**MASTER OF COMPUTER APPLICATIONS (SEMESTER SYSTEM) under Directorate of Open & Distance Learning, Guru Nanak Dev University, Amritsar**

**Eligibility:**
BBA/ B.com. / B.Sc. (Regular/ Hons.) Economics or Graduate in any stream with Mathematics/ Statistics/ Computer Sciences/ Computer Applications/ IT/ Computer Maintenance/ QuantitativeTechniques as one of the elective subjects with 50% marks (45% for SC/ST) in aggregate or anyequivalent degree thereto.

OR

Bachelor's degree in any stream with 50% marks (45% for SC/ST) in aggregate withMathematics as an elective subject at +2 level.

**SEMESTER-I**

| Sr. No. | Sub Code | Subject | Marks | | | Credits |
| --- | --- | --- | --- | --- | --- | --- |
| | | | Internal Assessment | End Term | Total | |
| 1. | ODMCA111T | Design And Analysis Of Algorithms | 30 | 70 | 100 | 4 |
| 2. | ODMCA112T | System Software | 30 | 70 | 100 | 4 |
| 3. | ODMCA113T | System Simulation | 30 | 70 | 100 | 4 |
| 4. | ODMCA114T | Design of Programming Languages | 30 | 70 | 100 | 4 |
| 5. | ODMCA115P | Programming Laboratory -I | 30 | 70 | 100 | 4 |
| 6. | ODMCA116T | Secure software development | 30 | 70 | 100 | 4 |
| | | **Grand Total:** | **180** | **420** | **600** | **24** |

**SEMESTER-II**

| Sr. No. | Sub Code | Subject | Marks | | | Credits |
| --- | --- | --- | --- | --- | --- | --- |
| | | | Internal Assessment | End Term | Total | |
| 1. | ODMCA211T | Open Source Software | 30 | 70 | 100 | 4 |
| 2. | ODMCA212T | Distributed Systems | 30 | 70 | 100 | 4 |
| 3 | ODMCA213T | Web Technologies | 30 | 70 | 100 | 4 |
| 4. | ODMCA214T | Microprocessor & its Applications | 30 | 70 | 100 | 4 |
| 5 | ODMCA215p | Programming Laboratory-II | 30 | 70 | 100 | 4 |
| 6 | ODMCA216T | Information Systems and Security | 30 | 70 | 100 | 4 |
| | | **Grand Total** | **180** | **420** | **600** | **24** |

## SEMESTER-III

| Sr. No. | Sub Code | Subject | Marks | | | credits |
| | | | Internal Assessment | End Term | Total | |
|---------|----------|---------|---------------------|---------|-------|---------|
| 1. | ODMCA311T | Advanced Software Engineering | 30 | 70 | 100 | 4 |
| 2. | ODMCA312T | Soft Computing | 30 | 70 | 100 | 4 |
| 3. | ODMCA313T | Data Warehousing and Data Mining | 30 | 70 | 100 | 4 |
| 4. | ODMCA314T | Advanced Computer Architecture | 30 | 70 | 100 | 4 |
| 5. | ODMCA315T | Cloud Native Application development | 30 | 70 | 100 | 4 |
| 6. | ODMCA316P | Programming Laboratory -III | 30 | 70 | 100 | 4 |
| | | **Grand total** | **180** | **420** | **600** | **24** |

| SEMESTER-IV | | | | | | |
|---------|----------|---------|---------|---------|-------|-------|
| | | | **Credits** | | | **Marks** |
| Sr. No. | Sub Code | Subject | Internal Assessment | End Term | Total | Marks |
| 1. | ODMCA411P | Major Project/Industrial Training/Dissertation | 180 | 420 | 600 | 24 |

# Programme Project Report (PPR)

# Master of Computer Applications (MCA)



# Directorate of Open & Distance Learning

# Guru Nanak Dev University

**(ESTABLISHED UNDER STATE LEGISLATURE ACT NO. 21 OF 1969)**

Accredited by National Assessment and Accreditation Council (NAAC) At 'A++' Grade (Highest Level) As Per Modified Criteria Notified On 27/07/2017 And Conferred 'University with Potential for Excellence' Status and 'Category-I University' As Per University Grants Commission (F. No. 1-8-2017/(CPP-II) Dated 12/02/2018)

**Grand Trunk (G.T.) Road, Chheharta, Amritsar (Punjab) – 143005**
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## <u>Course Coordinators:</u>

- Dr. Parminder Kaur, Professor and Head, Department of Computer Science, GNDU

## <u>Coordinating Departments:</u>

- Department of Computer Sciences

# Programme Project Report

# Master of Computer Applications

The Directorate of Open & Distance Learning reflects the fact that all or most of the teaching is conducted by someone removed in time and space from the learner, and that the mission aims to include greater dimensions of openness and flexibility, whether in terms of access, curriculum or other elements of structure. Contributing to social and economic development, Online Learning is fast becoming an accepted and indispensable part of the mainstream educational systems.

Guru Nanak Dev University, Amritsar is accredited at A++ grade (highest level) by NAAC (as per modified criteria, notified on 27/07/2017), conferred 'University with Potential for Excellence' and 'Category-I University' by UGC, New Delhi.

As per the UGC notification F. 1-1/2020(DEB-I) dated 04-09-2020, Guru Nanak Dev University, has been given the privilege to run Online Programme without prior permissions from UGC as per below given notification; on the basis of is NAAC & NIRF rankings.

**(i) Programme's Mission and Objectives:**

The major objective of the programme is to meet the demand of the growing need of experts in the field of Information Technology, database, Networking etc. Master of Computer Applications programme under online mode is designed with a vision to enhance the technical skills of a professional working in different fields such as programming languages, networking etc.

**(ii) Relevance of the programme with HEI's mission and goals:**

Guru Nanak Dev University was established in Amritsar on November 24, 1969 to commemorate the Birth Quincentenary of Sri Guru Nanak Dev Ji, the apostle of universal brotherhood, truthfulness and non-violence, also revered as the founder of Sikhism. It won't be an exaggeration to state that His teachings and preachings and His own personal life are a perfect example to be emulated by the entire mankind even after about five and half a century, and will remain so eternally.

Ever since its foundation, the endeavor of the University has been to meet the objectives enshrined in the Guru Nanak Dev University Act 1969, which emphasized that the new University would make provisions for imparting education and promoting research in humanities, learned professions, sciences, especially of applied nature and technology. Studies and research on the life and teaching of Guru Nanak Dev Ji, in addition to working towards the promotion of Punjabi language and imparting knowledge to educationally backward classes and communities, are the other commitments.

The mission statement of Guru Nanak Dev University, Amritsar is:

- Imparting education and promoting research in humanities, learned professions, sciences, especially of applied nature and technology.
- Study and research on life and teachings of Sri Guru Nanak Dev, and of Punjabi language and literature.

# Directorate of Open & Distance Learning (ODL)

*To fulfill this mission of University and to provide the quality and affordable education to all sections of the society, Directorate of Online Learning has introduced this programme (Master of Computer Applications) with following goals:*

- Disseminating quality education among learners to nurture inquisitive minds and instill yearning to excel.
- Generating knowledge capital for the individual and societal growth.
- Upgrade and enhance the knowledge of the working professionals.

## (iii) Nature of prospective target group of learners:

MCA course under online mode is mainly designed for

- Working Professionals in IT Sectors
- Business Professionals
- Non-teaching staff working in different academic and non-academic institutions.
- Fresh Graduates seeking higher education along with work or job.

## (iv) Appropriateness of the programme to be conducted in Open & Distance Learning/Online Learning mode to acquire specific skills and competence:

This course is having subject specific learning outcomes as specified in the syllabi. Overall, after completion of this course, candidates, those are working professionals in IT sectors, administrators and business professionals well in their administrative skills.

## (v) Instructional Design:

This course is having 4 semesters and is carrying 96 credits in total. There are online programme in each semester in which, internal assessment (assignments) having a weightage equal to 30% marks is given, followed by the end-term examinations having a weightage equal to 70% of total marks. Each student has to attend the online programmes and submit the assignments allocated to them. During the online Programme, academic experts are taking the expert lectures and assisting the students about the syllabi, course content with the help of ICT facilities and also providing the notes and other form of study material along-side.

**For Online Mode:**

**E-Learning Materials Quality Standard:**

The online courses should comply with the following Quality standards, namely:-

(i) The courses should follow the following four quadrant approach, as per the SWAYAM Guidelines:-

**(a) Quadrant-I is e-Tutorial;** which shall contain: Video and Audio Content in an organized form, Animation, Simulations, video demonstrations, Virtual Labs, etc, along with the transcription of the video.

**(b) Quadrant-II is e-Content;** which shall contain; self-instructional material (digital Self Learning Material), e-Books, illustrations, case studies, presentations etc, and also contain Web Resources such as further references, Related Links, Open source Content on Internet, Video, Case Studies, books including e-books, research papers and journals, Anecdotal information, Historical development of the subject, Articles, etc.

**(c) Quadrant-III is the Discussion forum;** for raising of doubts and clarifying the same on real time basis by the Course Coordinator or his team.

**(d) Quadrant-IV is Assessment;** which shall contain; Problems and Solutions, which could be in the form of Multiple Choice Questions, Fill in the blanks, Matching Questions, Short Answer Questions, Long Answer Questions, Quizzes, Assignments and solutions, Discussion forum topics and setting up the FAQs, Clarifications on general misconceptions.

**Directorate of Open & Distance Learning (ODL)**

**(vi) Procedure for Admission, Curriculum, Transaction and Evaluation:**

- Eligibility –As per university norms & UGC regulations.
- **Admission Procedure:**

Directorate of online Learning is having fully online procedure for admission including payment in the online learning platform. The platform has been integrated with different departments / sections of the University such as Accounts Branch, Examination Branch, General Branch and Registration Branch etc. to provide different facilities similar to the students being admitted under Regular mode. At the time of Registration, Students are provided with Unique ID / Student ID that is linked with University databases of different sections and is used across his/her academic stay in the University. Even the same ID is used for issuing of different certificates such as migration, transcripts etc. after completion of the course.

**Steps for Online Admission:**

1. Candidate can register himself/herself by visiting Directorate website and follow the registration guide as specified online.

2. Shall record Aadhar details or other Government identifier(s) of Indian Learner and passport for an International Learner.

**Evaluation:**

The University is running all the online courses in Semester System under Credit Based Evaluation as per University Grants Commission (Open and Distance Learning Programmes and Online Programmes) Regulations, 2020. University is having ordinances for courses under ODL, duly approved by the regulation committee and Syndicate of the University and all the students admitted under online mode are governed by these rules and ordinances. Grading criteria, conversion from CGPA, Maximum Duration of Course and Evaluation and Certification Criteria and Re-evaluation and Supplementary examination criteria is given below:

**Table for Credit Scheme for Online courses:**

A CGPA of 6 will be considered equivalent to 60% marks. The conversion of CGPA to Percent Score will be carried out by multiplication of respective CGPA by a factor of 10. The equivalence between selected percentages in absolute marks system and CGPA is as follows.

| Academic Performance | Grade | Grade Points | Percent Score in Absolute Marking System | %age | CGPA |
|---|---|---|---|---|---|
| Outstanding | O | 10 | 90-100 | 100 | 10 |
| Excellent | A+ | 9 | 80-89.9 | 90 | 9 |
| Very Good | A | 8 | 70-79.9 | 80 | 8 |
| Good | B+ | 7 | 60-69.9 | 70 | 7 |
| Above Average | B | 6 | 50.59.9 | 60 | 6 |
| Average | C | 5 | 40.1-49.9 | 50 | 5 |
| Pass | P | 4 | 35-40 | 40 | 4 |
| Fail | E | 0 | Below 35 | | |
| Absent | Ab | 0 | | | |

**Conversion from CGPA to Percentage:**

A CGPA of 6 will be considered equivalent to 60% marks. The conversion of CGPA to Percent Score will be carried out by multiplication of respective CGPA by a factor of 10.

(a) A student shall be required to maintain a minimum of 4 CGPA at the end of the final semester of course.

(b) CGPA will be calculated from sum of internal assessment and marks obtained in end term examination.

(c) A student getting 'F' Grade in any subject will be treated as having failed in that subject. If he/she fails in a subject, he/she will have to repeat the subject and will have to obtain at least 'P' grade in that subject, within the maximum period defined (UGC Letter no. F.12-I/2015 (CPP-II) dated 15.10.2015) to complete the degree/diploma for that subject.

(d) It will be compulsory for a student to appear in the End-Semester Examination (Major Test). A student who does not appear in the End-Semester Examination (Major Test) will be treated as having failed in that course and will be awarded 'F' Grade.

(e) Re-evaluation shall be allowed as per ordinances.

(f) The medium of instructions shall be as already existing in the ordinances.

(g) Grace marks will be allowed as per University ordinances.

(h) Maximum time allowed to pass a course as per UGC online guidelines and other regulations.

**Evaluation and Certification:**

The examination of the programmes in online mode shall be managed by the examination and evaluation unit of University and shall be conducted in the online proctored mode.

The successful candidate shall be awarded the degree in the subject of his/her study indicating the CGPA obtained on the basis of the result of all the semester examinations.

A student who does not complete the programme of study within the minimum duration of the course of his/her study, or fails in any course,

- shall not be eligible for any merit position/medal/award of the University.
- shall be awarded certificate as per earned credits in CBCS guidelines governing lateral exit.

**Assignments:**

The candidate shall be required to submit assignment(s) for each subject of course, as assigned by the Academic Experts, during online Classes. Submission of assignments is pre-requisite for appearing in the end-term examinations.

**(vii) Requirement of Laboratory Support and Library Resources:**

(i) Laboratory support for this course is required and online virtual lab is available on learning platform.

(ii) E learning Library is having a well-equipped that is having large collection of books, manuals, rare scripts, e-books, journals etc. E learning library is accessible to all the candidates of online mode for 7 days a week.

**(viii) Cost estimate of the programme and the provisions:**

**Directorate of Open & Distance Learning (ODL)**

Directorate of Online Learning is having allocation in University budget, duly approved by the finance committee of the University. Following provisions are available for different courses in the budget head:

| Sr. No | Budget Code | Budget Head | Budget Allocated |
|---|---|---|---|
| 1 | OD - 001 | Salaries etc. | Rs. 1,02,89000/- |
| 2 | OD – 002 | Contingencies etc. | Rs 1,00,000/- |
| 3 | OD – 003 | Preparation and Printing of Study Material etc | Rs. 9,00,000/- |
| 4 | OD – 004 | Honorarium and TA/DA for Coordinators, subject matter expert, evaluator etc | Rs. 6,00,000/- |
| 5 | OD – 005 | Computer, Printer, Photocopier, Scanner, Projector, UPS, AMC, Equipments and its repair etc | Rs. 2,00,000/- |
| 6 | OD – 006 | Hospitality and Discretionary fund | Rs. 20,000/- |
| 7 | OD - 007 | Daily Wagers / Appointments through Outsourcing | Rs. 1,50,000/- |

**(ix) Quality Assurance Mechanism and expected programme outcomes:**

HEI is having a following mechanism for quality assurance:

- All the courses are under Credit based Semester System as per University Grants Commission (Open and Distance Learning Programmes and Online Programmes) Regulations, 2020.
- Curriculum is having a flexibility for continuous updation as per the current requirements and having a provision for each academic session, as per the feedback obtained from the students as well as subject experts
- Academic calendar is followed as per the approved schedule.
- Examinations of Online candidates are conducted by the examination wing of the University, similar to courses running in conventional mode.
- Directorate is having a mechanism to obtain feedback from students under online mode and updating the course content and other facilities as per suggestions, requirements of the candidates.
- Progress and quality of the programme is monitored by the Centre for Internal Quality Assurance (CIQA) for online mode courses.
- The quality of the programme is ensured with strict monitoring by the Director and the Course Coordinator along with Subject experts.