# TECNIA INSTITUTE OF ADVANCED STUDIES

## NAAC GRADE "A" INSTITUTE (CYCLE-1)

Approved by AICTE, Ministry of Education Govt. of India,
Affiliated to G.G.S.I.P. University & Recognized Under Sec. 2(f) of UGC Act 1956.

### INSTITUTIONAL AREA, MADHUBAN CHOWK, ROHINI, DELHI-110085

*Department of Information, Communication & Technology*

# MASTER OF COMPUTER APPLICATIONS (MCA)

**As per Scheme of Examination & Detailed Syllabus (w.e.f. Academic Year 2020-21 onwards)**
For MCA Degree (02 Years) Offered at Affiliated Institutes of GGSIP University from A.S. 2020-21 onwards

## COs - POs MAPPING (Semester-Wise)

### FIRST SEMESTER

| C.CODE | COURSE | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MCA-101 | Discrete Structures | ✓ | ✓ | ✓ | ✓ | | | ✓ | | | | ✓ | |
| MCA-103 | Computer Networks | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | | ✓ | ✓ | |
| MCA-105 | Operating Systems with Linux | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| MCA-107 | Database Management Systems | ✓ | ✓ | ✓ | ✓ | | ✓ | | ✓ | | ✓ | ✓ | ✓ |
| MCA-109 | Object Oriented Programming and JAVA | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| MCA-161 | Computer Networks Lab.(P) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MCA-163 | Operating Systems with Linux Lab.(P) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MCA-165 | Database Management Systems Lab.(P | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MCA-167 | Object Oriented Prog.& JAVA Lab.(P) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| MCA-169 | Minor Project - I (Project) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MCA-171 | Professional Proficiency- I NUES* (PDCS Course) | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |

### SECOND SEMESTER

| C.CODE | COURSE | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MCA-102 | Data and File Structures | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ | |
| MCA-104 | Object Oriented Software Engineering | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | ✓ | ✓ | |
| MCA-106 | Python Programming | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MCA-108 | Adv. Data Base Mgt. Sys. (Core Ele-1:108-126) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| MCA-110 | Data Warehousing and Data Mining | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | ✓ | ✓ | |
| MCA-112 | Mobile Applications Design and Development | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MCA-114 | Full Stack Development | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | ✓ | ✓ | |
| MCA-116 | Web Technologies | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |
| MCA-118 | Theory of Computations | ✓ | ✓ | ✓ | ✓ | | | ✓ | | | | | |
| MCA-120 | Software Testing | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | ✓ | | |
| MCA-122 | Microprocessors | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| MCA-124 | Embedded System | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ | |
| MCA-126 | Information Security | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| MCA-128 | Digital Marketing (Open Ele-1:128-134) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MCA-130 | Management Information System | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MCA-132 | Mgt. Principles and Organizational Behavior | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MCA-134 | Finance and Accounting | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MCA-162 | Data and File Structures Lab. (P) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| MCA-164 | Object Oriented Software Engg. Lab (P) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MCA-166 | Python Programming Lab. (P) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MCA-168 | Lab. based on Core Elective-I (P) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MCA-170 | Minor Project-II (Project) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MCA-172 | Environment Science (NUES) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| MCA-174 | "Professional Proficiency - II(Tech. Paper Writing Course)" | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |

| The whole syllabus is divided into following types: | | | |
|---|---|---|---|
| **ABBR.** | **NEP Course Type** | **ABBR.** | **NEP Course Type** |
| CCT | Core Courses Theory | GE | Multidisciplinary(Generic Ele) |
| CCP | Core Courses Practical | PCE | Programme Core Elective |
| AEC | Ability Enhancement Courses | SI | Summer Internship |
| SEC | Skill Enhancement Courses | MOOCs | MOOC Courses |
| VA | Value Added Courses | PRJ | Minor/ Major Project |
| NUES | Non Univ. Exam. System | IIR | Industry Internship Report |
| BC | Bridge Course | DSEC | Discipline Specific Electives |

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## COs - POs MAPPING (Semester-Wise)

### THIRD SEMESTER

| C.CODE | COURSE | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MCA-201 | Design and Analysis of Algorithms | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | |
| MCA-203 | Artificial Intelligence and Machine Learning | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |
| MCA-205 | Stats. and Data Analytics (Core Ele-2 :205-225) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |
| MCA-207 | Enterprise Computing with JAVA | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MCA-209 | Natural Language Processing | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | |
| MCA-211 | Computer Graphics | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | | ✓ | ✓ | | |
| MCA-213 | Wireless Sensor Networks | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| MCA-215 | Software Project Management | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MCA-217 | Advanced Computer Architecture | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| MCA-219 | Distributed Systems | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| MCA-221 | Applied Cryptography | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| MCA-223 | Cloud Computing | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | |
| MCA-225 | e-Business Systems | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| MCA-227 | Web Intel. & Big Data (Core Ele-3 :227-247) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| MCA-229 | Flutter and Dart | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |
| MCA-231 | Service Oriented Architecture | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| MCA-233 | Multimedia Technologies | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| MCA-235 | Internet of Things | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| MCA-237 | Soft Computing | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | |
| MCA-239 | Software Quality Management | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | |
| MCA-241 | Digital image Processing | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| MCA-243 | Compiler Design | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| MCA-245 | Parallel Computing | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | |
| MCA-247 | Numerical and Scientific Computing | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| MCA-249 | Research Methodology (Open Ele-2:249-255) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| MCA-251 | Operational Research | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | ✓ |
| MCA-253 | Cyber Security and Cyber Laws | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| MCA-255 | e-Content Development | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| MCA-261 | Design and Analysis of Algorithms Lab. (P) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| MCA-263 | AI & Machine Learning Lab. (P) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |
| MCA-265 | Lab. based on Core Elective-II (P) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MCA-267 | Lab. based on Core Elective-III (P) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| MCA-269 | Minor Project-III (Project) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| MCA-271 | Entrepreneurship Mindset (NUES) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MCA-273 | "Professional Proficiency – III (IPR, Human Values & Prof. Ethics Course)" | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

### FOURTH SEMESTER

| C.CODE | COURSE | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MCA-202 | Dissertation (Major Project) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| MCA-272 | "One MOOC Course (from SWAYAM Platform) (NUES)" | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MCA-273 | Professional Proficiency – III (IPR, Human Values & Prof. Ethics Course) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

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