Kurukshetra University, Kurukshetra

(Established by the State Legislature Act XII of 1956)

('A+' Grade, NAAC Accredited)

॥ योगस्थः कुरु कर्माणि ॥

समबुद्धि व योग युक्त होकर कर्म करो

(Perform Actions while Stead fasting in the State of Yoga)

Scheme of Examination and Syllabus of Bridge Course (For students who have not studied Computer Science at 10+2 level or at Graduation level) for

Master of Computer Application (MCA) (CBCS & Non-CBCS)

SEMESTER - I

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

CBCS & Non-CBCS CURRICULUM (2023-24)

Program Name: Bridge Course (For students who have not studied Computer Science at 10+2 level or at Graduation level) for Master of Computer Applications (MCA)

(CBCS & Non-CBCS)

(For the Batches Admitted w.e.f. 2023-2024)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS
KURUKSHETRA UNIVERSITY, KURUKSHETRA

VISION

Pursue conducive advancement towards nurturing globally competent and ethically conscientious professionals and entrepreneurs in agile computing technologies and allied spheres for unceasing evolution of Nations IT affiliated commercial and research endeavours.

MISSION

Thrive to establish a strong foundation for technical competency in spheres concordant to software oriented design and development. Nurture skills and competency for administering expertise gained in computing discipline to a wide horizon of interdisciplinary application domains, thus supporting sustainable development of the society. Habituate the students to strive for technological innovations and successful endeavours ethically, supported by sustained learning continuance and problem solving proficiency that may promote nations welfare in terms of economic acceleration leading to the growth of society.

NAME OF THE PROGRAMME:
BRIDGE COURSE (FOR STUDENTS WHO HAVE NOT STUDIED COMPUTER SCIENCE AT 10+2 LEVEL OR AT GRADUATION LEVEL) FOR MASTER OF COMPUTER APPLICATIONS

KURUKSHETRA UNIVERSITY, KURUKSHETRA

SCHEME OF EXAMINATIONS FOR
BRIDGE COURSE
(FOR STUDENTS WHO HAVE NOT STUDIED COMPUTER SCIENCE AT 10+2 LEVEL OR AT GRADUATION LEVEL)
FOR
MASTER OF COMPUTER APPLICATIONS
(CBCS & Non-CBCS)) 1ST SEMESTER
W. E. F. ACADEMIC SESSION 2023-24

Paper Code	Nomenclature of Paper	Credits	Workload Per Week (Hrs.)	Exam Time (Hrs.)	External Marks		Internal Marks	Total Marks	Pass Marks
					Max.	Pass			
First Semester									
MCA-BC-23-11	Computer Fundamentals and Problem Solving Through C	0	4	3	75	30	25	100	40
MCA-BC-23-12	S/W Lab Based on MCA-BC-23-11	0	2	3	50	20	-	50	20
	Total	**0**	**6**		**125**	**50**	**25**	**150**	**60**

***Note 1:** Evaluation procedure for internal assessment marks:

Two Mid Term Examinations should be conducted by the concerned teacher each of 10 marks. Five marks may be given by the concerned teacher on the basis of performance during the course (puzzles/ assignments/ interactions/ attendance etc.).

Note 2: Size of groups in all practical courses should not be more than thirty students.
Note 3: To be qualified for the MCA degree, candidates (except belonging to Note 4) are required to pass the Bridge course. However, the marks obtained, although shown on the final year grade sheet, will not be added to the CGPA/SGPA.
Note 4: The students who have passed computer science as a major subject in graduation/ 10+2 level/ any diploma course from a recognized university are not required to do the bridge course in first semester.

MCA-BC-23-11: Computer Fundamentals and Problem Solving Through C	
Type: Bridge Course (For students who have not studied computer science before taking admission to MCA) **Course Credits:** 0 **Contact Hours:** 4 hours/week **Examination Duration:** 3 Hours **Mode:** Lecture **External Maximum Marks:** 75 **External Pass Marks:** 30(i.e. 40%) **Internal Maximum Marks:** 25 **Total Maximum Marks:** 100 **Total Pass Marks:** 40(i.e. 40%)	**Instructions to paper setter for End semester exam:** Total number of questions shall be nine. Question number one will be compulsory and will be consisting of short/objective type questions from complete syllabus. In addition to compulsory first question there shall be four units in the question paper each consisting of two questions. Student will attempt one question from each unit in addition to compulsory question. All questions will carry equal marks.
Course Objectives: This course is designed to get the students equipped with the fundamentals of computer science. This course will help the students to develop the problem solving skills through a well-known language C.	
UNIT – I Computer Fundamentals: Basics of computers, basic computer organization, storage hierarchy, storage devices, input-output devices. Computer Software. Introduction to operating systems. Planning the computer program: Purpose of program planning, algorithm, flowcharts, decision tables, pseudocodes. **UNIT – II** Digital Fundamentals: Information representation - number systems, number system conversion; Computer codes - BCD code, EBCDIC code, ASCII, Unicode; Binary arithmetic; Binary logic - Boolean algebra, Boolean functions, truth table, simplification of Boolean functions (upto 4 variables only), K-map, digital logic gates. **UNIT – III** Elements of C language: C character set, identifiers & keywords, data types: declaration & definition. Operators: Arithmetic relational, logical, bitwise, unary, assignment and conditional operators & their hierarchy & associativity, Data input/output. Control statements: Sequencing, Selection: if and switch statement; iteration: for, while, and do-while loop; break, continue, goto statement. **UNIT – IV** Functions in C language: Definition, prototype, passing parameters, recursion, Data structure: arrays, structures, union, string, data files. Pointers: Declaration, operations on pointers, array of pointers, pointers to arrays.	
Text Books: 1. Yashwant Kanitkar, Let us C, BPB Publications. 2. Pradeep k. Sinha & Priti Sinha, Computer Fundamentals, BPB Publications 3. Byron S Gottfried, Programming with C, Tata McGrawhill	

Reference Books:

1. Rajaraman V, Fundamentals of Computers, PHI
2. R.G. Dromey, How to solve it by Computer, Pearson Education,
3. Hanly J R & Koffman E.B, Problem Solving and Programm design in C, Pearson

Kurukshetra University, Kurukshetra

(Established by the State Legislature Act XII of 1956)
('A+' Grade, NAAC Accredited)

॥ योगस्थः कुरु कर्माणि ॥
समबुद्धि व योग युक्त होकर कर्म करो
(Perform Actions while Stead fasting in the State of Yoga)

Scheme of Examination and Syllabus of Bridge Course (For students who have not studied Mathematics at 10+2 level or at Graduation level) for

Master of Computer Application (MCA)(CBCS & Non-CBCS)

SEMESTER - II

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

CBCS & Non-CBCS CURRICULUM (2023-24)

Program Name: Bridge Course (For students who have not studied Mathematics at 10+2 level or at Graduation level) for Master of Computer Applications (MCA)

(CBCS & Non-CBCS)

(For the Batches Admitted w.e.f. 2023-2024)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS
KURUKSHETRA UNIVERSITY, KURUKSHETRA

VISION

Pursue conducive advancement towards nurturing globally competent and ethically conscientious professionals and entrepreneurs in agile computing technologies and allied spheres for unceasing evolution of Nations IT affiliated commercial and research endeavours.

MISSION

Thrive to establish a strong foundation for technical competency in spheres concordant to software oriented design and development. Nurture skills and competency for administering expertise gained in computing discipline to a wide horizon of interdisciplinary application domains, thus supporting sustainable development of the society. Habituate the students to strive for technological innovations and successful endeavours ethically, supported by sustained learning continuance and problem solving proficiency that may promote nations welfare in terms of economic acceleration leading to the growth of society.

NAME OF THE PROGRAMME:
BRIDGE COURSE (FOR STUDENTS WHO HAVE NOT STUDIED MATEHMATICS AT 10+2 LEVEL OR AT GRADUATION LEVEL) FOR MASTER OF COMPUTER APPLICATIONS

KURUKSHETRA UNIVERSITY, KURUKSHETRA

SCHEME OF EXAMINATIONS FOR
BRIDGE COURSE
(FOR STUDENTS WHO HAVE NOT STUDIED MATHEMATICS AT 10+2 LEVEL OR AT GRADUATION LEVEL)
FOR
MASTER OF COMPUTER APPLICATIONS
(CBCS & Non-CBCS) 2ND SEMESTER
W. E. F. ACADEMIC SESSION 2023-24

Paper Code	Nomenclature of Paper	Credits	Workload Per Week (Hrs.)	Exam Time (Hrs.)	External Marks		Internal Marks	Total Marks	Pass Marks
					Max.	Pass			
Second Semester									
MCA-BC-23-21	Mathematical Foundations for Computer Science	0	4	3	75	30	25	100	40
MCA-BC-23-22	S/W Lab Based on MCA-BC-23-21	0	2	3	50	20	-	50	20
	Total	**0**	**6**		**125**	**50**	**25**	**150**	**60**

***Note 1:** Evaluation procedure for internal assessment marks:
Two Mid Term Examinations should be conducted by the concerned teacher each of 10 marks. Five marks may be given by the concerned teacher on the basis of performance during the course (puzzles/ assignments/ interactions/ attendance etc.).
Note 2: Size of groups in all practical courses should not be more than thirty students.
Note 3: To be qualified for the MCA degree, candidates (except belonging to Note 4) are required to pass the Bridge course. However, the marks obtained, although shown on the final year grade sheet, will not be added to the CGPA/SGPA.
Note 4: The students who have passed mathematics/statistics as a major subject in graduation/ 10+2 level from a recognized university are not required to do the bridge course in second semester.

MCA-BC-23-21: Mathematical Foundations for Computer Science	
Type: Bridge Course (For students who have not studied mathematics at 10+2/graduation) **Course Credits:** 00 **Contact Hours:** 4 hours/week **Examination Duration:** 3 Hours **Mode:** Lecture **External Maximum Marks:** 75 **External Pass Marks:** 30(i.e. 40%) **Internal Maximum Marks:** 25 **Total Maximum Marks:** 100 **Total Pass Marks:** 40(i.e. 40%)	**Instructions to paper setter for End semester exam:** Total number of questions shall be nine. Question number one will be compulsory and will be consisting of short/objective type questions from complete syllabus. In addition to compulsory first question there shall be four units in the question paper each consisting of two questions. Student will attempt one question from each unit in addition to compulsory question. All questions will carry equal marks.
Course Objectives: The objective of this paper is to make the students familiar with the commonly used mathematics and statistics in the field of computer science.	
Unit – I Sets: Set theory: Basic concept, set types, set operations, cardinality, and notation. Relations: Relations and its representations, Properties of binary relation –Reflexive, symmetric, Asymmetric, transitive, Equivalence, Inverse & Composition of a relation, closure of relations, its types, Partial ordering relation, Hasse diagram, minimal elements, upper bound, lower bound, Lattices Functions: definition, floor functions, ceiling functions, surjective, injunctive and bijective functions, Inverse Function, Composition of functions, recursive Functions, Pigeon hole principles and its application.	
Unit – II Addition and multiplication of matrices, Laws of matrix algebra, Singular and non-singular matrices, Inverse of a matrix, Systems of linear equations, Eigen values and Eigen vectors, Diagonalization of a square matrix. Interpolation, Numerical Integration and Differentiation.	
Unit – III Statistical Methods: Definition and scope of Statistics, concepts of statistical population and sample. Data: Quantitative and qualitative, attributes, variables, scales of measurement nominal, ordinal, interval and ratio. Presentation: tabular and graphical, including histogram and ogives. Measures of Central Tendency: Mean, Median, Mode. Measures of Dispersion: range, quartile deviation, mean deviation, standard deviation, coefficient of variation, Moments, skewness and kurtosis.	
Unit – IV Bivariate data: Definition, scatter diagram, simple, partial and multiple correlation (3 variables only), rank correlation. Simple linear regression, principle of least squares and fitting of polynomials and exponential curves.	

Probability: Introduction, random experiments, sample space, events and algebra of events. Definitions of Probability – classical, statistical, and axiomatic. Conditional Probability, laws of addition and multiplication, independent events, theorem of total probability, Bayes' theorem and its applications.

Text Books:

1. Gupta, S. C. and Kapoor, V.K. : Fundamentals Of Mathematical Statistics, Sultan Chand &Sons
2. Seymour Lipschutz, Marc Lars Lipson, Discrete mathematics, McGraw-Hill international editions, Schaum's series.
3. V. Rajaraman, Computer-Oriented Numerical Methods., PHI

Reference Books:

1. Kenneth H. Rosen, Discrete Mathematics and its Applications, Tata McGraw – Hill
2. Hogg, R.V., Tanis, E.A. and Rao J.M. : Probability and Statistical Inference, Seventh Ed, Pearson Education, New Delhi.
3. Goon A.M., Gupta M.K. and Dasgupta B. (2002): Fundamentals of Statistics, Vol. I & II, The World Press, Kolkata.
4. Babu Ram: Discrete Mathematics
5. Shanti Narayana : Differential & Integral calculus