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(Accredited by NAAC with Grade 'A')

GU/Acad-PG/94/CAC/481

Date: 30/ 12/ 2021

NOTIFICATION

The Master of Computer Application (MCA) Degree Programme offered at Goa Business School, Goa University has been restructured to a two year duration (four semesters) full-time Programme from the academic year 2021-22 onwards, as per the AICTE recommendations. The two year MCA Programme is governed under OB-33 available on the University website.

The Eligibility criteria for admission to the MCA Programme along with details of the Aptitude Entrance Test and Syllabus of Aptitude Entrance Test and Bridge Courses are hereby notified for information.

A. Eligibility Criteria:

To be eligible for admission to the **two year MCA** Programme, a candidate must have:

(i) Passed BCA/ Bachelor Degree in Computer Science/ Engineering or equivalent Degree with at least 50% marks (relaxation in minimum percentage for reserved categories shall be applicable as per State Government Rules).

OR

(ii) Passed Graduation in a Non-Computer Science discipline with Mathematics at 10+2 level or at Graduation level with at least 50% marks (relaxation in minimum percentage for reserved categories shall be applicable as per State Government Rules). Such candidates shall be provisionally admitted until successful completion of Bridge Courses.

Apart from the eligibility conditions mentioned above, a candidate has to qualify in the Aptitude Entrance Test for MCA. Details about the same are given below in Section B. *Aptitude Entrance Test*.

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A.1 Admission to Semester III (Applicable for Non-Computer Science Graduates):

The Non-Computer Science candidates are required to successfully complete the Bridge Course(s) before admission to the third Semester. To be considered successful, the student is required to obtain a minimum of 40% marks separately in the Theory and Laboratory components. The assessment of the Bridge course(s) shall be conducted by the Goa Business School. Refer C for details

B. Aptitude Entrance Test:

The Aptitude Entrance Test shall be conducted as per the procedure given below:

1. The entrance test shall be based on the **syllabus (Appendix A)** which consists of:
Part 1: Analytical Ability and Logical Reasoning
Part 2: Mathematics
Part 3: Computer Science
2. The test shall have 50 multiple choice questions carrying 2 marks each for a correct answer, with a negative marking of 0.5 for each wrong answer. An unanswered question will have 0 marks.
3. The duration of the Test shall be 90 minutes.
4. The candidates are required to score a minimum of 30% marks (percentage obtained by the candidate to be rounded up to the next integer) in the Aptitude Entrance Test to qualify for admission to MCA.
5. The breakup shall be as follows:

Section	Level of Difficulty	Topic/s	No. of questions
I	Least Difficult	• Analytical Ability and Logical Reasoning	15
II	Medium Difficulty	• Mathematics • Computer Science	10 05
III	Most Difficult	• Computer Science	20

6. The tie-breaking in creating the Merit List will be as follows:
 - i. Section III scores shall be the first level of tie-breaker, followed by Section II.
 - ii. In case the tie still exists, the University shall decide the order of merit.

C. Bridge Course for Non-Computer Science candidates:

Non-Computer Science candidates who wish to apply for the Two-Year MCA programme will have to undergo the Bridge course titled “Fundamentals in Computer Science” via self-study using content identified from existing MOOCs courses. The syllabus and suggested links to MOOCs courses for the same can be found in **Appendix-B**.

The evaluation of the Bridge course (from Appendix B) will be done in two parts: Part A and Part B. The evaluation will be conducted by the Goa Business School. The evaluation from AY 2022-23 will be conducted in the following manner: -

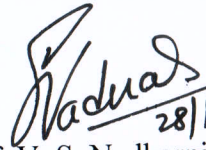
Part	Total Marks	To be held in	Contents and weightage
A	100	1 st month of Semester I	1. Programming and Simple Linear Data Structures (Theory: 30 marks, Lab : 40 marks) 2. Computer Organization & Architecture and Fundamentals of Operating Systems (Theory: 30 marks)
B	100		1. Discrete Mathematics (Theory: 50 marks) 2. Web Basics (Lab: 50 marks)

Candidates would be required to obtain a minimum of 40% marks separately in theory as well as in lab, in each component A and B to be considered as “passed” in the Bridge course.

Please note that the candidates will need to pass the Bridge course to be admitted to the 3rd semester of the MCA programme. Candidates are preferably advised to undergo the Bridge course before the start of the programme.

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All the Principals of affiliated Colleges offering general education programmes are kindly requested to give wide publicity of this notification among the faculties and students of their Institution.


(Prof. V. S. Nadkarni)
Registrar

To,

- 1) All the Principals of affiliated Colleges offering General Education programme
- 2) Director, Directorate of Higher Education
- 3) Chairman, Goa Board of Secondary & Higher
Secondary School – (with request to circulate to all the higher secondary schools)
- 4) Dean, Goa Business School
- 5) MCA Programme Coordinator
- 6) Chairperson, Central Admission Committee (GU-ART)
- 7) PS to VC
- 8) PA to R
- 9) Guard file

APPENDIX A

Syllabus for the Aptitude Entrance Test for Admissions to Master of Computer Application (MCA), Goa University **Effective from AY 2022-2023 onwards**

Part 1: Analytical Ability and Logical Reasoning:

The questions in this section will cover analytical and logical reasoning and are based on Series, Relationships, Classification, Coding, Permutations and Combinations and Inference, Numerical problems.

Part 2: Mathematics:

Set Theory, Probability and Statistics, Logarithms, Geometric and Harmonic progressions, Determinants and Matrices, Coordinate Geometry & Applications. Basic Calculus: Limit of functions, continuous function, differentiation of function, Integration and their applications. Trigonometry & applications. Vectors: Concepts of vectors & vector algebra, applications of Vectors.

Fundamentals of logic, Relations and Functions, Counting Techniques: Basics of Counting, Pigeonhole Principle, Recurrence relations, Graphs: Basic concepts of Graph and its applications. Introduction to trees, Applications of trees, Boolean Algebra and Circuits.

Part 3: Computer Science:

Programming and Basic Data Structures:

Introduction to Algorithms, Flow charts, Assembly language and high-level language, Programming in C: Tokens, Identifiers, Data Types, Sequence Control, Subprogram Control, Arrays, Structures, Functions. Data Structures: Abstract data types, stacks, queues, Singly Linked Lists.

Basic sorting algorithms: bubble sort, selection sort, insertion sort.

Computer Organization & Architecture and Operating Systems:

Basic functional blocks of a computer, Number Systems, Conversion & Arithmetic, Complements.

Introduction to operating systems, Structure and Basic functions, types of OS, Operating System Services.

Application development:

Internet and WWW Architecture, The Web browsers, HTML, Structural & formatting tags, Page elements, Tables, forms.

APPENDIX B

Syllabus For MCA Bridge Course

“Fundamentals In Computer Science”

Effective from AY 2021-22 Onwards

Mode of conduct: Self-Study via MOOCs

To be qualified for the MCA degree, candidates are required to pass the test in the individual theory and laboratory components of the Bridge course (40% marks to be obtained in theory and lab separately) which will be conducted by the programme. However, the marks obtained, although shown on the final year grade sheet, will not be added to the CPI/SPI.

The content of the Bridge course(s) will consist of the fundamentals in the following topics (percentages indicate weightage assigned to the topic for the purpose of evaluation)

Part A

(100 marks)

Programming and Simple Linear Data Structures:

(70%)

Introduction to Algorithms, Flow charts, Assembly language and high-level language

Programming in C: Tokens, Identifiers, Data Types, Sequence Control, Subprogram Control, Arrays, Structures, Union, String, Pointers, Functions, File Handling, Command Line Arguments, Pre-processor directives.

Data Structures: Abstract data types, Linear Data Structures: stacks, queues, and their applications. Linked Lists: singly linked list.

Basic sorting algorithms: bubble sort, selection sort, insertion sort

Computer Organization and Architecture & Fundamentals of Operating Systems: (30%)

Data Representation: Data Types, Number Systems and Conversion, Complements, Fixed Point Representation, Floating Point Representation,

Binary Arithmetic - Addition and Subtraction.

Computer System: Computer Components and Functions, interconnection structures, Bus Interconnections.

Processor Organization: Instruction Formats, addressing modes, Processor Organization, Register Organization, Instruction Cycle, Instruction Pipelining.

Memory System Organization: Memory Hierarchy, Internal Memory, Cache Memory.

Input/output Organisation: Peripheral devices. I/O interface, Asynchronous Data Transfer, I/O Processor.

Introduction to Operating Systems, Structures and Basic functions of monolithic OS, System services.

Part B

(100 marks)

Discrete Mathematics:

(50%)

Set Theory: Concepts of sets – Union, Intersection, Cardinality.

Elementary counting; permutations and combinations.

Fundamentals of logic: Propositional and Predicate Logic, Propositional Equivalences, Predicates and Quantifiers, Rules of Inference.

Relations and Functions: Cartesian Product, Relations and their types, Properties of Relations Functions, Types of Functions, Operations on Functions

Counting Techniques: Basics of Counting, Pigeonhole Principle, Recurrence relations.

Boolean Algebra, Boolean Expression, Boolean Functions.

Web Basics (HTML, CSS)

(50%)

Web browsers

HTML Overview, DOCTYPE, HTML page structure, structural HTML tags, formatting text tags, semantic & generic HTML tags, HTML links, adding image and other page elements, Tables, frames, image mapping, HTML forms, attributes, form elements, type types, HTML entities, symbols, charset, comments, HTML audio, video

CSS overview, inline/internal/external css, @import, CSS selectors, combinators, pseudo-class & pseudo element, attribute selectors, colours, backgrounds, Border, padding, margin, box model, CSS width/height, min-/max- width/height, CSS text and font properties, CSS text and element alignment, CSS table & list, CSS units, CSS display, position, float, overflow, visibility, z-index, CSS 2D transform

Suggested links to MOOCs Courses

Course name	Organized by	Link
Computer Organization	Prof. S. Raman, Department of Computer Science and Engineering, IIT Madras.	http://www.nptelvideos.in/2012/11/computer-organization.html
Programming and data structure	Dr. P.P. Chakraborty, Department of Computer Science and Engineering, IIT Kharagpur.	http://www.nptelvideos.in/2012/11/programming-and-data-structure.html
Operating system	PROF.SANTANU CHATTOPADHYAY Department of Computer Science Engineering IIT Kharagpur	https://nptel.ac.in/courses/106/105/106105214/ First two weeks
Discrete Mathematical Structure	Prof. Kamala Krithivasan, Department of Computer Science and Engineering, IIT Madras	http://www.nptelvideos.in/2012/11/discrete-mathematical-structures.html
Web Basics		https://www.youtube.com/watch?v=mU6anWqZJcc
UNIX fundamentals		https://nptel.ac.in/courses/117/106/117106113/ first 4 Modules