- Inline and Friend function.

Unit III: Classes and objects-Specifying a class-Defining member functions- Nesting of member functions- Private member functions- Private member functions- Array with a class-Static member functions- Array of objects- Constructor and Destructors.

Unit IV: Operator overloading-Overloading function- Overloading unary operators using member and friend functions- Overloading binary operators using member and friend functions.

Unit V: Type conversion- Inheritance: levels of inheritance- Multiple inheritance- Multilevel inheritance- Hierarchical inheritance, Hybrid inheritance- Virtual base classes-Introduction to files.

Text Book:
>Balagurusamy. E., Object Oriented Programming with C++, Tata McGraw-Hill, 2008.
>>**Unit I:** Sections 1.3-1.8; 2.1-2.8; 3.1-3.24
>>**Unit II:** Sections 4.1-4.11
>>**Unit III:** Sections5.3-5.18; 6.2-6.11
>>**Unit IV:** Sections 7.1-7.8
>>**Unit V:** Sections8.1-8.9; 11.1-11.6

MAT1334 (ECE/ECO) FUNDAMENTALS OF COMPUTER APPLICATIONS 3hrs / 3cr

Objective:
>To create awareness on the efficiency and accuracy in using computer techniques in dealing with problems in social sciences with special emphasis on study of economic, To introduce the basic tools in computer software.

On successful completion of the course the student will be able to

- know creating and editing documents using Word, data analysis and numeric manipulation using Excel and create and deliver presentations using Power Point.

Unit I: Physical components of computer – input – output devices – hardware and software – operating system.

Unit II: Word – creating a document – editing – move and copy text – help system – formatting text and paragraph – finding and replacing text – spelling checking – tabs – enhancing document – column and tables – graphs – mail merge.

Unit III: Data Base Management – spread sheet – MS Excel – basic commands – word processing – inserting and deleting rows and columns – formatting and printing work sheet – creating a chart – date and time – naming ranges and using statistical data.

Unit IV: Power-point – creating a presentation – power-point view, running a slide show – printing a presentation.

Unit V: Office automation – multimedia application – internet browsing

Text Book:

Taxali. R.K., PC Software for windows – Made simple, Tata Mc Graw- Hill, 1998.

Unit-I: Fundamentals of Computer Studies, Expert Solution Consults, 2010.
Microsoft office word 2007,Torben Lage Frandsen, e - publication
Unit II: Chapters 8-18
Microsoft office Excel 2007,Torben Lage Frandsen, e - publication
Unit III: Chapters 19-27
Microsoft office powerpoint 2007,Torben Lage Frandsen, e - publication

Unit IV: Annexure B
UnitV: Fundamentals of Computer Studies, Expert Solution Consults, 2010.

MAT 3232   DEVELOPING QUANTITATIVE APTITUDE   3 h/2Cr

Objectives:

This course will enable the students to develop their quantitative skills that strengthen their edge over others in competitive examinations. This course covers the area related to problems on numbers, logical concepts, alligation and mixture.

On successful completion of the course the student will be able to
- appreciate the techniques and tools in mathematics to solve problems in life

- read between the lines and understand the logic behind it
- increase the speed and accuracy in performing problems in competitive examinations
- improve the efficiency in dealing with numbers
- appreciate the techniques and tools in mathematics to solve problems in life

Unit I: Simple equation - simultaneous simple equations - Number of solution - Application on age –fraction – average - partnership.

Unit II: Ratio and proportion- Variation- Profit and loss.

Unit III: Time and work- Pipes and cistern-Time and distance.

Unit IV: Simple interest- Compound interest-Alligation and mixture.

Unit V: Indices - Surds - Logarithms.

References:

1. Aggarwal R.S.Quantitative Aptitude,S.chand & company Ltd., 2006
2. Sundaresan.V & Jeyaseelan.S.D, An Introduction to Business Mathematics, S.Chand & company Ltd., 2003.

PGM 4301/ PSM 4301   **Programming in C**   **4 hrs (2T+2L) / 3 cr**

Objective: C has become the starting point for learning a course on programming language. This course is mainly designed to use C to learn the art of programming, and to appreciate and understand the C language to creatively write a wide range of programmes and peep into the study of Data Structures.
At the end of the course student will be able to:
Explain the process of problem solving using computer
- Design an algorithmic solution for a given problem
- Write a maintainable C program for a given algorithm.
- Trace the given C program manually.

Unit I: Overview of C- basic structure – executing a C program - character sets – C tokens – keywords – identifiers - constants – variables – data types- declaration of variables.

Unit II: Operators and expressions- arithmetic, relational, logical, assignment, increment and decrement, conditional, bitwise, special operators- managing input and output operations- formatted input and output

Unit III: Decision making and branching –simple if – if … Else- nested if – else if ladder – switch statement –Goto statement.

Unit IV: Decision making and looping- while loop – for loop –do while loop – break, continue statements.

Unit V: Arrays - introduction – declaration initialization of one dimensional arrays – initializing two dimensional arrays - character arrays and strings – declaring and initializing string variables – string handling functions.

Text book:

E. Balagurusamy, Programming in ANSI C 6th edition, Tata McGraw Hill, 2013.
    Unit I: Chapter 1: sec 1.1-1.10, Chapter 2 sec 2.1-2.10
    Unit II: Chapter 3: sec 3.1-3.12, Chapter 4
    Unit III: Chapter 5
    Unit IV: Chapter 6: sec 6.1-6.5
    Unit V: Chapter 7: sec 7.1-7.6, Chapter 8: sec 8.1-8.8

Reference books:

1. P. Pandiyaraja, Programming in C, S. Viswanathan Pvt Ltd, 2005.
2. Herbert Schildt, Advanced C programming, Osborne McGraw Hill, 1990.
3. M. Tim Grady, Turbo C Programming Principles and Practices, McGraw Hill, 1990.

PGM 4302 / PSM 4302   **Mathematics for Career Prospects**   **4hrs/ 3cr**

Objective: This course aims at providing necessary logical reasoning part which is required of post graduates, especially from arts disciplines, in order to get through in competitive exams like UGC-NET/SET. This course includes Mathematical reasoning, logical reasoning and Data interpretation ideas. The contents were put in order so that a student who had undergone this course will get enhanced with numerical and logical abilities.

After completion of the course, the students will be able to
- Understand the techniques in solving mathematical reasoning problem
- Get enhanced in numerical aptitude
- Solve logical reasoning problem
- Understanding data interpretations
-

Unit I: Alphabetic series - Numerical series - odd man out - Inserting a number in a series- Completing a series- Ranking in a series - Time sequence test.

Unit II: Verbal reasoning- Problem solving by substitution - Interchange of signs and numbers- Deriving appropriate conclusions from given set of statements - Logical sequences of words - Venn diagram-based problems.

Unit III: Non-verbal reasoning- inserting the missing character - Five figure series - Analogy - Arithmetical   reasoning - Analytical reasoning.

Unit IV: Logical reasoning - Two premise arguments - Three premise arguments - Statements and arguments-Statements and assumptions – Statements and course of actions-Statements and conclusions -Deriving conclusions from passages-Theme deduction -Cause and effect reasoning.

Unit V: Data interpretation- Tabulation - Bar graphs - Pie charts - Line graphs.

Text Books:
1. Dr.R.S.Aggarwal; A Modern Approach To Verbal and Non – Verbal Reasoning ;S.Chand and Company.Pvt.Ltd ,2013
   Unit I: Part 1: Section 1. Chapters 1,11&12.
   Unit II: Part 1: Section 1. Chapters 13&14.
   Unit III: Part 1: Section 1. Chapter 15&16; Part 2: Chapter 1,2 &4.
   Unit IV: Part 1: Section 2, Chapters 1 to 8.
2.R.S.Aggarwal, Quantitative Aptitude ,2008.
   Unit V: Section 2, Chapters 36 to 39.

PGM 5349/PSM 5349   **Programming in C++ with OOPS**   **4hrs/3cr**

Objective: The objective of this course is to enable the students to understand the fundamental concepts of Object - Oriented programming using C++ and to train them to apply these concepts in solving the real world problems.

Students are encouraged to write programs in C++ related to the problems they encounter in day-to-day life and validate in the computer lab

Unit I: Introduction- Need for object oriented programming-Advantages of OOP-Basic concept of OOP- Objects- Classes-Inheritance- Reusability- Polymorphism – Overloading- C++ console I/O commands- Tokens –Expressions – Control structures.

Unit II: Function Prototyping- call by reference-return by reference-Inline functions-default arguments - Function overloading- Classes and objects- Static member functions –Arrays of objects- friend function-Pointers to members- Constructors and Destructors functions.

Unit III: Operator overloading- Overloading unary and binary operators- overloading binary operators using friend function-Manipulation of strings using operators-rules for overloading operators-Type conversion.

Unit IV: Inheritance- single Inheritance –multiple Inheritance –multilevel Inheritance - hierarchical and hybrid inheritance- virtual base classes-abstract classes-constructors in derived classes-nesting of classes.

Unit V: Polymorphism- Pointers- this pointer- virtual functions-pure virtual functions-exception handling-Opening and closing a file- File pointers and their manipulations - Updating a file – Error handling during file operations.

Textbook: Balagurusamy E., Object Oriented Programming with C++, PHI, 2008
Unit I: Sections :1.3-1.8,3.2-3.7, 3.13-3.19, 3.22, 3.24.
Unit II: Sections : 4.2-4.11, 5.3-5.18, 6.2-6.11.
Unit III: Sections : 7.2-7.8.
Unit IV:Sections : 8.2-8.12.
Unit V: Sections :9.1-9.7, 11.1-11.9,13.2-13.7.

Reference books:
1. A. Chandra Babu & T. Joshuva Devadoss, Programming with C++, Narosha Publishing House Ltd. 2008
2. Herbert Schildt, Teach yourself C++, Osborne McGraw Hill, 1994.
3. Herbert Schildt, C++ Complete Reference, Osborne McGraw Hill, 1995.
4. Rajaram R, Object Oriented Programming and C++, New Age International Publications, New Delhi, 1997
5. Robert Latfore, Object Oriented Programming in Microsoft C++, Galgotia Publication, 1993.