



ORDINANCE
Master of Computer Applications (MCA)
(A-10)

Notified on 12/09/2023

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Universities Amendment Act 2023*

T.S. MISHRA
UNIVERSITY
LUCKNOW

UP Act No.10 of 2023

PREFACE

To ensure a smooth educational experience and uphold academic excellence, the rules and regulations for the Master of Computer Application with specialization Artificial Intelligence and Machine Learning (MCA)" course is published under Ordinance 01. These regulations are supplementary to the standards established by the regulatory body as updated periodically.



School of Computer Science & Artificial Intelligence

Ordinance for Master of Computer Applications [MCA]

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Master of Computer Applications (MCA)

1. EDUCATIONAL OBJECTIVES & OUTCOMES

1.1 Program Educational Objectives (PEOs)

A graduate of MCA Program should:

- (i) **PEO 1:** Students will establish themselves as effective professionals by solving real problems through the use of computer science knowledge and with attention to team work, effective communication, critical thinking and problem solving skills.
- (ii) **PEO 2:** Students will develop professional skills that prepare them for immediate employment and for life-long learning in advanced areas of computer science and related fields.
- (iii) **PEO 3:** Students will demonstrate their ability to adapt to a rapidly changing environment by having learned and applied new skills and new technologies.
- (iv) **PEO 4:** Students will be provided with an educational foundation that prepares them for excellence, leadership roles along diverse career paths with encouragement to professional ethics and active participation needed for a successful career.

1.2 Program Outcomes:

A graduate of MCA Program will demonstrate:

- (i) **PO1- Disciplinary knowledge:** Apply the knowledge of mathematics, science, computing fundamentals, and a Computing specialization to the solution of complex problems.
- (ii) **PO2- Problem analysis:** Identify, formulate, review research literature, and analyse complex computing problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and computing sciences.
- (iii) **PO3- Design/development of solutions:** Design solutions for complex problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- (iv) **PO4- Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- (v) **PO5- Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern Computer Science and IT tools including prediction and modelling to complex computing activities with an understanding of the limitations.
- (vi) **PO6- The Computer professional and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional computing practice.

- (vii) **PO7- Environment and sustainability:** Understand the impact of the professional computing solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- (viii) **PO8- Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the computing practice.
- (ix) **PO9- Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- (x) **PO10- Communication:** Communicate effectively on complex Computing activities with the Computer Science community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- (xi) **PO11- Project management and finance:** Demonstrate knowledge and understanding of the Computer Science and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- (xii) **PO12- Lifelong learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

1.3 Programmed Specific Outcomes:

A graduate of MCA Program will:

- (i) **PSO1 - Knowledge of Computing Systems and Project Development Skills:** An ability to understand the principles and working of computer systems and understand the structure and development methodologies of software systems.
- (ii) **PSO2 - AI & ML Model Development Skills:** Use tools and techniques in Artificial Intelligence & Machine Learning for solving problems.
- (iii) **PSO3 - Applications of AI & ML:** Apply intelligent models for multidisciplinary areas.

The New Education Policy 2020 focuses on skill development among students to prepare them to develop academic and industry- oriented skills in order to gain knowledge of business practices and be absorbed in the industry. This 2 Year MCA program will provide the students with flexibility to complete the courses at their own pace with the option of multiple entry and exit at various levels from the Academic Year 2025-26. This will remove the rigid boundaries and provide new avenues to choose and learn. This shall aim to provide opportunities to experience the full range of holistic and multidisciplinary education as per the student's preference. The students shall be able to analyze the world marketplace, create an awareness of various type of real issues and technical practices.

2. SHORT TITLE AND COMMENCEMENT

- 2.1 The “**Ordinances**” shall mean the Ordinances of T.S. Mishra University, Lucknow, Uttar Pradesh, framed under section 7 of sub section (1) of the Uttar Pradesh Private State Universities Act, 2019.
- 2.2 They shall come into force with effect from the date of approval of the Executive Council.
- 2.3 Nothing in these Ordinances shall be deemed to debar the University to amend these Ordinances subsequently.
- 2.4 Unless provided otherwise, the regulations, orders, memos, codes, procedures, policies, schemes etc., on the subjects covered under these Ordinances, shall cease to operate from the date of enactment of these Ordinances.
- 2.5 Any abbreviation or shortened form of a word shall represent and mean exactly that word as defined in the Act, the Statutes, these Ordinances, Manuals and such other documents of the University, as may be framed from time to time.

3. DEFINITIONS

- 3.1 “**ABC**” means Academic Bank of Credit
- 3.2 “**Act**” means the Uttar Pradesh Private Universities Act, 2019.
- 3.3 “**Aggrieved Student**” means a student, who has any complaint in the matters relating to or connected with the grievances defined under these Ordinances.
- 3.4 “**BOS**” means Board of Studies of a Department/ School as prescribed by the Statutes.
- 3.5 “**Class**” means specific group of students meeting for specific instructional purposes; that may include a lecture, tutorial, practical, studio, workshop session.
- 3.6 “**Clause**” means duly numbered Clauses of these Ordinances.
- 3.7 “**Commission**” means the University Grants Commission established under the UGC Act, 1956.
- 3.8 “**Continuing Student**” means a student who has completed at least one semester prior to the current semester.
- 3.9 “**Course Detail**” means detailed teaching scheme of a course.
- 3.10 “**Course**” means a component of a programme. All courses need not carry the same weight. The courses shall define learning objectives and learning outcomes. A course shall be designed to comprise lectures/ tutorials/laboratory work/ field work/ outreach activities/ project work/ vocational training/viva/ seminars/ term papers/assignments/ presentations/ self-study etc. or a combination of some of these.
- 3.11 “**Credit**” determines the number of hours /periods of instructions required per week. One credit is equivalent to one hour /period of teaching (lecture or tutorial) or two hours/period of practical work/field work per week.
- 3.12 “**Declared Admission Policy**” means such policy, including the process there under, for admission to a course or program of study as may be offered by the

University by publication in the prospectus of the University.

3.13 “**Department**” means the Department of Studies and includes Centre of Studies and Research.

3.14 “**Disciplinary Probation**” refers to the status assigned to a student on committing an act of misconduct, academic or otherwise and once assigned, the student remains on disciplinary probation for the period decided by the Vice Chancellor.

3.15 “**Enrolment Number**” means a unique number allotted as System Id, to a student on his admission in the university. Enrolment number/System Id remains unchanged throughout the duration of student’s stay at the university.

3.16 “**ESE**” means End-Semester Examination.

3.17 “**Ex-Student**” means a student who has failed in a course(s) after appearing in final year/semester examinations and who registers fresh to pass the said course(s) on payment of a prescribed fee.

3.18 “**Expulsion**” means permanent removal from the University rolls with prohibition on future enrolment.

3.19 The “**Faculty Board**” of each School of studies shall be constituted per Section 27 of the Statutes.

3.20 “**Fresher**” means a student enrolled on a programme for the first time.

3.21 “**Faculty or School**” means an institute or school established by the University by its Act and the Statutes.

3.22 “**Government**” means Government of Uttar Pradesh.

3.23 “**He**” includes her and “**His/Him**” includes her.

3.24 “**LTPC**” means hours of Lecture, Tutorial and Practical per week and “C” refers to the total credit of a course.

3.25 “**Matriculation**” means registration of provisionally admitted students by the concerned School/Department.

3.26 “**Mentor**” means a faculty member who acts as counsellor, guide, motivator, and role model to a group of students (mentees), assigned to him. He acts as career guide to his mentees and also advises them course- specific and programme-specific information.

3.27 “**MEME**” means Multiple Entry and Multiple Exit.

3.28 “**MSE**” means Mid-Semester Examination.

3.29 “**NCrF**” National Credit Framework

3.30 “**NEP**” means National Education Policy-2020.

3.31 “**NHEQF**” means National Higher Education Qualification Framework

3.32 “**NSQF**” National Skill Qualification Framework

3.33 “**Practical**”. Includes lab work/ project/ dissertation/fieldwork/ studio/ jury/ moot court/ clinical posting/ survey and similar hands-on activities related to previously learnt principles/ theory in the chosen field of learning under the supervision of an expert or qualified individual.

3.34 “**Pre-requisites**” means conditions that must be met before a student can register for a course.

3.35 “**Programme**” means an educational programme leading to the award of a

Degree, diploma or certificate.

3.36 "Programme Detail" means the year-wise well-structured teaching scheme of programmes which may include courses from major, minor, multidisciplinary, interdisciplinary, ability enhancement, skill enhancement, value-added, internship/ apprenticeship, capstone, community connect, project/ dissertation/ research-project, etc

3.37 "Prospectus" means and includes a publication in the form of a booklet or brochure, whether in print or otherwise, for providing fair and transparent information to the general public (including to those seeking admission) by the University or any authority or person authorized by it to do so on its behalf.

3.38 "Roll Number" is the number issued to every student by the Controller of Examinations and shall remain valid for the total duration of the Programme.

3.39 "Rustication" from the University means the withdrawal of right to access to the entire premises and facilities of the University campus for a specified period and/ or till the fulfillment of specified conditions.

3.40 "Student Grievance Redressal Committee" (SGRC) means committee(s) constituted under this Ordinance at the level of the University, for dealing with grievances of the students.

3.41 "Semester" shall consist of 15-18 weeks of academic work equivalent to around 90 teaching days.

3.42 "Student" means a person enrolled, or seeking admission to be enrolled, in the University.

3.43 "Suspension" from the University means withdrawal of the right to access to all.

Some of the facilities or premises of the University as an interim measure, pending further investigation.

3.43.1 "Syllabi" means details of the course and includes a description of nature, duration, pedagogy, syllabus, eligibility and related details.

3.43.2 "Tutorial" means courses involving problem-solving and discussions relating to a field or discipline under the guidance of qualified personnel in a field of learning, work/ vocation, or professional practice.

3.43.3 "University" means the T.S. Mishra University, Lucknow, Uttar Pradesh established under the Uttar Pradesh Private Universities Act, 2019; and Definitions specified in the University Act and the Statutes shall apply *ipso facto* unless provided otherwise.

4. ADMISSION AND ENROLMENT OF STUDENTS

(i) Admission to different programmes of the University shall be based on merit, providing equal opportunity to all without any prejudice towards the gender, religion, caste, creed or nationality of a candidate.

- (ii) The University may make suitable provisions for reservation for the students belonging to weaker section(s) of the society and others in accordance with the provisions of the Act of the University and decision of the Executive Council.
- (iii) The admission criterion recommended by the Admission Committee and approved by the Academic Council shall be followed for admission in all the Programmes of studies.
- (iv) Provided that the number of seats in each programme of study, as determined by the Admission Committee and approved by Academic Council may, at the discretion of the Vice Chancellor in his capacity as the Chairman of the Academic Council, be increased by a maximum of 15% of the approved seats for additional intake of students in the said program. This provision, however, shall be subject to the condition that there are no overhead costs of faculty and resources.
- (v) In general, the criterion prescribed by the respective Statutory Councils shall be followed in admission to council-based programmes. However, the university may decide to have intake less than that prescribed, provided the same is approved by the Academic Council of the university.
- (vi) The University may make provisions for admission through lateral entry in programmes, as may be approved by the relevant competent authority. Admission to various academic programmes may also be facilitated through the Multiple Entry Multiple Exit (MEME) guidelines issued by the UGC, in pursuance of the NEP-2020. The qualification type and credit requirements for entry or exit at various academic levels (Level 5 to Level 10) shall be as per the SOP for operationalization of NCrF at Higher Education Institutions.
- (vii) The registration of the provisionally admitted and continuing students shall be done by the School(s) /Department(s) on dates notified in Academic Calendar.
- (viii) Candidates who have passed BCA from any recognized University are eligible for admission to first year of 2 Years MCA program.

4.1 Enrolment

- 4.1.1** The student shall be given a unique and permanent enrolment number and issued an identity card bearing the enrolment number (i.e. system ID), and the same must be quoted by the student in all communications with the University.
- 4.1.2** The office of the Registrar and Internal Quality Assurance Cell shall maintain a record of all enrolled students studying in the various Schools/Departments/Centre of the University or carrying on research work in the University.
- 4.1.3** A student applying for a change of his name in the record of students shall submit his application to the Registrar accompanied by
 - a. The prescribed fee;
 - b. An Affidavit relating to his present and proposed name, duly sworn in the presence of a Magistrate by himself;
 - c. A publication in a newspaper in which the proposed change of name has been advertised. However, the provision relating to publication shall not be

applicable in case where a woman student wants change in her name following her marriage in which case marriage certificate indicating the new name shall be valid.

4.2 Migration of students

Inter-university migration of students may be allowed in special circumstances as per the policy notified on the subject. It shall be allowed under special circumstances on the recommendations of the Equivalence Committee, appointed by the Vice-Chancellor under the chairmanship of the Dean of Academic Affairs.

If a student takes a Migration Certificate to join another University, his enrolment to the University shall lapse until he/she may subsequently return with a Migration Certificate from that University, to take admission in another programme of this University. Fresh enrolment in such cases shall be necessary.

4.3 TRANSFER OF PROGRAMME

A first-year student, subject to the availability of seats and fulfilling the minimum qualifications, may be allowed to change his Programme on the recommendation of the Equivalence Committee appointed by the Vice Chancellor under the chairmanship of the Dean of Academic Affairs.

4.4 PROCEDURE OF WITHDRAWAL

The student may withdraw his admission as specified by the University on or before the prescribed date. The University will refund the deposited amount after deducting processing fee in accordance with the guideline's issues by the concerned regulatory authority, from time to time.

5. COURSES OF STUDY

5.1 Programmes of Studies

5.1.1 The University on the recommendations of the Academic Council and with the approval of the Executive Council, shall offer under-graduate and post-graduate programmes in areas of Computer Science and Engineering.

The University may also run Diploma and Certificate courses of shorter durations.

5.1.2 The University shall also offer doctoral and or post-doctoral programme in chosen areas of a specialization in regard to the degree programmes.

5.1.3 The nomenclature of various degrees shall align with the regulations framed by the regulatory authorities as defined in the Act, or as may be approved by the Executive Council.

5.1.4 The structure and duration of the academic programmes shall be as approved by

the Academic Council.

5.1.5 The University shall make provisions in its regulations to enable students to concurrently convert their courses of studies into integrated degree programmes of durations approved by the Academic Council wherever permissible by the statutory regulatory bodies.

5.1.6 NCrF recognizes two types of experiential learning i.e. within academic or vocational programmes and through employment post-completion. Credits are awarded based on the basic principles of NCrF for both scenarios

Recognition of Prior Learning (RPL)

Through NCrF, the NEP-2020 recognizes RPL, allowing students, learners, and the workforce to receive credit for the knowledge and skills they have acquired through formal, non-formal, traditional, or other methods.

Pursuing two degrees

By the UGC guidelines, a student can pursue two full-time academic programmes simultaneously in physical mode/ Online Distance Learning or combination of both, provided that in such cases, class timings for one programme do not overlap with the class timings of the other programme.

5.1.7 The University may also run courses through distance learning, correspondence, and online mode. The guidelines of University Grants Commission, however, are to be complied with.

5.1.8 (A) The administrative structure of a School shall be as approved by the Executive Council. The Executive Council shall also lay guidelines for the smooth running and effective technological of academic programmes, the cooperation and coordination amongst the Schools and the linkages with other academic and research organization(s) as well as the Industry.

(B) All the academic programmes framed by the Board of Studies of a Department and concurred in by the Faculty Board of the School shall be submitted to the Academic Council for approval by the Executive Council.

(C) The Executive Council as and when deemed necessary, may appoint committee(s) for periodic review of a programme, a Department or a School.

5.2 Registration of Students

5.2.1 Academic Registration

- a)** The Head of the Department/Dean of the School shall issue the list of courses to be offered during the semester well before the Registration date(s) specified in the Academic Calendar.
- b)** Every student shall register himself for the courses that he wishes/opts to pursue in that semester as prescribed.

c) Programme -coordinators/mentors amongst the faculty members of the Department will provide necessary information on the courses and to advise the students on registration.

5.2.2 Registration for Semesters

- (i) Registration for each semester has to be done on date(s) notified in Academic Calendar. It will involve:
 - Clearance of all dues of the University; however merely depositing of the fee will not amount to academic registration.
 - After completing the online process for academic registration on or before the dates specified in the Academic Calendar, it is mandatory for the students to verify and sign in person, the course registration document available with the respective mentors.
- (ii) A student must ensure that he/she satisfies the pre-requisites, if any, for each course he/she registers for. The sole responsibility for registration rests with the student.
- (iii) In case a student is registering for course(s) other than those prescribed in the regular scheme for that semester, the University shall not be responsible for a clash-free scheduling of such course(s). The student himself shall verify the timetable and ensure that the regular course(s) do not clash with other course(s) he/she is choosing.
- (iv) The student will not be allowed to undergo academic registration if the 'Maximum Duration for Completion of the Degree/Diploma/Certificate' does not permit so.
- (v) A student will not get any credit for a course for which he has not registered or has registered without being eligible.

5.2.3 Late Registration

- (i) The maximum time permitted for late registration on payment of the prescribed fee shall be one week from the last date of registration as specified in the Academic Calendar.
- (ii) Late registration may be allowed, beyond the period of one week, by the Vice- Chancellor or his nominee only on valid reasons and on the recommendations of the Mentor/ Head of Department/ Dean of School and Dean of Academic Affairs. Provided that in exceptional circumstances, on the recommendations of the Dean of a School, the Vice Chancellor may further allow late registration.
- (iii) Late Registration may be allowed for a student who is on disciplinary probation, only with the approval of the Vice-Chancellor on recommendations as mentioned in 4.2.3 (b).
- (iv) Students registering late may be allowed to compensate for the loss of any component of continuous assessment by the Dean of the School. The student

may be allowed to complete the same on a date(s) decided by the Dean of the School.

5.3 Adding and Dropping of Courses

- a. A student on the recommendations of his Mentor, duly endorsed by his Head of the Department and recommended by the Dean to add or drop course(s) as notified in the Academic Calendar with the approval of the Dean of Academic Affairs.
- b. A student who is on disciplinary probation shall be allowed to change the course, only with the approval of the Vice-Chancellor within two weeks.
- c. A student shall be asked to drop a course within two weeks:
- d. if it is found that he /she does not meet the pre-requisites of the course, or
- e. if there is a clash in the student's timetable preventing him from attending the course, or
- f. If he/she is found not entitled to register for that course for any other reason(s).
- g. A student shall be allowed to take any course out of his active backlogs if time table permits, within the permissible credit limits.

5.4 Maximum Duration for the Completion of MCA Programme

5.4.1 The maximum duration for completion of MCA Programme shall be 4 years. Provided, that in exceptional circumstance a further extension of one more year may be granted. The Vice Chancellor may consider allowing extension by one year beyond 4 years for completion of a degree of MCA on case-to-case basis, depending on the merit of each case.

5.4.2 The enrolment of the student, who fails to complete the requirements for the award of a degree in extended duration, shall stand cancelled and no degree shall be awarded.

Provided that the student may be considered for the award of a certificate diploma or degree, in case he has earned the requisite credits, wherever permissible.

5.4.3 The time taken to improve the grade/CGPA shall be counted in '**Maximum Duration allowed for completion of a Programme**'.

5.5 Duration of the Semester

5.5.1 The date of commencement and conclusion of Odd Semester and Even Semester shall be as notified in the Academic Calendar.

5.5.2 The duration of each semester shall be on average 16-18 weeks excluding examinations with 5 days a week academic schedule.

6. MEDIUM OF INSTRUCTION AND EXAMINATIONS

English shall be the medium of instruction and examinations. The University may, however, decide to introduce regional language(s) as a medium of instruction and examination.

7. UNIVERSITY FEE

- 7.1 The fee structure of various programmes shall be concomitant with the objective of providing quality education to the University students.
- 7.2 The tuition, examination and any other fee chargeable from the students shall be as recommended by the Fee Fixation Committee and approved by the Executive Council keeping given the provisions of Section 29 (c) of the Act. The fee revision shall be duly notified.

The revised fee shall apply to all the students admitted in that Academic year and onwards.

8. AWARD OF FELLOWSHIPS, SCHOLARSHIPS, MEDALS AND PRIZES

- 8.1 The Fellowships, Scholarships, Medals and Prizes shall be instituted with the approval of the Executive Council.
- 8.2 The Executive Council may appoint committee(s) to frame guidelines for the award of fellowships, scholarships, medals, and prizes.
- 8.3 The eligibility criteria, values tenure, methodology, and procedure for the selection of awardees shall be as approved by the Executive Council.

9. EXAMINATIONS AND EVALUATION

9.1 Registration for Examination

- (i) No student shall be admitted to any examination of the University, unless he has been duly enrolled/registered as a student for the prescribed number of courses, except in the case of an Ex-Student.
- (ii) A student who fails to submit the registration form (every Semester) shall be deemed as an unregistered student and shall not be allowed to attend classes and take examinations even if he/she has paid the fees.

9.2 Attendance Requirements

9.2.1 Course-Wise Attendance

A student is expected to attend all the classes consisting of lectures, tutorials, labs, and workshop sessions. A student may be debarred from appearing in the ESE of one or more courses for shortage of attendance as enumerated below:

- (a) Attendance shall be monitored course-wise.
- (b) A student shall be required to have at least 75% attendance in a course to be eligible to appear in MSE as well as in ESE in the said course.
- (c) Students will be given a 10% attendance benefit to participate in approved co-curricular and extra-curricular activities if prior approval has been taken from the competent authority.
- (d) If a student is eligible for the End-Semester Examination based on attendance in the class, but is not able to take the examination due to any reason, then he/ she can appear in that ESE at the next time. He/she will not need to take classes again

and the marks earned by him in the CA and MSE shall be taken into account while determining overall marks in the course.

- (e) In extreme cases of hardship on account of hospitalization of self, immobilization for valid reasons, or in case of natural calamity, the Dean of the School may recommend attendance to the extent of 10%, provided the claim is duly supported by requisite documents to the satisfaction of the Dean concerned/ the medical committee constituted by Dean Academic Affairs for which the case is referred to.
 - i. In case of hospitalization, complete medical treatment records of the hospital, may be verified by the university.
 - ii. In case of natural calamity, the official government notification relating to the calamity in the concerned region will suffice.
- (f) In case a student has been allowed to change the course or programme during the current semester, the classes attended in previous course/ programme will also be considered in the calculation of attendance, and the eligibility for appearing in ESE will be determined accordingly.
- (g) Irrespective of whether a continuing student has registered late or on time, calculation of attendance shall be based on all the classes held/engaged and not from the date on which the student has registered unless otherwise decided by the committee constituted and headed by the Dean Academic Affairs.

9.3 Debarring from Examination

- (i) A student who has less than 75% attendance in any course will not be able to take the End-Semester-Examination (ESE) in that course and such students will be designated as '**debarred**' students in that course.
- (ii) 'DEB' grade will be recorded against that course in the transcript of the debarred students.

9.4 Evaluation Scheme

9.4.1 For Theory Subjects

- (i) For Theory Courses Minimum passing marks must be 40% including Internal (Sessional and Continuous Assessment) and External (End Semester Examination) to pass each theory subject.
- (ii) Minimum 30% marks is required to pass the End Semester Examination for each theory subjects.

Marks Distribution:

Internal Assessment : 40 Marks

- (a) Continuous Assessment (CA) : 20 marks
- (b) Mid-Semester Examination (MSE) : 20 marks

External Assessment (End-Semester Examination (ESE)) : 60 Marks

Total : 100 Marks

9.4.2 For Practical Subjects:

- (i) Minimum Passing Marks must be 50% including Internal and External Practical Examination to pass each practical subject.
- (ii) Minimum 40% marks is required to pass the End Semester Practical Examination for each practical subjects.

Marks Distribution:

Internal Assessment : 30 Marks

External Assessment (End-Semester Practical Examination (ESE) : 20

Marks

Total : 50 Marks

9.4.3 For Grace Marks:

- (i) A candidate may be awarded grace marks up to a maximum of total 10 marks in maximum 2 subjects, which may be theory papers, practical, project, seminar, industrial training or aggregate marks once during their entire course.
- (ii) The grace marks shall not be added to the aggregate marks.
- (iii) No grace marks shall be awarded in carry over / re-back/special back examinations.

9.4.4 For Summer Internship / Projects / Seminar etc. Evaluation is based on work done, quality of report, performance in viva-voce, presentation etc. To pass in Summer Internship / Projects / Seminar, a student must be secured minimum of 40% of the maximum marks prescribed, including internal assessment. i.e. Minimum Passing Grade is "E".

Note: (a) For practical examinations, external examiners will be appointed by the Dean of Academic Affairs on the recommendation of the HOD/ School Dean.

(b) The internal assessment is based on the student's performance in mid semester tests (two best out of three).

9.4.5 Carryover System

- a. If students are not able to clear/pass or absent in any theory or practical subjects in odd/even semester, it will be considered as carry over in that subject.
- b. External examination for carry over paper will be conducted during odd or even end semester examination respectively.
- c. Special carry over paper examination may be conducted, if required, with permission of VC, COE and Dean.

9.4.6 For Promoting Next Academic Year for MCA Students

- (i) If students don't have any carry over in any theory and practical subjects, they will be promoted for next academic year as status, PASS.
- (ii) If student has cleared any number of subjects from odd and even semester of same academic year, they will be promoted for next academic year as status, PROMOTED with carry over.

9.5 Conduct of Examinations

The Mid-Semester and End-Semester examinations shall be conducted by the Controller of Examination of the University on the date(s) notified in Academic Calendar

9.6 Use of Unfair Means

An Examination Manual shall provide for what constitutes use of unfair means and penalties there off.

9.7 System of Grading

Unless otherwise prescribed by the statutory regulatory authority of a Programme, the University shall use a ten- point broad-band grading system. Each Programme shall have prescribed number of credits assigned to it, depending upon the academic load of the course determined by the weekly contact hours. The credits assigned shall be provided in course details.

9.7.6 Award of Grades

Based on the marks obtained in the courses studied by a student, a letter grade as given in the table below shall be awarded to each course using an absolute grading system.

Award of Grades based on absolute Grading System		
Lower range of Marks	Upper Range of Marks	Grade
> 90	\leq 100	O
> 80	\leq 90	A ⁺
> 70	\leq 80	A
> 60	\leq 70	B ⁺
> 50	\leq 60	B
> 40	\leq 50	C
----	\leq 40	F
	Absent in ESE	Ab

	Shortage of Attendance	DEB
--	------------------------	-----

For all practical purposes, 'Ab' and 'DEB' grades shall be treated as 'F' grades. The following letter grades shall be used to assess a student's performance:

Grades and Grade Points		
Letter Grades	Description	Grade Points
O	Outstanding	10
A+	Excellent	9
A	Very Good	8
B+	Good	7
B	Above Average	6
C	Average	5
F	Fail	0
Ab	Absent	0
DEB	Debarred	0

The following grades shall be used for non-credit courses:

Grades and Grade Points		
Letter Grades	Description	Grade Points
Q	Qualified	0
NQ	Not Qualified	0

For the computation of grade points, the University will follow absolute grading system.

9.7.7 General guidelines for the award of grades

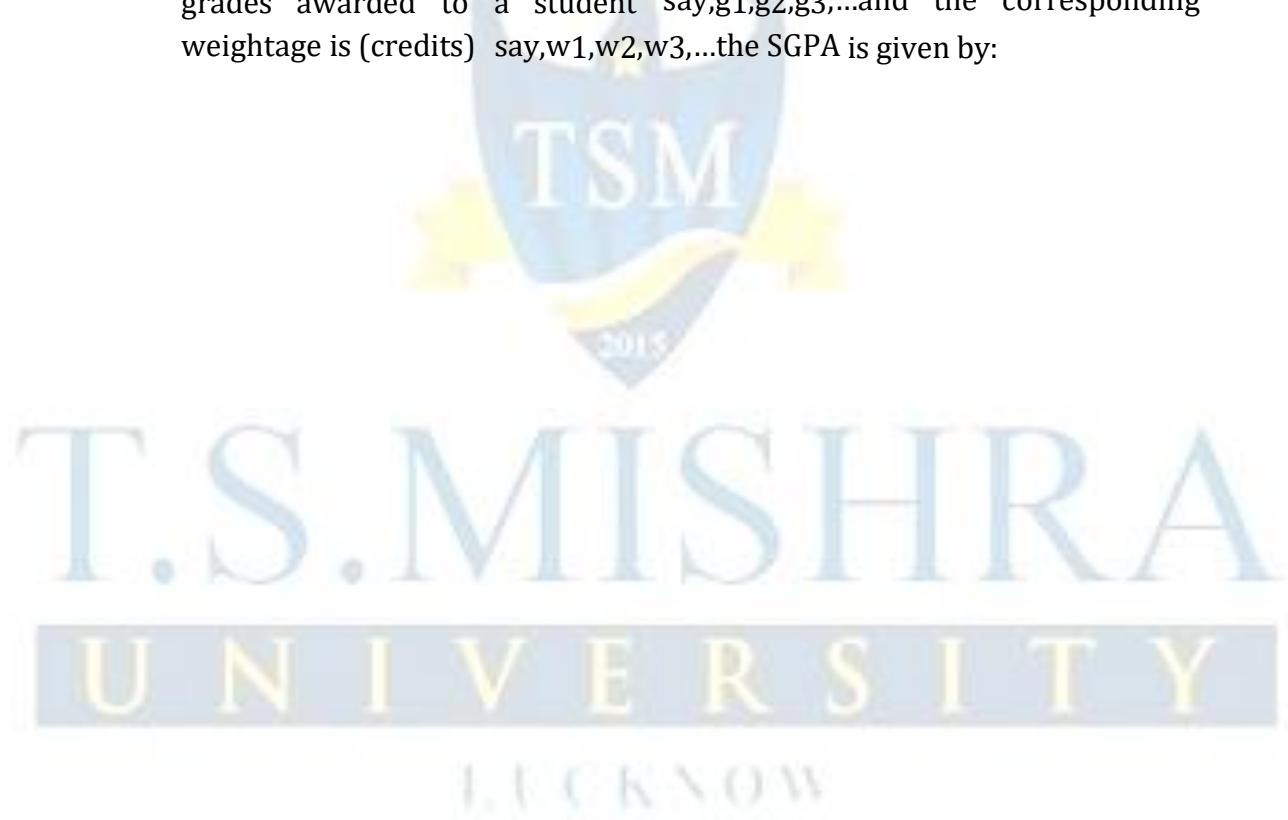
- Evaluation of different components of a course outlined in the course plan shall be done in marks.
- The marks obtained in various components shall be added to get total marks secured on a 100-point scale for theory and laboratory courses.
- The End-Semester Examinations' question paper shall cover all the sections of the syllabus.

The grades shall be notified with the approval of Vice-Chancellor on the recommendations of the Examination Committee.

- The Examination Committee shall consist of:
- Dean Academic Affairs - Chairman
- Dean of the School – Member
- Controller of Examination - Convener

9.7.8 Semester Grade Point Average (SGPA)

The Semester Grade Point Average is a weighted average of the grade points earned by a student in all the courses credited and describes his academic performance in a semester. If the grade point associated with the letter grades awarded to a student say, g_1, g_2, g_3, \dots and the corresponding weightage is (credits) say, w_1, w_2, w_3, \dots the SGPA is given by:



$$SGPA = \frac{w_1g_1+w_2g_2+w_3g_3+\dots}{w_1+w_2+w_3+\dots}$$

Thus, for j^{th} semester

$$\text{SGPA}(\mathbf{Sj}) = \frac{\sum(C_i \times G_i)}{\sum C_i}$$

Here,

C_i = number of credits of the i^{th} course in j^{th} semester

G_i = grade point scored by the student in the i^{th} course in j^{th} semester.

9.7.9 Cumulative Grade Point Average (CGPA)

The Cumulative Grade Point Average indicates the overall academic performance of a student in all the courses registered up to and including the latest completed semester. It is computed in the same manner as SGPA, considering all the courses (say, n), and is given by:

Note:

$$CGPA = \frac{\sum_{i=1}^n w_i g_i}{\sum_{i=1}^n w_i}$$

$$CGPA = \frac{\sum(C_j \times S_j)}{\sum C_j}$$

Here,

S_j = SGPA of the j^{th} semester

C_j = total number of credits in the j^{th} semester

- I. A student shall be required to complete successfully all the courses of the curriculum prescribed for the Programme and attain a minimum level of academic performance, by way of obtaining a minimum CGPA of 4.5 in UG Programmes (MCA), otherwise decided by the Academic Council.
- II. A student shall normally have to clear his backlogs in the sequence in which he has obtained lower grades in the preceding semesters.
- III. A copy of the grade card is issued to each student at the end of a Semester. A duplicate copy, if required, can be obtained on payment of the prescribed fee.
- IV. If a student fails at the end of a semester to achieve minimum required SGPA, he shall

be placed on ACADEMIC PROBATION during the ensuing semester immediately. He/She may either repeat the course(s) in which he has obtained 'P' or 'F' grade or opt for a new alternate course of the same category/ discipline/ subject as and when offered, in order to complete the credit requirements.

9.7.10 Conversion factor for converting CGPA into marks equivalent

If a conversion from CGPA to marks is required, the following formula shall be used to calculate same:

The equivalent percentage of Marks = CGPA X 10.

9.8 Minimum CGPA Requirement for award of Degree of MCA

9.8.6 Certificate Programme

Criterion as decided by the University from time to time shall be applicable.

9.8.7 Diploma Programme

Criterion as decided by the University from time to time shall be applicable

9.8.8 Under-Graduate Programme (Master of Computer Application)

Unless approved otherwise, the minimum CGPA requirement for the award of a degree in an undergraduate program shall be 4.5 subject for getting a minimum of 'C' or a higher grade in the courses offered.

9.9 RESULT

- (i) The results for each semester shall be declared on the date(s) notified in Academic Calendar.
- (ii) The mathematical principle of rounding off shall be followed to round off the grade points up to two decimal places.
- (iii) The result of a student may be withheld if he has not paid the university dues, or a case of misconduct or use of unfair means is pending against him; or for any other reason, as may be decided by the university.

9.10 TRANSPARENCY GUIDELINES

- (i) All marks obtained in assignments/ practical, presentations or a report shall be made available to the students within areas on able time after evaluation.
- (ii) A student shall be allowed to see his Mid Semester/Mid Term Examination answer books. Error of evaluation, if any will be reported to the HOD. Any change in the marks will be made with due approval of the Dean. The change of marks shall be reported to the Controller of Examinations for updating the result accordingly

(iii) A student shall be allowed to see all the answer books of the End Semester/End Term examination at one time and at a location, notified by the concerned School. No second opportunity shall be provided for the purpose. However, a student may seek:

- (a) Scrutiny of the answer book where under only calculation part will be checked i.e. question have been marked/have remained unmarked/or totaling mistakes have occurred which can be corrected.
- (b) Re-evaluation of specific questions by making a written request on the following grounds.
 - (i) The question was left un evaluated.
 - (ii) A correct answer has been awarded a zero or less marks.

No other request for re-evaluation shall be entertained. The result shall be conveyed to the student.

- (iv) A student not satisfied with the result of re-evaluation, may request for challenged evaluation on deposit of the specified fee. If marks in re-evaluation are increased increase by 5 percent of the maximum marks or more, the revision of the marks shall be made, and money refunded. There shall be no increase in marks if the change in re-evaluation is less than 5 percent of the maximum marks and the fee deposited will be forfeited. If marks in re-evaluation decrease by more than 5 percent, the lesser marks shall be awarded.
- (v) The re-evaluation shall be done either by a teacher from the Faculty of the particular School, where the student is enrolled. **However**, the examiner appointed for re-evaluation should be other than the one who has evaluated the answer book **earlier** / or by any external expert appointed by the Dean Academics. In both the cases the re-evaluator should be one step senior, such that if Assistant Professor has evaluated, the answer book, **re-evaluator** should be an Associate Professor and likewise.

9.11 ACADEMIC PROGRESSION

- (i) A student will always be promoted from the current Odd semester to the next even semester, irrespective of the result of the current Odd semester.
- (ii) Promotion from the current Even semester to next Odd semester i.e. from current year to the next year shall be subjected to the following conditions:
 - (a) A student shall have a CGPA of at least 4.00 out of 10.00 in the first year of study to be eligible to register for courses offered in the third semester (second year). A student shall maintain a CGPA of at least 4.50 out of 10.00 at the end of second and subsequent years for academic progression, during UG Program and a CGPA of at least 5.00 out of 10.00 at the end of completion of the PG degree program.
 - (b) If a student does not meet the academic progression criteria as stated above in

(ii (a)), then he/ she must repeat the year of study in which he/she has failed to maintain the required CGPA to continue in the program. Repeating the year, the student will have to pay the full fee.

(c) Students shall be given the option to carry the **credit(s)** of passed course(s) while repeating the year.

9.12 BACK LOG PAPER OR IMPROVEMENT EXAMINATION

- (i) The facility of back paper (in F and NQ graded courses) will be available to the student for the courses of Even (Odd) semesters only in the Even (Odd) semesters.
- (ii) There shall be no back paper or improvement examination in the Continuous Assessment (CA) and Mid-Semester Examination (MSE). A student can improve in Continuous Assessment (CA) and Mid- Semester Examination (MSE) in a course only if he/ she repeats the course.
- (iii) The syllabus of the course for the student shall be the same as that of the current semester in which he/ she is appearing for the back paper or improvement examination.

9.13 MAKE-UP EXAMINATION

- (i) If necessary, the committee may examine cases of students who are not promoted to the next year after the End-Semester-Examinations of the even semester on a case-by-case basis. The committee will send its recommendation to the Vice-Chancellor for consideration and approval.
- (ii) The Vice-Chancellor may ask the Controller of Examination to conduct a Make-up Examination, if necessary.
- (iii) A student who has attendance above 50% but less than 75% in a theory course will be eligible for the Make-up Examination, if taken, in that theory course, on the recommendation of a committee constituted to evaluate the eligibility of the candidate **By the Dean Academics.**
- (iv) A student who has less than 50% attendance will not be eligible for Make-up Examination and F grade will be recorded against the course. Such students have to repeat the course in which their attendance is less than 50%. The facility to repeat the course shall be available to the students for the courses of Even (Odd) semesters only in the Even (Odd) semesters.
- (v) If a student is in his odd /even of any semester and repeats an odd/even of previously semester (previous year) course, he must attend the regular classes with the first semester (first year) students. The department/ school concerned must plan the time- table in such a way that the student can attend the classes of the repeat course. Student will be treated as regular student only if his / her enrollment no. is carried forward.

(vi) If the option (v) above is not available, the department / school concerned must assign the student a course mentor for the course in which the student wishes to repeat the course. It is the student's responsibility to meet with the mentor at least three times a week. The mentor will guide the student and ask the student to submit assignments timely. The mentor assesses students throughout the semester through assignments, unit tests, quizzes, presentations, etc., and awards marks for Continuous Assessment (CA) at the end of the semester. The mentor/ programme coordinator / HOD / Dean must also take care of MSE dates and conduct MSE on the dates mentioned in the Academic Calendar.

(vii) It shall be the responsibility of the mentor to monitor the progress of these students from time to time and to guide the student accordingly.

(viii) If a student is repeating a course, their most recent marks in CA, MSE, and ESE will be considered for the computation of grade in that course. The prior marks of CA and MSE, if any, will not be taken into account.

(ix) There will be no Make-up Examination for practical/ laboratory courses. The facility to pass a practical/laboratory course will be available to the student for the courses of Even (Odd) semesters only in the Even (Odd) semesters.

(x) The Make-up Examination may be held once per academic-year after one month from the date of declaration of the result of the even semester.

(xi) A student who secures 'F' or 'NQ' or 'DEB' grade in a theory course shall be eligible for Make-up Examination.

(xii) A student may apply for any course in which he / she has obtained 'F' or 'NQ' grade **subject to maximum of five courses at any time**. The fee for such an Examination shall be as specified by the University, from time to time for each course.

(xiii) A student wishing to appear for a Make-up Examination in a course must fill up a form and submit the same along with the examination fee to the Examination Department of the concerned School within 7 days of notification, if the University decides to conduct a Make-up Examination. The Controller of Examinations shall schedule the Make-up Examination by taking University's convenience into account.

(xiv) The grade earned through the Make-up Examination shall be capped at 'A' grade.

(xv) If a student who secures 'NQ' or 'F' grade in a theory course and misses the Make-up Examination, he/ she has the opportunity to pass/improve the grades of Even (Odd) semesters only in the Even (Odd) semesters. The University will not carry out any further examination for this purpose.

9.14 DEFICIENT STUDENT

(i) A deficient student is one who has either not registered himself for one or more courses or has registered but not completed successfully one or more courses of the previous semester(s) or has a Cumulative Grade Point Average (CGPA) below the minimum CGPA required for the award of a Certificate, Degree or a Diploma.

- (ii) The course planning of such deficient student shall be framed by the Mentor concerned /Programme Coordinator, duly endorsed by the HOD, recommended by the concerned Dean and with the approval of the Dean Academic Affairs in such manner as may be permissible for the backlog(s). Further, backlog courses may be registered for, as far as practicable, in the sequence of their accumulation.
- (iii) The facility of repeating or improvement of grade in a course(s) shall be within the maximum duration of the Programme.
- (iv) If a student fails in a programme elective or open elective course he may opt to re-register for the same course or may opt for other prescribed course of same credit provided the maximum duration for the completion of Degree/ Diploma/ Certificate permits so.
- (v) Student (s) unable to secure minimum CGPA for promotion from one Academic year to another will have to repeat the whole year in which he /she has not been able to secure the required CGPA. While repeating the whole year, the student shall complete all the requirements together with other students admitted in the Programme in that Academic year, while the System Id/ enrolment number allotted at the time of registration shall be retained, his old marks will be replaced by the marks obtained in Continuous Assessment (CA), MSE and ESE examination held in current Academic year.
- (vi) An ex-student who has **FR (Failed & Repeat)** in one/or few courses after appearing in final year/ semester examinations may register afresh to pass the said course(s) as **FI (Failed & Improved)** on payment of prescribed fee.

9.15 EX- STUDENTSHIP

- (i) A student can opt for Ex-studentship provided he/ she has obtained minimum 50% marks in the internal assessments (CA+MSE) in theory/ practical courses. An ex-student only has to appear in End-Semester Examinations (ESE).
- (ii) A student opting for 'Ex-studentship' must apply to the concerned School 15 days before the start of new academic session and have to pay only the prescribed examination related fee as decided by the University.

9.16 MULTIPLE ENTRY AND MULTIPLE EXIT

(Applicable to all except Council-based Programmes)

- (i). In pursuance of provisions made in NEP-2020, students are given the option of multiple entries and multiple exits. If a student wants to leave the Programme after the end of a particular academic year (even after the first year), then he/ she must:
 - (a) Achieve a minimum CGPA equal to or greater than 4.5 for UG and 5.0 for PG.
 - (b) Accumulate the minimum prescribed credits for the award of the respective certificate/ diploma/ degree. 26

(c) The University shall follow the guidelines issued by the Uttar Pradesh State Council of Higher Education/ University Grants Commission (UGC).

(ii). For all council-based programs, the University shall follow the rules and regulations of their respective Councils.

9.17 DIVISION CLASSIFICATION

The following two divisions, as defined below, shall be awarded to the students:

Division	Classification
First Division	CGPA \geq 6.50 and \leq 10.00
Second Division	CGPA \geq 5.00 and $<$ 6.5



9.18 Format for MSE & ESE

(Sample of MSE)

School of Computer Science & Artificial Intelligence T. S. Mishra University, Lucknow

Mid Semester Examination - 1/2 (Odd/Even Semester 2025-26)
MCA - First/Second Semester

Subject Code:	Roll No.:	Max. Marks: 20
Subject Name:		Time : 1 Hours
Instructions :	<ol style="list-style-type: none">Attempt the questions as per the instructions givenAssume missing data suitably	

CO1	Statement of CO1/ CO3:
CO2	Statement of CO2/ CO4:

Section - A (6X1 =6 Marks)

Attempt all parts of the followings:

1(a).		CO 1/ CO 3		1
1(b).		CO 1/ CO 3		1
1(c).		CO 1/ CO 3		1
1(d).		CO 2/ CO 4		1
1(e).		CO 2/ CO 4		1
1(f).		CO 2/ CO 4		1

Section - B (2X3 = 6 Marks)

Attempt any two of the followings:

2(a).		CO 1/ CO 3		3
2(b).		CO 1/ CO 3		3
2(c).		CO 2/ CO 4		3

Section - C (2X4 = 8 Marks)

Attempt any two of the followings:

3(a).		CO 1/ CO 3		4
3(b).		CO 2/ CO 4		4
3(c).		CO 2/ CO 4		4

(Sample of ESE)

School of Computer Science & Artificial Intelligence
T. S. Mishra University, Lucknow

End Semester Examination (Odd/Even Semester 2025-26)
MCA – First/Second Semester

Subject Code:	Roll No.: <input type="text"/>	Max. Marks: 60
Subject Name:		Time : 3 Hours

Instructions :	2. Attempt the questions as per the instructions given 3. Assume missing data suitably
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CO1 Statement of CO1:

CO2 Statement of CO2:

CO3 Statement of CO3:

CO4 Statement of CO4:

Section - A

Q.1	Attempt all the parts	(2 x 10 =20)		
(a)		CO1		2
(b)		CO1		2
(c)		CO2		2
(d)		CO2		2
(e)		CO3		2
(f)		CO3		2
(g)		CO4		2
(h)		CO4		2
(i)		CO1		2
(j)		CO2		2

Section - B

Q.2	Attempt any four parts of the following	(4 x 4 = 16)		
(a)		CO1		4
(b)		CO2		4
(c)		CO3		4
(d)		CO4		4
(e)		CO2		4
(f)		CO1		4

Section - C

Q.3	Attempt any one part of the following	(4 x 6 = 24)		
(a)		CO1		6
(b)		CO2		6
(c)		CO3		6
(d)		CO4		6
(e)		CO4		6
(f)		CO3		6

10. REMUNERATION FOR EXAMINATIONS

The Vice Chancellor may from time to time decide the remuneration for the external paper setters, moderators, examiners, evaluators, invigilators, tabulators and other staff members engaged in examination work. The duties shall, however, be mandatory for the University faculty and staff members and no remuneration shall be paid to them under ordinary circumstances.

11. AWARD OF DEGREES, CERTIFICATES AND OTHER DISTINCTIONS

- a. A student shall be deemed to have completed the requirements of a Programme and declared eligible for the award of Degrees or Certificates, only if he has completed all the requirements specified in the University Ordinances, Examination Manual and/ or the Programme and Curriculum details.
- b. The degrees and certificates shall be awarded to successful students based on their performance evaluated through examinations and/ or any other method of testing prescribed by the Academic Council. However, the degrees shall be awarded by the University in terms of Section 51(2) of the U.P. Private Universities Act, 2019.
- c. The degrees shall be awarded in Convocation or a function specially organized for the purpose.
- d. The text and the format of the degrees and citations shall be approved by the Academic Council.

11.4 Duplicate Degree

A duplicate degree shall be issued to a student who has lost his degree, after the completion of the following steps:

- 11.4.6** The student shall file an F.I.R. at the local police station and shall publish it in the national newspaper also.
- 11.4.7** The student shall submit an affidavit on stamp paper of Rupees 10/-that he/she has lost the degree.
- 11.4.8** The student shall submit a written request together with a payment of the prescribed fee to the office of the Dean of the School concerned.
- 11.4.9** The Dean's Office will forward the application with all documents to the Office of Controller of Examination for verification and printing of the degree.
- 11.4.10** Once the degree has been printed and received, a “DUPLICATE” stamp shall be affixed in the Controller of Examination office for issuance.

12. CURRICULUM OUTLINE MASTER OF COMPUTER APPLICATION (SPECIALIZATION IN ARTIFICIAL INTELLIGENCE & MACHINE LEARNING)

Semester I							
1-Week Orientation Programme							
S.No.	Course Code	Course Title	L	T	P	Credits	Marks
1	MCCS101	Computing Essentials & Future Technologies	3	0	0	3	100
2	MCCS102	C Programming Concepts	3	0	0	3	100
3	MCHU101	Fundamentals of Leadership & Communication	3	0	0	3	100
4	MCMA101	Discrete Mathematics	4	0	0	4	100
5	MCCS103	Computer Organization & Architecture	3	1	0	4	100
6	MCCS151	Computing Essentials & Future Technologies LAB	0	0	2	1	50
7	MCCS152	C Programming LAB	0	0	2	1	50
8	MCHU151	Fundamentals of Leadership & Communication LAB	0	0	2	1	50
9	MCCS154	Design Thinking Lab	0	0	2	1	50
10	GP101	General Proficiency	-	-	-	1	50
Total						22	750

Semester II							
S.No.	Course Code	Course Title	L	T	P	Credits	Marks
1	MCCS201	Web Technology	3	0	0	3	100
2	MCCS202	Object Oriented Programming with Python	3	0	0	3	100
3	MCCS203	Operating System	3	1	0	4	100
4	MCCS204	Database Management Systems	3	0	0	3	100
5	MCCS205	Data Structures	3	0	0	3	100
6	MCCS251	Web Technology LAB	0	0	2	1	50
7	MCCS252	OOPS LAB	0	0	2	1	50
8	MCCS254	Database Management Systems LAB	0	0	2	1	50
9	MCCS255	Data Structures LAB	0	0	2	1	50

10	GP201	General Proficiency	-	-	-	1	50
		Total				21	750

Abbreviations and Definitions

L	Number of Lecture Hours	MA	Engineering Mathematics
T	Number of Tutorial Hours	CS	Computer Science Core
P	Number of Practical Hours	HU	Humanities Course
C	Credit	CP	Computer Project/Seminar
AS	Applied Science Courses	GP	General Proficiency
PE	Professional Electives	OE	Open Electives

Marks Distribution for Theory and Practical Subjects:

Subject Type	Internal Marks	External Marks	Total Marks	Minimum Mark to Pass
Theory	40	60	100	40
Practical	30	20	50	20
General Proficiency	50	-	50	-

Note: (i) Minimum 40% marks in aggregate as per guidelines of para number 9.4.1, 9.4.2 and 9.4.3.

(ii) Assessment for **General Proficiency (GP)** is based on the overall performance of the students, which are based on the various factors like extra activity, sports, research etc.

13. OVERALL OBJECTIVES BEHIND THE COURSE:

1. Students should be able to understand soft computing concepts and techniques and foster their abilities in designing and implementing soft computing-based solutions for real-world problems.
2. The course describes and implements algorithms such as stacks, queues, linked lists, trees, searching techniques, sorting techniques, hashing techniques and graphs.
3. Comprehend alternative implementations using the differing logical relationships and appreciate the significance of choosing a particular logical relationship for implementation within real-world setting.
4. Demonstrate the ability to plan, design, execute and document sophisticated technical programs to handle various sorts of data structures.
5. Be familiar with the use of data structures as the foundational base for computer solutions to problems.

6. The students will be able to understand and analyze how to deal with changing data. They will also be able to identify and interpret potential unintended effects in your project. They will understand and define procedures to operationalize and maintain your applied machine learning model.
7. People working in industries or elsewhere essentially require the knowledge of environmental science so as to enable them to work and produce most efficient, economical and eco-friendly finished products.
8. To provide a good understanding of the underlying concepts of Computer organization.
9. Explain Computer performance measurement methods.
10. Student should learn how to quantitatively evaluate different designs and organizations.
11. Student should be able to articulate design issues in the development of processor or other components that satisfy design requirements.
12. To introduce advanced concepts and methods of machine learning and to develop an understanding of the role of machine learning in massive scale automation. To design and implement various machine learning algorithms in a range of real-world applications.
13. The students should be able to study language and the tools that are available to efficiently study and analyze large collections of text. They should learn about and discuss the effects of electronic communication on our language.
14. People working in industries or elsewhere essentially require the knowledge of environmental science so as to enable them to work and produce most efficient, economical and eco-friendly finished products.
 - a. Solve various engineering problems applying ecosystem to produce eco – friendly products.
 - b. Use relevant air and noise control method to solve domestic and industrial problems.
 - c. Use relevant water and soil control method to solve domestic and industrial problems.
 - d. To recognize relevant energy sources required for domestic and industrial applications.
 - e. Solve local solid and e-waste problems.
15. Students should be able to describe the services provided by and the design of an operating system. They should be able to understand the structure and organization of the file system, processes synchronization, process scheduling, system calls and different approaches to memory management.
16. To introduce the fundamentals of deep learning and the main research activities in this field. To learn architectures and optimization methods for deep neural network training.
17. Students should learn the concept and importance of Software Engineering. They should be able to construct software that is reasonably easy to understand, modify, maintain and reliable. They should learn strengths and weaknesses of various Software Engineering Techniques used in industrial applications.
18. Students should be able to have an understanding of the fundamental concepts of computer networking and have a basic knowledge of the various network models and their uses. They should be able to analyze simple protocols and independently study

literature concerning computer networks.

14. OTHER DETAILS:

Mandatory Visits/ Workshop/Expert Lectures:

- (a) It is mandatory to arrange one industrial visit every semester for the students of each branch.
- (b) It is mandatory to conduct a One-week workshop during the winter break after second semester on professional/ industry/ entrepreneurial orientation.
- (c) It is mandatory to organize at least one expert lecture per semester for each branch by inviting resource persons from domain specific industry.

Internship and Project:

The following points pertaining to internship semester:

- (a) Internship semester is kept as 3rd Semester for MCA, there is a reason for it. All International internships (List of few such internships provided below), there is a necessary condition that at least one semester study should be left to complete the degree after undertaking that internship. They want students to come back to India and bring cross culture back.
- (b) For MCA students opting for industry internships also, 3rd Semester is a good option, as most of the Industries visit for campus placements in 3rd Semester.
- (c) Keeping all these in mind and looking at flexibility mentioned in **NEP-2020**, we can give flexibility to all MCA students to decide Internship in respective semester for as per their interest and choice.
- (d) Report of Project, in the 3rd/4th semester for MCA, are an integral part of the curriculum. The problem/topic will be assigned by the School of Computer Science and Artificial Intelligence, TSM University under the supervision of a core faculty member of the department. The project work should contain all the data of system study, analysis, design, coding, testing and implementation. The Project Report in hard bound copies will be submitted to the Head of the Department or to the Dean, School of Computer Science and Artificial Intelligence. The report will be typed in A-4 size paper. The evaluation will be based on the report writing, and viva-voice. The students are also required to make a brief presentation of the report.
- (e) For each practical subjects, seminar and projects, evaluation will be based on viva-voice. Main emphasis should be on Project Based Learning / Experiential Learning. There should be an option to delay internship semester to 3rd/4th Semester as per University convenience and availability of internship slots for different group of students.