# Department of Computer Science and Engineering
# Revised Curriculum for Master of Computer Applications (MCA)
# (2011 Admission onwards)

**Semester 1**

| Sl. No. | Code | Title | L | T | P | C |
|---|---|---|---|---|---|---|
| 1 | CS2001 | Logic Design | 3 | 0 | 2 | 4 |
| 2 | CS2301 | Introduction to Programming | 4 | 0 | 0 | 4 |
| 3 | MA6010 | Discrete Mathematics | 3 | 0 | 0 | 3 |
| 4 | MS1001 | Professional Communication | 3 | 0 | 0 | 3 |
| 5 | | Maths Elective I | | | | 3 |
| 6 | CS2391 | Introductory Programming Laboratory | 1 | 0 | 3 | 3 |
| | | **Total Credits** | | | | **20** |

**Semester 2**

| Sl. No. | Code | Title | L | T | P | C |
|---|---|---|---|---|---|---|
| 1 | CS2004 | Computer Organization | 3 | 0 | 2 | 4 |
| 2 | CS2005 | Data Structures and Algorithms | 4 | 0 | 0 | 4 |
| 3 | | Maths Elective II | | | | 3 |
| 4 | | Maths Elective III | | | | 3 |
| 5 | | Elective I | | | | * |
| 6 | CS2094 | Data Structures Laboratory | 1 | 0 | 3 | 3 |
| | | **Total Credits** | | | | **20*** |

**Semester 3**

| Sl. No. | Code | Title | L | T | P | C |
|---|---|---|---|---|---|---|
| 1 | CS3002 | Database Management Systems | 3 | 0 | 2 | 4 |
| 2 | CS3003 | Operating Systems | 3 | 0 | 2 | 4 |
| 3 | | Elective II | | | | * |
| 4 | | Elective III | | | | * |
| 5 | | Lab Elective I | | | | * |
| | | **Total Credits** | | | | **17*** |

**Semester 4**

| Sl. No. | Code | Title | L | T | P | C |
|---|---|---|---|---|---|---|
| 1 | CS3004 | Software Engineering | 3 | 0 | 2 | 4 |
| 2 | CS3006 | Computer Networks | 3 | 0 | 2 | 4 |
| 3 | CS3301 | Object Oriented Programming | 3 | 0 | 2 | 4 |
| 4 | | Elective IV | | | | * |
| 5 | | Elective V | | | | * |
| | | **Total Credits** | | | | **17*** |

**Semester 5**

| Sl. No. | Code | Title | L | T | P | C |
|---|---|---|---|---|---|---|
| 1 | ME4104 | Principles of Management | 3 | 0 | 0 | 3 |
| 2 | | Elective VI | | | | * |
| 3 | | Elective VII | | | | * |
| 4 | | Elective VIII | | | | * |
| 5 | | Elective IX | | | | * |
| | | **Total Credits** | | | | **17*** |

**Semester 6**

| Sl. No. | Code | Title | L | T | P | C |
|---|---|---|---|---|---|---|
| 1 | CS3099 | Project | | | | 09 |
| | | **Total Credits** | | | | **09** |

## LIST OF ELECTIVES

### Theory Electives:

| S. No. | Code | Title | L | T | P | C |
|---|---|---|---|---|---|---|
| 1 | CS4021 | Number Theory and Cryptography | 3 | 0 | 2 | 4 |
| 2 | CS4022 | Principles of Programming Languages | 3 | 0 | 2 | 4 |
| 3 | CS4023 | Computational Intelligence | 3 | 0 | 2 | 4 |
| 4 | CS4024 | Information Theory | 4 | 0 | 0 | 4 |
| 5 | CS4025 | Graph Theory and Combinatorics | 4 | 0 | 0 | 4 |
| 6 | CS4026 | Combinatorial Algorithms | 3 | 0 | 2 | 4 |
| 7 | CS4027 | Topics in Algorithms | 4 | 0 | 0 | 4 |
| 8 | CS4028 | Quantum Computation | 4 | 0 | 0 | 4 |
| 9 | CS4029 | Topics in Theory of Computation | 4 | 0 | 0 | 4 |
| 10 | CS4030 | Computational Complexity | 4 | 0 | 0 | 4 |
| 11 | CS4031 | Computational Algebra | 3 | 0 | 2 | 4 |
| 12 | CS4032 | Computer Architecture | 3 | 0 | 2 | 4 |
| 13 | CS4033 | Distributed Computing | 3 | 0 | 2 | 4 |
| 14 | CS4034 | Middleware Technologies | 3 | 0 | 2 | 4 |
| 15 | CS4035 | Computer Security | 3 | 0 | 2 | 4 |
| 16 | CS4036 | Advanced Database Management Systems | 3 | 0 | 2 | 4 |
| 17 | CS4037 | Cloud Computing | 3 | 0 | 2 | 4 |
| 18 | CS4038 | Data Mining | 3 | 0 | 2 | 4 |
| 19 | CS4039 | Multi Agent Systems | 3 | 0 | 2 | 4 |
| 20 | CS4040 | Bioinformatics | 3 | 0 | 2 | 4 |
| 21 | CS4041 | Natural Language Processing | 3 | 0 | 2 | 4 |
| 22 | CS4042 | Web Programming | 3 | 0 | 2 | 4 |
| 23 | CS4043 | Image Processing | 3 | 0 | 2 | 4 |
| 24 | CS4044 | Pattern Recognition | 3 | 0 | 2 | 4 |
| 25 | CS4045 | Medical Image Processing | 3 | 0 | 2 | 4 |
| 26 | CS4046 | Computer Vision | 3 | 0 | 2 | 4 |
| 27 | CS4047 | Computer Graphics | 3 | 0 | 2 | 4 |
| 28 | CS4048 | Topics in Compilers | 3 | 0 | 2 | 4 |
| 29 | CS4049 | Advanced Computer Networks | 3 | 0 | 2 | 4 |
| 30 | CS4050 | Design and Analysis of Algorithms | 3 | 0 | 2 | 4 |
| 31 | CS4051 | Coding Theory | 3 | 0 | 2 | 4 |
| 32 | CS4052 | Logic for Computer Science | 3 | 0 | 2 | 4 |

## Laboratory Electives:

| S. No. | Code | Title | L | T | P | C |
|---|---|---|---|---|---|---|
| 1 | CS3091 | Compiler Laboratory | 1 | 0 | 3 | 3 |
| 2 | CS3092 | Operating Systems Laboratory | 1 | 0 | 3 | 3 |
| 3 | CS3093 | Networks Laboratory | 1 | 0 | 3 | 3 |
| 4 | CS3094 | Programming Languages Laboratory | 1 | 0 | 3 | 3 |
| 5 | CS3095 | Database Management Systems Laboratory | 1 | 0 | 3 | 3 |
| 6 | CS3096 | Computational Intelligence Laboratory | 1 | 0 | 3 | 3 |
| 7 | CS3097 | Web Programming Laboratory | 1 | 0 | 3 | 3 |
| 8 | CS4091 | Biocomputing Laboratory | 1 | 0 | 3 | 3 |
| 9 | CS4092 | Data Mining Laboratory | 1 | 0 | 3 | 3 |
| 10 | CS4093 | Image Processing Laboratory | 1 | 0 | 3 | 3 |
| 11 | CS4094 | Computer Vision Laboratory | 1 | 0 | 3 | 3 |
| 12 | CS4095 | Computer Graphics Laboratory | 1 | 0 | 3 | 3 |
| 13 | CS4096 | Software Engineering Laboratory | 1 | 0 | 3 | 3 |
| 14 | CS4097 | Object Oriented Programming Laboratory | 1 | 0 | 3 | 3 |

**Notes:**

1. The total credit requirements for the programme is a minimum of 100 credits of which 60 credits are from core courses and the rest from elective courses.
2. The credit requirements for each semester indicate the minimum number of credits a student has to register in a semester.
3. Either theory or lab elective courses may be credited for elective courses. However only laboratory electives may be credited for courses marked in the curriculum as laboratory electives. Coursed marked as ‘Maths Elective’ need to be credited from the courses offered by the Mathematics department.
4. In addition to the electives listed in the curriculum, a student may be permitted to credit as an elective any other course offered in the institute, subject to consent from the Faculty Advisor.

***** The credits for each elective course may vary depending on the courses credited. However a student is required to register for the number of courses stipulated in the curriculum in each semester and satisfy the total credit requirement in each semester.