



VIGNAN'S

FOUNDATION FOR SCIENCE, TECHNOLOGY & RESEARCH

(Deemed to be University) - Estd. u/s 3 of UGC Act 1956



R26

Regulations for MASTER OF COMPUTER APPLICATIONS

MCA



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FOUNDATION FOR SCIENCE, TECHNOLOGY & RESEARCH

(Deemed to be University) - Estd. u/s 3 of UGC Act 1956

R26

Academic Regulations

In Compliance with NEP 2020

PREFACE – R26

*The future belongs to those who can learn continuously, innovate confidently, and adapt to rapidly evolving technologies. As higher education responds to the transformative impact of **Artificial Intelligence (AI)**, digitalization, and global challenges, universities must equip students with not only knowledge but also the skills and mindset required to excel in an increasingly dynamic world.*

*With this vision, VFSTR introduces the **R26 Regulations**, a progressive curriculum framework aligned with the objectives of the **National Education Policy (NEP) 2020** and the principles of **Outcome-Based Education (OBE)**. The R26 curriculum has been designed to ensure that learning is meaningful, measurable, application-oriented, and focused on the attainment of clearly defined graduate outcomes.*

*A distinctive feature of R26 is the **strategic integration of Artificial Intelligence across all academic programs**, enabling students from diverse disciplines to understand and apply AI tools and methodologies relevant to their domains. This initiative aims to create **future-ready graduates** who can effectively leverage emerging technologies, solve complex real-world problems, and contribute to innovation-driven growth.*

*The curriculum places strong emphasis on **project-based, research-centric, and experiential learning**, encouraging students to move beyond passive acquisition of knowledge toward inquiry, creativity, design thinking, and problem-solving. Through interdisciplinary projects, industry engagement, research activities, internships, and innovation-driven learning experiences, students will develop the competencies needed for higher studies, entrepreneurship, and professional success.*

*R26 also promotes flexibility, multidisciplinary learning, sustainability, ethical responsibility, and the values embedded in **Indian Knowledge Systems (IKS)**. By fostering critical thinking, collaboration, communication, and lifelong learning, the curriculum seeks to nurture graduates who are not only technically competent but also socially responsible and globally competitive.*

I am confident that the R26 Regulations will further strengthen VFSTR's commitment to academic excellence and provide a transformative educational experience that prepares our students to lead, innovate, and excel in the decades ahead.

I extend my best wishes to all students, faculty members, alumni, and stakeholders for the successful implementation of the R26 curriculum and for shaping a future defined by knowledge, innovation, and impact.

Prof. K. V. Krishna Kishore
In-Charge Vice-Chancellor
VFSTR

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Academic Regulations, Curriculum and Course Contents

EXECUTIVE ABSTRACT

The Academic Regulations - R26, Curriculum, and Course Structure of VFSTR Deemed-to-be University are designed in alignment with NEP-2020, emphasizing continuous learning, continuous assessment, and competency-based education. These regulations build upon the evolving academic framework of the University, responding to the changing landscape of higher education, emerging professional demands, and the diverse learning needs of students, while further strengthening the integration of NEP-2020 principles into curriculum, pedagogy, assessment, and academic progression. In recognition of the transformative role of Artificial Intelligence across contemporary engineering and professional domains, the framework also seeks to develop students' AI awareness and capabilities as an integral part of their education, enabling them to adapt to emerging technologies and apply them meaningfully across disciplines.

The course structure incorporates a two-module system, where Module-1 focuses on strengthening foundational knowledge and conceptual clarity, while Module-2 fosters higher-order thinking, problem-solving, and innovation. The curriculum adopts the **T-shaped learning philosophy**, balancing breadth (horizontal line) and depth (vertical line) in knowledge acquisition. The vertical line represents deep expertise in core domains, while the horizontal line encourages cross-disciplinary learning and adaptability, equipping students with both rich foundations and diverse competencies for research, industry, and entrepreneurship.

Furthermore, the program ensures an integrated and rigorous learning experience across various specialized domains. Rather than offering superficial exposure, the curriculum is designed to provide in-depth engagement in these areas. It offers students the flexibility to choose electives not randomly from other fields but from domains related to and enhancing the scope of their cognitive field, ensuring meaningful multidisciplinary learning. This fosters a truly multidisciplinary and holistic education that bridges theoretical knowledge with practical application. In alignment with this vision, relevant concepts from the **Indian Knowledge System (IKS)** have been woven into a few courses, enriching modern scientific approaches with India's rich intellectual traditions. Additionally, all courses in the curriculum are mapped with relevant **Sustainable Development Goals (SDGs)**, reaffirming VFSTR's commitment to fulfilling the SDGs through education.

To provide greater academic flexibility, the provision of '**Creative Work-in-Lieu of a Course**' continues to provide an avenue for students to pursue creativity-driven exploration in place of a conventional elective, leading to research-based outcomes such as peer-reviewed publications, patents, or innovative projects. This provision encourages students to engage with impactful research and real-world problem-solving, fostering a culture of innovation, creativity, and intellectual contribution. Additionally, experiential learning has been infused throughout the curriculum, ensuring that students gain hands-on experience through industry

collaborations, prototype development, applied research, and project-based activities. These learning experiences provide opportunities for students to connect theoretical knowledge with practical applications and address real-world challenges.

The assessment framework is designed as an integral component of the learning process, with students being assessed progressively across all levels of the revised Bloom's Taxonomy. While foundational levels of learning are assessed to ensure conceptual understanding, greater weightage is accorded to application and analysis, promoting deeper learning, problem-solving, and the meaningful use of knowledge. Project-based learning and other higher-order learning experiences further provide opportunities for students to demonstrate capabilities at the level of creation, thereby making assessment a comprehensive measure of learning progression and competency development.

The two-year MCA program follows a flexible and student-centric approach, offering **honorable exit options**. Students completing the required credits after one year may earn a PG Diploma facilitating early career opportunities while retaining the option to return and upgrade their qualifications. However, the primary focus remains on ensuring students acquire a full MCA degree. Additionally, for students who wish to progress at a slower pace, a spillover period of up to two additional years is available for degree completion, ensuring academic flexibility without compromising learning outcomes. By integrating **multidisciplinary learning, competency development, experiential and skill-based education, academic flexibility, and holistic assessment**, VFSTR reaffirms its commitment to developing well-rounded, adaptable, innovative, and future-ready professionals in accordance with the transformative vision of NEP-2020.

SALIENT FEATURES OF R26 REGULATIONS

- Continuous learning
- Continuous assessment
- AI-Integrated Future-Ready Education
- Creative Work-in-Lieu of a Course

VALUE ADDITION

- Honorable exit options
- Sabbatical Semester Drop option to pursue innovation, incubation, entrepreneurial and advanced exploratory activities and subsequent re-entry
- Credit earning through credit transfer

1 INTRODUCTION

This document contains the academic regulations, scheme of assessments, curriculum, detailed syllabi, course contents with text / reference books recommended, course outcomes, skills expected to be acquired and the projects / assignments that are to be performed for each course for the conduct of 2-year MCA. degree programmes.

1.1 Definition

For the purpose of R26 regulation, definitions as follows shall apply:

- **“Degree”** shall refer to the MCA Degree Program.
- **“Course”** shall refer to such Course(s) for which a student shall earn Credits after due assessment as per the laid provisions. Project is also treated as a Course.
- **“Academic activities”** shall refer to the activities like Lecture-L (Physical Lecture Session), Transactions (Tutorial)-T (Participatory discussion / Self-Study / Desk Work / Quiz / Seminar Presentation, etc. activities that make the student absorb & assimilate, the delivered contents effectively) and Practical / Practice Sessions-P (includes Hands on Experience / Lab experiments / Field Studies / Case Studies etc. activities that enable the student to acquire the requisite skill).
- **“Credit”** refers to a unit of measurement assigned to courses based on the weekly instructional hours. Typically, one credit corresponds to one hour of lecture (L) or two hours of transaction (T) / practices (P) sessions per week.
- **“Continuous Assessment”** shall refer to the assessment of the student spread over the entire semester on the various constituent components of the prescribed course.
- **“Semester”** shall refer to a period covering the two assessment periods viz Formative and Summative Assessment period. A semester would generally be spread over twenty weeks.
- **“Course Drop”** shall refer to a student having to undertake a ‘Repeat (R)’ of the Course(s) not being able to complete the Credit requirements of the Course(s), under the conditions stipulated in the regulation.
- **“Supplementary Examinations”** shall refer to the examination(s) conducted to allow the student to appear in the un-cleared / Incomplete (I) Semester - End summative assessment component.
- **“Blank Semester”** shall refer to a Semester in which a student either does not register for any course at the beginning of the Semester OR chooses to DROP all courses OR is so compelled to DROP all the courses, as the case may be.
- **“Semester Drop”** shall refer to availing a blank semester. However, if drop is availed to pursue a creative extension activity, then it is defined as **semester sabbatical**.
- **“Spill Over Semester”** shall refer to the additional semester(s) beyond the completion of prescribed normal semesters.
- **“AAA Section”** shall refer to the Academics, Assessment and Award Section of the Institute.
- **“Attendance”** refers to the physical personal presence in an academic activity session.
- **“Summer Semester”** refers to a Semester that is scheduled to be held during the intervening period of Even and Odd Semester (*i.e.* Summer Vacation period).
- **“Themes”** refer to the courses offered in a particular stream other than offered by the regular departments, for example NCC, Entrepreneurship, Fitness and Living, *etc.*

- **“School”** refers to a division of institute dealing with two or more specific areas of discipline / study comprising of the departments related with exclusive emphasis on trans-disciplinary research.
- **“Department”** refers to a division of institute dealing with a specific area of discipline / study.
- **“HoD”** refers to the Head of the respective Department, where the student is enrolled for his / her Branch of Study.
- **“Center”** refers to a structured unit within the school / department established with the purpose to carry out advanced research.
- **“Grade Point”** refers to the quantification of the performance of a candidate in a particular course as defined herein.
- **“SGPA”** refers to the Semester Grade Point Average and is calculated as detailed in the regulations subsequently.
- **“CGPA”** refers to the Cumulative Grade Point Average and is calculated as detailed in the regulations subsequently.
- **“Division”** refers to the Division awarded to the student as per the mechanism detailed in the regulations subsequently.
- **“Internship”** refers to onsite Practical Training offered by reputed companies / Institutions, in India or abroad. To be undertaken with (or seeking) prior approval of the respective HoD.
- **“Project”** refers to a course executed by a candidate on a specific research problem / product or process development at VFSTR / any organization of repute. To be undertaken with (or seeking) prior approval of the respective HoD.
- **“Credit equivalence and credit transfer committee”** refers to the committee designated to look into for credit equivalence and credit transfer.
- **“Honorable Exit Option”** refers to the Exit Options available to students, when they are unable to complete the prescribed two-year MCA Degree program in seven successive years or would like to voluntarily exit.

1.2 Academic Administration

The academic programmes of VFSTR are governed by the rules and regulations approved by the Academic Council and subsequently Executive Council from time to time. The various academic activities are conducted following a fixed time schedule duly approved by the Academic Council in line with the AICTE / UGC regulations. The academic activities of VFSTR are followed meticulously as specified in the academic calendar as approved by the Academic Council. This academic calendar is shared with all the stakeholders well before the beginning of the respective academic year. The curriculum and the course contents of all the programmes are discussed by the respective Board of Studies (BoS), analyzed and recommended for implementation. The Academic Council, being the highest statutory body for academic affairs, chaired by the Vice-Chancellor, meets four times a year and discusses, suggests and approves all the important academic matters related to curriculum and course contents in particular including the recommendations of BoS. The intended revision in

regulations (R26) was accepted and recommended by the Academic Council in its 45th meeting on 11-04-2026.

1.3 Program Duration

For the MCA program the regular courses including theory and practical are offered over a period of two years in four semesters. The normal duration to complete the MCA program is two years. However, a student can avail the benefit of spill over period for 2 years, that is the maximum duration of four years can be availed by a candidate to complete the MCA programme at a slower pace if he / she desires. This flexibility caters to diverse learner needs and career aspirations, supporting both accelerated and extended degree pathways. Candidates failing to complete the requirements within this period will be considered for an honorable exit, as applicable. Honorable exit can also be exercised by a candidate voluntarily.

1.4 Courses and Credits

The term course is used in a broader sense to refer to so called papers such as ‘theory subject’, ‘practice subject’, ‘socially relevant project using design thinking’, ‘project’ etc. A course can be of theoretical and/ or of practical nature, and certain number of credits are allotted to it depending on the number of hours of instruction per semester. For a course offered in a semester, one hour of lecture (L) instructions carried out in a week is considered equivalent to one credit, whereas two hours of practical (P) sessions done in a week are considered equivalent to one credit respectively. Depending on the course two hours of tutorial (T) sessions may be considered equivalent to one credit. A student earns these credits when he/she successfully completes the course.

1.4.1 Content Delivery of a Course

Content delivery of a Course in the MCA Degree Program shall be through, either or all, of the following Methods:

- i. **Lecture** - refers to Lecture Session(s) through classroom contact session wherein students will learn by listening. Denoted by “L”.
- ii. **Tutorial** - refers to transaction(s) consisting of Participatory discussion / Self-study / Desk work / Brief presentations by students along with such other novel methods that enable a student to efficiently & effectively absorb and assimilate the contents delivered in the lecture sessions. Denoted by “T”.
- iii. **Practice** - refers to Practice / Practical sessions and it consists of Hands-on-Experience / Laboratory Experiments / Field projects / Case Studies / Minor / Major Project, that equip the students to acquire the much-required skill component. Denoted by “P”.

1.5 MCA Degree

All students formally and conventionally enroll for MCA degree programme. They have to earn **80** credits for the award of degree as specified in the Curriculum, wherein credits are assigned towards courses such as Professional Core, Electives, Humanities and Management, Basic Sciences and Projects.

1.6 Composition of An Academic Year

An academic year is composed of an **Odd semester** (20 – 22 weeks), an **Even semester** (20 – 22 weeks) and a **Summer semester** (6 – 8 weeks). The regular semester that begins in July / August is known as odd / first semester and the one that begins in December / January is known as even / second semester (Figure 1). The instructional days for a regular semester shall be a minimum of 90 working days exclusive of days earmarked for summative assessment.

YEAR OF 12 MONTHS											
1	2	3	4	5	6	7	8	9	10	11	12
July/ Aug.	Aug./ Sept.	Sept./ Oct.	Oct./ Nov.	Nov./ Dec.	Dec./ Jan.	Jan./ Feb.	Feb./ Mar.	Mar./ Apr.	Apr./ May	May/ June	June/ July
ODD SEM/ FIRST SEM					EVEN SEM/ SECOND SEM					SUMMER SEM	

Figure 1: Distribution of semesters during an Academic Year.

1.6.1 Before the commencement of the semester, a candidate has to pay the stipulated tuition fee and submit an application detailing the courses he / she intended to register, valid for that respective Odd / Even semester. The maximum number of credits per semester will be 25 credits inclusive add-on credits. The intended semester wise coverage will be as presented in the curriculum.

1.6.2 Summer semester is a short duration semester program that will be generally conducted during the semester break between even semester and odd semester. The students having ‘R’ (Repeat grade) courses may register for the course work during this semester to get a chance for successfully completing the ‘R’ courses. In general, supplementary assessments are conducted in the later part of the summer semester. However, the courses offered in summer semester and the number of courses a student can register are subjected to academic and administrative convenience. A student may register up to a max. of 16 credits in a summer semester.

1.6.3 Exception to the routine practice of registering for ‘R’ courses in summer semester, a student can register in a course offered by a visiting expert during the summer vacation which may be equivalent to an open elective or a department elective or an Add-on-course. The

candidates can register for such courses within the scope of 16 credits. Candidate may also avail summer semester for summer internship opportunities, which may be considered as Add-on credits.

1.7 Semester-wise Provisions

A student may register for a max of 25 credits per semester as prescribed or otherwise he/ she may include the Repeat courses in the event of having not successfully completed a course or courses in the earlier semester. However, a student may also opt to go in a slower pace to earn the credits less than the prescribed max of 25, including even ‘Dropping’ a semester for special reasons.

It should be clearly underscored that a candidate should on priority register for Repeat (R) credits if any, during a regular semester, within the said scope of 25 credits; in case he / she cannot be sure of completing the ‘R’ credits in Summer semester.

1.7.1 During the first four years from the date of admission to B.Tech., a candidate has to pay the semester / annual fees as prescribed irrespective of the smaller number of credits / semesters that he / she would register or even opt to Drop a semester.

1.7.2 If a candidate gets into spill over semester beyond two years up to a maximum of four years he / she has to pay semester fee proportional to the credits that he/ she registered in that spill over semester as prescribed from time to time.

1.7.3 A candidate has to pay additional fee proportional to the number of credits for registering in a summer semester as prescribed from time to time.

2. CURRICULUM

School of Computing & Informatics offers MCA degree programmes and the departments of Computer Applications prescribes semester-wise curriculum encompassing different courses. Every course offered will be designated in a L-T-P-SL structure. The theory courses comprise of L (and / or T & P hours) whereas the practical courses include instructions (T) and practical sessions (P). Amalgamation of theory courses with practical sessions is predominantly seen in this curriculum. The ‘SL’ represents the expected self-learning hours (to be carried out by each student) in a particular course. As postgraduate programs demand higher-order learning, students are expected to spend two hours of self-learning for every one hour of lecture (L) to internalize and apply advanced concepts effectively.

2.1 Distribution of credits

The overall distribution of credits for various categories of courses in the curriculum of MCA programmes is represented in Table 1.

Table 1: Credits distribution for various categories of courses.

Category of Courses	Number of Credits	Percentage of Credits	UGC Credit Framework Recommendation
Professional Core	41	51.25 %	40 Credits per year, Total Credits: 80
Humanities	4	5 %	
Basic Sciences	3	3.75 %	
Electives	18	22.5 %	
Projects	14	17.5 %	
Total	80	100 %	

2.2 Organization of Course Contents

Courses offered in the program are composed of two modules, covering all the course contents required for a candidate to obtain knowledge and skill. Module-1 is divided into two units, focusing on the ‘Fundamentals and Broad Perspective’ of the course while also introducing basic applications to establish a practical context. In contrast, Module-2 is divided into three units, which encompass the extension and advanced topics of Module-1. Both modules will include a separate list of suggested transactions or practices tailored to its content. These transactions / practices are essential for validating and applying the knowledge gained during Lecture sessions.

Module-1 may be completed within 5 to 6 weeks, while Module-2 may require 9 to 10 weeks. By the end of each module a candidate must be in a position to translate his/ her L-based knowledge into P-based skill as prescribed in the curriculum. Individual formative assessment shall be in place for each module and a single semester-end summative assessment for the course composed of both the modules.

The course contents are mapped with relevant Sustainable Development Goals (SDGs), ensuring alignment with global sustainability objectives. Additionally, where authenticated information is available, Indian Knowledge System (IKS) topics are incorporated into the curriculum.

Each course must have 4 to 6 course outcomes (COs) mapped to relevant program outcomes (POs), aligning with the revised Bloom’s Taxonomy levels 3, 4, 5, and 6 ensuring progressive cognitive development. Furthermore, every course has at least one mandatory textbook and two to three reference books to provide students with credible and in-depth learning resources.

2.3 Prerequisite Knowledge

Wherever prerequisite knowledge is specified, students must have exposure to the prescribed prerequisite content before registering for the higher-level course. Completion of the prerequisite course, earning credits, or successful completion of assessments in the prerequisite course is not mandatory, unless explicitly specified for a particular course.

3. NATIONAL CREDIT FRAMEWORK / CHOICE BASED CREDIT SYSTEM

MCA programme comprises a set of courses - Professional Core, Electives, Humanities & Management, Basic Sciences, and Projects. Departments of Computer Applications offers flexibility for students to choose courses of their choice and obtain the credits satisfying the minimum credits criterion in each category as given in Table (1).

3.1 Basic Sciences

Basic science learning is incorporated in the MCA curriculum to provide students with analytical and quantitative foundations that strengthen computational thinking and support advanced problem-solving in modern information technology.

3.2 Humanities and Management

Management-oriented learning develops professional competence by nurturing leadership, teamwork, decision-making, and adaptability, preparing students for diverse roles in dynamic organizational settings. Humanities components complement this by enhancing communication, critical thinking, and ethical awareness, enabling graduates to express ideas effectively, collaborate across disciplines, and uphold professional values. Together, these elements enrich the technical curriculum by cultivating the interpersonal, analytical, and ethical dimensions essential for success in software development, research, and IT-enabled services.

3.3 Professional Core

Professional Core courses in the MCA curriculum are tailored to provide students with a strong foundation in computing and application development. They are mandatory for every student in the program and are designed to impart essential knowledge and skills in areas such as programming, software engineering, databases, networks, and emerging technologies. These courses build the technical depth necessary for advanced computing practice, while also preparing students to apply their expertise effectively in research, industry, and entrepreneurial ventures.

3.4 Electives

A candidate has a choice to choose the elective courses. A list of elective courses is pooled together, enabling a candidate to choose electives from a pool so that he/she can focus on a

specific theme. Otherwise also he/ she can also exercise the choice to choose electives from across the pools.

Elective courses are distributed across the second and third semesters, allowing students to earn credits from a chosen pool in line with their academic and professional interests. Within the 18-credit elective requirement, students are also provided the flexibility to earn two credits through BoS approved MOOCs courses offered via Swayam platform, thereby widening their learning opportunities and exposure to diverse domains

3.5 Socially Relevant Project using Design Thinking

Students shall undertake a Socially Relevant Project during the first year of the program, adopting the principles of design thinking as a structured problem-solving approach. The objective is to conceptualize and implement innovative digital solutions, processes, or services that address the needs of individuals, organizations, or communities, with emphasis on creating social and technological value. Each project shall be carried out under the supervision of faculty members of the department and may be undertaken in batches of 2–3 students. Assessment will be conducted under the modular framework through both formative and semester-end summative assessments. Successful completion of the project shall carry 2 credits.

3.6 Project

Students may opt for Project work in lieu of internship. Such students may avail research - internship support from any institution well known for research and development (R&D). They may also take up project work in VFSTR itself. Each candidate has to submit interim reports and a final report which are mandatory requirements towards the partial fulfillment of project credits requirements. It bears a weightage of 12 credits with a duration of 90 working days. During the semester the student under the guidance of a faculty member(s) will involve in innovative design / research through the application of his / her knowledge gained in various courses studied. He / she is therefore expected to present a survey of literature on the topic, work out a project plan and carry it out through experimentation / modelling / simulation / computation. Through such a project work, the student is expected to demonstrate system analysis, design, presentation and execution skills. Students are expected to integrate design component into their project to realize various aspects such as User-Centric Focus, Consistency and Branding, Efficiency and Scalability, Improved Communication, Adaptability and Innovation, Faster Development Cycles, Enhanced User Engagement and Satisfaction etc. Comprehending design component should be documented in the project report by incorporating 'Major Design Experience Information Sheet'. Performance in the project will also be assessed in the modular framework for formative and semester-end summative.

3.7 Internship

A student can undertake internship in industry during fourth semester in lieu of project work, which bears a weightage of 12 credits. This is aimed at training students in solving / understanding real-life problems through application of engineering analysis, design,

evaluation and creation, particularly in association with practitioners and experts in the industry. The procedures for obtaining the internship placements and allocation of the same to the students are as per university defined norms outlined in the 'internship programme operational guidelines' manual. Even during internship, a student is preferably expected to carry out a focused study on one topic/ problem in consultation with the interning institute. Internship progress report should be submitted periodically and finally a detailed internship report should be submitted duly certified by a mentor from the internship institute. Performance in the internship will also be assessed in the modular framework for formative and semester-end summative.

Furthermore, a special provision has been introduced to enable students to undertake a year-long internship at industries, provided they meet the eligibility criteria prescribed by the Institute. Under this framework, students will complete a 13-credit internship in the 7th semester, while the 8th semester will follow the standard 12-credit internship structure. Students choosing the yearlong industry internship will gain hands-on experience in a professional environment, integrating academic knowledge with industry applications.

4. ATTENDANCE

It is mandatory for the student to attend the course work in each semester as per the academic schedule of that semester. VFSTR expects 100% attendance. However, the attendance in each course shall not be less than 75 % of the aggregate of all L, T, P sessions conducted in that course. In order to encourage the students attending the L, T, and P sessions, a provision of earning maximum of 2 or 5 marks (depending on the courses) is given in the assessment framework and the students can earn these marks based on their attendance percentage in each course.

- a) The attendance calculations will be periodically reviewed at the end of every 4 weeks. The details of attendance status will be shared with the parents / guardian. The final status of attendance will be reported at end of 14th week granting the advantage of the attendance for the 15th week for the purpose of attendance shortage calculations.
- b) The shortage of attendance may be condoned up to 10% on the ground of ill-health, social obligations, participating / representing in sports/cultural events, placement activities etc.
- c) Documentary evidence like medical reports and certificates issued by concerned bodies is to be produced on time as support for the attendance shortage due to ill-health. These cases are subjected to the scrutiny of a committee constituted for this purpose by the Dean – AAA. The decision of the committee shall be final.
- d) Prior approval has to be taken from the HoDs for the other types of leaves.
- e) The courses where the student shortage of attendance was not condoned shall be considered as 'Repeat' category courses and will be under 'R' grade in the student's semester

transcript. Student should re-register for these courses during the summer semester or whenever the course is offered next time during regular semesters. These re-registrations are subjected to the regulations at the time of re-registration. In case of core courses, the same core course has got to be re-registered. However, in case of an elective a candidate may exercise a choice of choosing different elective in place of 'R' graded elective.

The students who are put into 'R' grade will not be allowed to take up the summative assessment in that semester. In case due to lack and/or delay in information, if he/she appears for the summative assessment in that course, the Office of Dean - AAA is empowered to cancel the attended assessments. The scores obtained either in formative or summative assessment will not be considered for grading.

5. ASSESSMENT

Teaching-Learning and Assessment should go hand in hand and complement each other. Continuous assessment plays a vital role to enable the student to get synchronized with the teaching-learning process. Assessment mechanism adopted in the institute is aimed at testing the learning outcomes in tune with the outcome-based model of education. The focus, is thus on assessing whether the outcomes are realized by the end of the course.

The performance of a student in each course is assessed on a continuous basis during the semester through various in-semester and end-semester assessment models. The marks awarded through continuous assessment are referred to as Formative assessment marks. The marks awarded through end-semester tests are referred to as Summative assessment marks (Figure 2). Both the formative and summative assessment marks are considered for awarding the final marks and the grade point in a particular course.

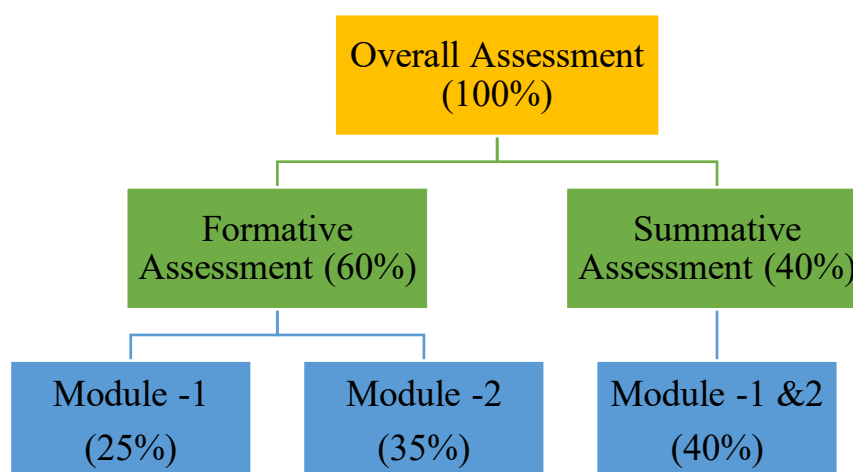


Figure 2: Categories of assessments in place for R26.

5.1 Marks Distribution

For each course, the maximum sum of formative and summative assessment marks put together is 100, in the ratio of 60:40, respectively. Furthermore, the 40 marks allocated for the summative assessment shall be further divided between L-based and P-based assessments in a ratio of 25:15 marks respectively.

5.2 Qualifying Criteria

To be declared successful in a course, the students must satisfy the following hierarchy of qualifying criteria:

- i. Attendance compliance should be 75% or within condonable range; else the candidate is put into 'R' grade.
- ii. In formative assessment, a candidate should secure a minimum of 50% *i.e.* 30 marks out of 60; else the candidate is put into 'R' grade.
- iii. In summative assessment, a candidate should secure a minimum of 40% *i.e.* 16 marks out of 40; else the candidate is put into 'I' (Incomplete) grade.

The candidates with 'R' grade should re-register for 'R' courses either in Summer semester or in a regular semester as and when the courses are offered. The candidates in 'I' grade are allowed to appear for supplementary summative assessment whenever the semester-end assessments are conducted.

To assess Binary graded courses / special projects / courses, not fitting into the categories described here, a suitable assessment procedure will be evolved in consultation with experts of that area and adjudicated by the committee constituted for that purpose. The decision given by the committee will be final. The appended assessment scheme shall be announced by the course coordinator during the commencement of course.

5.3 L-based courses integrated with P/T (L+P/ L+T/ L+T+P)

5.3.1 Formative Assessment

The scheme of formative assessment is designed to promote continuous learning and continuous engagement throughout the semester. The formative assessment framework comprises scheduled Formative Assessments (FA) and Continuous Learning Assessments (CLA), distributed across the two-module course structure. The assessments are designed to monitor students' progressive attainment of course learning outcomes through periodic evaluation, continuous academic engagement, practical activities, assignments, and experiential learning.

The formative assessment framework extends across the 15-week instructional period, with Module-1 covering Weeks 1–6 and Module-2 covering Weeks 7–15. The four scheduled Formative Assessments are conducted at appropriate stages of the semester, while Continuous Learning Assessments are carried out progressively during the respective periods of

instruction. The assessment modalities shall be communicated to students by the respective course instructor at the beginning of the course.

The suggestive modality of formative assessment is given below:

- a) **FA-1:** As outlined in Section 2.2, Module-1 is conducted over a shorter duration, emphasizing the fundamentals and broad perspectives of the course. In tune with this, the assessment shall be based on Revised Bloom's Taxonomy Levels 1, 2, and 3, with an emphasis on remembering, understanding, and applying. FA-1 shall assess the learning outcomes associated with Unit-1 and shall be a paper-based, proctored test conducted for 30 minutes and evaluated for a maximum of 10 marks. The question paper shall consist of two 5-mark questions and shall be conducted at the end of third week after commencement of the course.
- b) **FA-2:** FA-2 shall be conducted on completion of Module-1 and shall assess the learning outcomes associated with Unit-1 and Unit-2, covering the breadth of the Module-1 content. The assessment shall provide opportunities for students to demonstrate learning across the relevant levels of the Revised Bloom's Taxonomy, with greater emphasis on application and analysis. FA-2 shall be a paper-based, proctored test conducted for 60 minutes and evaluated for a maximum of 20 marks. The question paper shall consist of four 5-mark questions and shall be conducted at the end of the sixth week after commencement of the course.
- c) **FA-3:** As outlined in Section 2.2, Module-2 emphasizes higher-order learning, problem-solving, and innovation, building upon the foundational knowledge developed in Module-1. In tune with this, FA-3 shall assess the learning outcomes of the first part of Module-2, covering Unit-3 and the initial portion of Unit-4, with greater emphasis on application, analysis and evaluation in accordance with the Revised Bloom's Taxonomy. FA-3 shall be a paper-based, proctored test conducted for 60 minutes and evaluated for a maximum of 20 marks. The question paper shall consist of four 5-mark questions and shall be conducted by the end of the tenth week after commencement of the course.
- d) **FA-4:** FA-4 shall assess the remaining content of Module-2, covering the concluding portion of Unit-4 and Unit-5, with greater emphasis on application, analysis, and evaluation in accordance with the Revised Bloom's Taxonomy. FA-4 shall be a paper-based, proctored test conducted for 60 minutes and evaluated for a maximum of 20 marks. The question paper shall consist of four 5-mark questions and shall be conducted by the end of the fifteenth week after commencement of the course.
- e) There shall be no internal choice of questions in FA-1, FA-2, FA-3, or FA-4. FA-1 may be scheduled along with up to three courses on a day, whereas FA-2, FA-3, and FA-4 may be scheduled along with up to two courses on a day.
- f) **Continuous Learning Assessment (CLA):** CLA-1 to CLA-4 shall be conducted progressively throughout the semester to assess students' continuous learning and academic engagement.
 - i. Each CLA shall carry a maximum of 10 marks.

- ii. For P-based courses, each CLA shall comprise two laboratory experiments, each carrying 10 marks, with the combined score of 20 marks being scaled to 10 marks for the respective CLA.
- iii. For L/T-based courses, each CLA shall comprise an appropriate assignment and/or class assessment aligned with the learning outcomes of the corresponding instructional period. The assessments shall provide continuous opportunities for students to demonstrate their learning and receive feedback on their progress.
- g) **Module-1 CLA:** CLA-1 and CLA-2 shall be conducted during Weeks 1–3 and 4–6, respectively, covering the corresponding learning experiences of Module-1.
- h) **Module-2 CLA:** CLA-3 and CLA-4 shall be conducted during Weeks 7–10 and 11–14, respectively, covering the corresponding learning experiences of Module-2.
- i) **CLA-5 – Experiential Learning:** CLA-5 shall provide students with opportunities to apply their knowledge and skills through experiential and application-oriented learning activities during Weeks 11–15.
 - i. It shall carry a maximum of 10 marks, comprising 8 marks for the experiential learning activity and 2 marks for attendance.
 - ii. For P-based courses, the experiential learning component shall comprise an internal laboratory assessment based on the experiments covered or a mini project, as prescribed for the course.
 - iii. For L/T-based courses, it may comprise a seminar, mini project, case study, or real-time example, as appropriate to the course content and learning outcomes.
 - iv. MCQ-based activities and SDG-related activities may also be incorporated where relevant to the course content and learning outcomes, with appropriate documentation.
- j) **Attendance:** The 2 marks allocated for attendance under CLA-5 shall be awarded as follows: 2 marks for attendance of 90 to 100% and 1 mark for attendance of 80 to <90%.
- k) The scores of each formative assessment shall normally be announced within three working days of completion of the assessment, and the performance of students shall be discussed in the class to facilitate timely feedback and improvement.
- l) The total formative assessment marks for Module-1 shall be 50, comprising FA-1 (10), FA-2 (20), CLA-1 (10), and CLA-2 (10). These marks shall be scaled to a maximum of 20 marks, contributing 20% of the total course assessment.
- m) The total formative assessment marks for Module-2 shall be 60, comprising FA-3 (20), FA-4 (20), CLA-3 (10), CLA-4 (10). These marks shall be scaled to a maximum of 30 marks, contributing 30% of the total course assessment.
- n) The total formative assessment marks for CLA-5 shall be 10. These marks shall be scaled to 8 marks and 2 marks for attendance.
- o) The consolidated formative assessment score shall be finalized and submitted before commencement of the L-based summative assessment to facilitate the declaration of the formative ‘R’ grade.
- p) A candidate placed under ‘R’ shall not be permitted to take up the L-based summative assessment.

5.3.2 Summative Assessment

Summative assessment activities including timetables, question paper model, duration of the examinations will be informed to the students well before the commencement of the examinations in the form of circulars from Dean-AAA's office.

- a. Unless specified otherwise one of the following formats may be used for summative assessment for L-based courses integrated with T/P.
 - i. 15 (P) + 25 (L) marks format (L+P or L+T+P courses).
 - ii. 40 marks format (L+T courses).
- b. **If summative assessment is in two parts formats:**
 - i. **P-based assessment** shall comprise the exploratory review assessment of all lab practice assignments or a capstone project pre-assigned during the module-2 period, for a maximum of 40 marks.
 - ii. **L-based assessment** shall comprise a written examination for a maximum of 80 marks. This assessment shall be conducted by the Institute for a duration of 180 min. The contents for summative assessment shall cover the breadth and depth of the complete syllabus prescribed across the two modules of the course.
 - iii. The question paper for L-based summative assessment shall consist of two parts as given in Table 2.

Table 2: L-based Summative Assessment Question Paper Pattern.

Part No.	No. of Questions	Marks per Question	Choice	Marks
A	6	10	Answer any 5	50
B	3	15	Answer any 2	30
Total Marks				80

- iv. Each question shall comprise three sub-questions, with the distribution of marks among the sub-questions designed appropriately to assess the intended learning outcomes and relevant levels of the Revised Bloom's Taxonomy.
- c. A candidate should attend both the parts of summative assessments; else he will be put into I grade.
- d. The marks obtained in the P-based summative assessment, out of a maximum of 40 marks, shall be scaled to a maximum of 15 marks, while the marks obtained in the L-based summative assessment, out of a maximum of 80 marks, shall be scaled to a maximum of 25 marks.
- e. Total marks of summative assessment will be for a max. of 40 irrespective of format of evaluation.
- f. The award of 'I' grade is solely based on marks scored in summative assessment out of 40, if he/she does not score a min. 16 out of 40 (40%).

5.4 P-based Courses (P/ T+P/ T)

The detailed information consisting of experiments, batch formation, experiment schedules, etc., shall be displayed/informed to the students in the first week of the semester so that they come prepared for the laboratory sessions. Copies of the laboratory manual shall be made available to the students along with the schedule. The laboratory manual shall consist of the list of equipment, detailed procedures for conducting the experiments, format for record writing, expected learning outcomes for each experiment, and relevant short questions to facilitate conceptual understanding and critical thinking.

5.4.1 Formative Assessment

The scheme of formative assessment for P-based courses is designed to promote continuous learning, practical engagement, and experiential learning throughout the semester. Unlike L-based courses integrated with P/T, P-based courses shall not have separate Formative Assessments (FA-1 to FA-4). The formative assessment shall comprise Continuous Learning Assessments (CLA-1 to CLA-5) conducted progressively across the two-module structure and through experiential learning activities.

The suggestive modality of formative assessment is given below:

- a. **Continuous Learning Assessment (CLA):** CLA-1 to CLA-4 shall be conducted progressively during the respective instructional periods to assess students' continuous learning and practical engagement. CLA-1 to CLA-4 shall carry a maximum of 10 marks.
- b. Each CLA shall comprise two laboratory experiments/practice sessions, each carrying 10 marks, with the combined score of 20 marks being scaled to a maximum of 10 marks for the respective CLA.
- c. The assessment of laboratory experiments/practice sessions may include appropriate components as mentioned in table 3 such as viva-voce, experimentation and data collection, analysis and interpretation of results, and submission of the laboratory record/report, as appropriate to the nature of the course.

Table 3: Suggested parameters for Lab Practice Assessment (CLA)

S. No	Component	Marks
1	Experimentation and data collection	2
2	Analysis of experimental data and interpretation	2
3	Viva and interaction to evaluate understanding of concepts	2
4	Laboratory record/ report	4
Total		10

- d. **Module-1 CLA:** CLA-1 and CLA-2 shall be conducted progressively during Weeks 1–3 and 4–6, respectively, covering the corresponding learning experiences of Module-1.
- e. **Module-2 CLA:** CLA-3 and CLA-4 shall be conducted progressively during Weeks 7–10 and 11–14, respectively, covering the corresponding learning experiences of Module-2.
- f. **CLA-5 – Experiential Learning:** CLA-5 shall provide opportunities for students to apply their practical knowledge and skills through experiential and application-oriented learning activities. It shall carry a maximum of 20 marks, comprising 15 marks for experiential learning assessment and 5 marks for attendance.
 - i. The 15-mark experiential learning assessment shall be based on appropriate practical or experiential activities, such as an internal laboratory assessment, mini project, or other course-specific activity, as prescribed for the course.
 - ii. The 5 marks for attendance shall be awarded as follows:

Table 4: Marks distribution for Attendance

Attendance	95–100%	90–<95%	85–<90%	80–<85%	75–<80%	<75%
Marks	5	4	3	2	1	0

- g. The total formative assessment for P-based courses shall therefore carry a maximum of 60 marks, comprising 20 marks from Module-1, 20 marks from Module-2, and 20 marks from CLA-5.

5.4.2 Summative Assessment

The end-semester summative assessment for each P-based course shall be conducted for a maximum of 40 marks. The assessment shall be designed to evaluate the student's ability to perform practical activities, demonstrate conceptual understanding, analyse experimental observations, interpret results, and respond to relevant questions. The detailed scheme of assessment may vary depending on the nature and requirements of the laboratory/course and shall be communicated to the students by the laboratory in-charge before the commencement of the summative assessment.

The end-semester examination for each practical course shall be conducted jointly by two examiners. The internal examiner shall be the faculty member who has conducted the practical sessions and associated activities throughout the semester. The external examiner shall be nominated from within the department and shall be familiar with the practical components of the course but shall not have been directly involved in its delivery. The general scheme of assessment is given in Table 5.

Table 5: Suggested End-Semester Summative Assessment Pattern for P-based Courses

Component	Examiner 1	Examiner 2	Total
Objective and procedure write-up, including outcomes	4	4	8
Experimentation and data collection	4	4	8
Computation of results	4	4	8
Analysis of results and interpretation	4	4	8
Viva-voce	—	8	8
Total Marks	16	24	40

The assessment components may be suitably modified according to the nature of the laboratory/course, while ensuring that the summative assessment comprehensively evaluates the intended practical learning outcomes.

The total marks obtained in the summative assessment shall be for a maximum of 40 marks.

5.5 Assessment and Grading of MOOCs-based Elective

Whenever a candidate opts for a course through MOOCS offered via Swayam platform, he / she has to learn and undergo assessment as per norms set by VFSTR for such MOOCs Courses. Upon the declaration of the result, that the candidate has successfully completed the course, the candidate is said to have earned the credits under credit equivalence and credit transfer.

5.6 Socially Relevant Project using Design Thinking

Socially relevant project using design thinking work is undertaken in the 2nd semester and continued till the end of the semester for earning 2 credits by each candidate.

5.6.1 Formative Assessment

The assessment will be carried in a systematic way wherein first review is conducted during module-1 and second review during module-2 period. The detailed assessment guidelines and scheme are to be announced along with the assessment schedule as mentioned in the Table 6.

Table 6: Schedule and parameters followed for formative assessment.

Module	Schedule	Review	Points to be considered	Formative assessment marks
Module -1	5 th – 6 th week	Review -1	• Identification of specific area out of broad areas under the supervisor • Identification of outcomes in line with programme objectives. • Identification of tools / equipment / surveys / training needs / etc. • Completion of literature survey • Readiness of about 25% documentation	30
Module - 2	14 th – 15 th week	Review -2	• Presentation of results, analyses and conclusions • Meeting of objectives defined in first review • Preparation of report • Understanding by individual students on the overall project	30

5.6.2 Summative Assessment

Summative assessment will be done jointly by two examiners (both from VFSTR) wherein one as internal examiner and the other as external examiner. These examiners will be appointed by School Dean from the panel of examiners suggested by the respective Head of the Department. The scheme of assessment will be report (15 marks), presentation (10 marks) and demonstration (15 marks) respectively.

Points to be considered during the review.

- i. Presentation of results, analyses and conclusions
- ii. Meeting of objectives defined in first review
- iii. Preparation of report
- iv. Understanding by individual students on the overall project
- v. Individual student contribution

5.7 Project

Those students who do not opt for the internship, carry out their major project at VFSTR and submit their report which is a mandatory requirement for the award of degree. These projects

are usually done individually during the second year under the guidance of a faculty member. Every candidate, in consultation with the guide, should define the project and also the probable procedure of carrying it out and submit the same to a committee consisting of 2 to 3 faculty members appointed by Head of the Department. This is to avoid the repetition and also to come up with a roadmap for completion of the project within the time stipulated. The students are encouraged to select topics related to ongoing research and consultancy projects. The students are expected to carry out and present a survey of literature on the topic, work out a project plan and its implementation through experimentation / modelling / simulation / computation. They are also expected to exhibit system analysis, design, and presentation and evaluation skills.

5.7.1 Formative Assessment

The progress of project is reviewed as mentioned below in module by the Project Review Committee (PRC) and formative assessment marks are awarded based on these reviews. The Project review committee consists of:

- a) Head of Department or his/her nominee – Chairperson
- b) A senior faculty member identified by the HoD – Member
- c) Project supervisor – Member

Review schedules of PRC are to be announced by the department immediately after the commencement of class work. The review presentations are open to all the students of that section and attendance is compulsory. The first review should be of 15 minutes / batch; the remaining reviews should be around 30 minutes / batch. Before every review the batches should submit their PPT along with a brief report of not exceeding two pages. It is to be expected by the committee that student communicates/publishes research article based on the project work prior to graduation. The following aspects may be considered by the committee for assessment Table 7.

Table 7: Schedule and suggested parameters to be considered for formative assessment.

Module	Schedule	Review	Points to be considered	Max. Marks
Module -1	4 th week	First review	• Identification of specific area out of broad areas. • Identification of outcomes in line with programme objectives • Feasibility of contributing to the attainment of outcomes • Awareness on components mentioned in Project Experience Information sheet	20

Module	Schedule	Review	Points to be considered	Max. Marks
Module – 2	12 th week	Second review	• Acquisition / learning of the tool required • Readiness of the layout of the project report • Progress review as per mechanism/ schedule identified • Individual student contribution in above activities	20
	16 th week	Third review	• Presentation of results and conclusions • Meeting of objectives defined in first review • Submission of draft report • Understanding by individual students on the overall project • Individual student contribution • Progress of project as per schedule	20

5.7.2 Summative Assessment

At the end of the semester, during 18th to 20th week of the semester the summative assessment will be conducted in two phases.

Phase–I (during 18th -19th week): This is an evaluation for a max of 20 marks. A committee of two members comprising of HoD's nominee and Guide will assess the project work which will involve going through the project report (6 marks), project presentation (7 marks) and demonstration of the project (7 marks).

Phase–II (during 20th week): A final presentation and defense assessment for a max. of 20 marks will be carried out by one-man committee composed of an external expert who is chosen by the Dean AAA from a panel of examiners suggested by the HoD. The format for evaluation will involve going through the project report's quality (6 marks), presentation (6 marks) and interaction and defense (8 marks).

The qualifying marks will be finalized considering the marks scored in both the phases (I & II) of summative assessment.

In case the candidate is placed in 'I' grade, he/she has to appear for both Phase-I and Phase-II assessments, which will be held within the 15 days after declaration of results. In the consecutive assessment also if the candidate fails to secure min. required score, then he/ she will be placed in 'R' grade.

5.8 Internship

Internship work is undertaken either in the IV semester by a student in an industry, under the joint supervision of industry personnel and an internal faculty member. Sixty percentage of the

marks of Internship are allotted through continuous evaluation as formative assessment (Table 5) and the remaining 40% are based on end semester assessment.

5.8.1 Formative Assessment

The internal supervisor will interact with the guide allotted at internship offering industry based on the schedule given to conduct the reviews. Scheduled reviews can be conducted by IRC on online mode for discussion/ presentation. The 20 marks obtained by students for each review will be scaled to allotted marks as given in Table 8.

Table 8: Assessment scheme for Internship reviews.

Module	Review	Schedule	Formative assessment marks
Module -1	First review	4 th week	20
Module – 2	Second review	12 th week	20
	Third review	16 th week	20
Total			60

- The progress of internship work is reviewed in every module by the “Internship Review Committee” and marks for formative assessment are awarded based on these reviews.
 - The Internship Review Committee (IRC) consists of Head of Department or his/her nominee (Chairperson), the internal and external (industry) supervisors.
 - The IRC may not be the same for all students; however, the same IRC should exist for entire duration of the internship program of any single student.
 - The schedule and the scheme of evaluation are to be announced with internship notification. The internship reviews may take place at the place of internship or at the university, as decided by the interning organization or may be conducted in the blended mode.
- For Internal Reviews at the Place of internship**
 - Students should submit a report (not more than two pages) explaining about the progress of their work, mentioning clearly details like the machines or software handled / adopted, type of data collected and his/her understanding and contribution in the programme, and the same has to be presented before the supervisors.
 - The candidate should clearly present the completion of stipulated assignments set by the industry supervisor for that period.

- c) The evaluation will be based on a & b above and also based on regularity and discipline maintained in the internship venue (Table 9).

Table 9: Suggested scheme of assessment for every review.

Component	Total
Regularity and interaction	5
Application of knowledge	3
Gaining of new knowledge /skills / literature survey	5
Internship progress	4
Report	3
Total marks	20

5.8.2 Summative Assessment

At the end of the semester, the student shall submit a comprehensive report of internship covering the work done and make a final presentation in two phases as follows:

Phase-I (during 18th - 19th week): A committee of two members comprising of internal supervisor and HoD's nominee will assess the overall internship participation by the candidate and his final report through presentation made by the intern. The internship report (6 marks), presentation (7 marks) and overall impression (7 marks) during the internship will be evaluated respectively.

Phase-II (during 20th week): A final presentation and defense assessment for a max. of 20 marks will be carried out by one-man committee composed of an external expert who is chosen by the Dean AAA from a panel of examiners suggested by the HoD. The format for evaluation will involve going through the project report's quality (6 marks), presentation (6 marks) and interaction and defense (8 marks).

The qualifying marks will be finalized considering the marks scored in both the phases (I & II) of summative assessment.

In case the candidate is placed in 'I' grade, he / she has to appear for both Phase-I and Phase-II assessments, which will be held within the 15 days after declaration of results. In the consecutive assessment also if the candidate fails to secure min. required score, then he/ she will be placed in 'R' grade.

6. SEMESTER-END ASSESSMENT ACTIVITIES

- a) Setting of semester-end summative assessment question papers will be coordinated by the lead instructor assigned for a particular course. Two sets of question papers will be submitted latest by 12th week of the semester.
- b) There shall be 'Summative Assessment Question Paper Scrutiny Committee' which would be constituted with external experts. Experts are empowered to modify / rephrase the questions to maintain a high standard of the semester-end assessment. The review should be completed by the 14th week of the semester. The review process will be coordinated by a committee of School Dean, HoDs and external experts.
- c) The question wise marks scored in the summative assessment out of a total of 60 will be made available online within two weeks from the last date of examination and would be kept active for 24 hours. Latest by the end of 48 hours from the instant of notification any candidate can submit an appeal online providing question wise claim.
- d) Claims for re-assessment on P-based courses are not allowed.
- e) The appeals will be attended within next three working days. Fees for appeal, as decided from time to time, has to be remitted online along with the appeal.
- f) Final results and grades will be computed as explained in the next section.
- g) Final results and grades shall be announced within four weeks of completion of the last examination of the summative assessment (within two weeks from the last date of appeal). Grades are published on the University website, and also informed to the parents and students through SMS.

7. COMPUTATION OF GRADING

- i. Candidates who have successfully completed the prescribed formative and summative assessment requirements shall be considered for grading. Candidates awarded an 'R' grade in formative assessment or an 'I' grade in summative assessment, as applicable, shall not be considered for the award of the regular course grade.
- ii. The total marks obtained by a candidate in a course shall be computed as the sum of the marks secured in the formative and summative assessments, as prescribed for the respective course category. The total marks shall be considered out of 100.
- iii. The Letter Grade and corresponding Grade Point shall be assigned based on the absolute marks secured by the candidate, as prescribed in Table 10. The grade awarded shall be independent of the performance of other students in the course.

Table 10: Grading Information.

Percentage of Marks	Category	Grade	Grade Points
90 and above	Outstanding	O	10
80 and above but <90	Excellent	S	9
70 and above but <80	Very good	A	8
60 and above but < 70	Good	B	7
50 and above but < 60	Fair	C	6
46 and above but $\leq$ 49	Marginal	M	5
Less than 46	Incomplete	I	-
Transitional Grade	Repeat	R	-

8. SUPPLEMENTARY EXAMINATIONS

- a) The supplementary examinations shall be conducted once in summer semester. Notifications will be released by the examination section informing the students about registration procedures, details of fee and timetables. Apart from these examinations the students who have courses with 'I'-grade can also write the supplementary examinations along with regular semester-end examinations of that academic (Odd / Even) semester.
- b) Whenever a candidate clears courses with 'I' grade in a supplementary examination that are conducted during a regular semester, the Threshold value for computing his / her grade will be obtained from the same batch in which he / she had completed his/her formative assessment.
- c) Whenever a candidate clears courses with 'R' / 'I' grade in a summer semester, the Threshold value for computing his / her grade will be carry forwarded from the preceding Odd / Even semester for the respective courses.
- d) Whenever a candidate clears courses with a 'R' grade in a regular semester along with his/ her junior batch then for this candidate the Threshold value will be corresponding to his/her junior batch for computing grade.
- e) The results of summative assessment of Project / Internship will be announced only if the candidate successfully earns all the credits in courses registered during the program. If the candidate is with 'R' / 'I' graded courses the results will be kept under '**Announced Later (L)**' status and will be announced only after candidate clears these courses.

9. GRADE POINT AVERAGE

The Academic Performance of a student in every semester is indicated by the Semester Grade Point Average (SGPA) and finally by Cumulative Grade Point Average (CGPA).

9.1 SGPA

The Semester Grade Point Average (SGPA) shall be computed using the formula given below:

$$SGPA = \frac{\sum_{i=1}^n C_i P_i}{\sum_{i=1}^n C_i}$$

Where

n = number of courses a student successfully completed in the semester under consideration

P_i = Grade points secured for the ith course registered in the semester under consideration.

C_i = the number of credits assigned to ith course registered in the semester under consideration

9.2 CGPA

The Cumulative Grade Point Average (CGPA) shall be computed after successful completion of the programme. The CGPA shall be expressed in different flavours to reflect MCA of 80 credits.

Accordingly, the computations will be as below:

$$CGPA = \frac{\sum_{j=1}^m C_j P_j}{\sum_{j=1}^m C_j}$$

Where

m = total number of courses prescribed for the completion of the programme

P_j = grade points secured for the jth course.

C_j = the number of credits assigned to jth course

9.3 GRADE POINT PERCENTAGE EQUIVALENCE

Where Grade Point-based percentage equivalence is required, the percentage shall be calculated as:

$$\text{Percentage equivalence} = \text{Grade Point} \times 9.5$$

10. AWARD OF CLASS

The students who have become eligible for award of degree shall be classified based on their CGPA secured, as per the Table 11:

Table 11: Class/ Division information.

Sl. No.	CGPA	Class / Division
1	8.0 and above	First Class with Distinction
2	6.5 and above but less than 8.0	First Class
3	6.0 and above but less than 6.5	Second Class
4	5.0 and above but less than 6.0	Pass class

- a) For the purpose of rewarding the accomplisners with ranks and awards, toppers in each branch discipline are identified, based on their academic performance (CGPA).
- b) In addition, the ‘Chairman’s Gold Medal’ and other ‘Endowment Awards’ are awarded to the ‘outstanding students’ based on the overall performance which includes academic, co-curricular and extra-curricular activities, campus placements and competitive examinations. A committee appointed by the Vice-Chancellor will recommend the eligible student for the award, selected from the nominations received from the departments. In addition, the institution may recognize exceptional performance such as music, dance, sports etc. and display of exceptional bravery from time to time.
- c) Only such candidates who complete 80 credits (+16 credits) in the first 4 successive semesters shall be eligible to receive awards/ ranks.
- d) The candidates availing spill over semesters will not be eligible for the award of merit scholarships.

11. AWARD OF DEGREE

On successful completion of prescribed requirements of the programme, the degree shall be conferred during the convocation of the VFSTR.

For the conferment of degree, the student has to fulfill the following requirements:

- a) a bonafide student and undergone the course work of not less than two academic years and not more than four academic years from the date of joining.
- b) successfully completed all the courses as prescribed in the respective curriculum.
- c) acquired a minimum eligible credit i.e. 80 credits for the award of MCA degree.
- d) obtained no due certificates as prescribed by VFSTR.

- e) no in-disciplinary proceedings pending against him / her.

Consequent upon being convinced, following an enquiry, the Academic council may resolve to withdraw the degree / diploma / any other certification provided by the institute. The aggrieved may however prefer for a review of such decision by the Academic Council, citing cogent reasons for review or go in for an appeal to the, Executive Council of the institute.

12. HONOURABLE EXIT WITH PG DIPLOMA

In line with NEP-2020, the MCA program provides an honourable exit opportunity for candidates at a defined stage of their academic journey. A candidate who has earned a minimum of 40 credits and has successfully completed all requirements up to the end of the first year (second semester) will be awarded a Postgraduate Diploma. All candidates exiting under this provision will be issued semester-wise transcripts and a consolidated transcript. A candidate who has exited may seek re-entry to complete the MCA degree by surrendering the Postgraduate Diploma previously awarded. Such re-entry requests shall be scrutinized by a committee constituted by the Vice-Chancellor, which will recommend a suitable plan of action. The maximum duration to complete the MCA program shall be limited to the prescribed period for the degree, and any extension beyond this limit will require the approval of the Academic Council, if the candidate submits an appeal for such an extension.

12.1 Volunteer 'Drop' with Sabbatical Semester

A candidate may exercise his option to voluntarily exit from MCA programme temporarily for a semester during the MCA programme, by registering for a 'DROP option' in the beginning of the semester. The DROP can be exercised to take up special Internship / Innovation / Exploratory / Entrepreneurship / Advanced research / Start-up and such related activities. Under such circumstances a candidate can normally avail DROP over two successive semesters. Such 'Drop' semester will be identified as Sabbatical semesters.

Such a candidate has to pay the regular semester fee if such a Drop option is utilized during the first 4 semesters of MCA and has to pay a nominal semester maintenance fee during the spill over period, if a candidate has not yet completed the credit requirements.

Upon returning from such a temporary exit, a candidate may continue his MCA studies utilizing the provision of spill over period. A candidate may also submit a claim for Credit equivalence for the activities undertaken during the sabbatical period. The equivalence committee would evaluate and assess the academic equivalence of the work carried out and would recommend the credit equivalence and credit transfer to be granted together with the grades that could be attributed, if applicable. However, the max. duration of programme should be limited to seven years and further extension beyond the stipulated max. duration of study has to be approved by Academic Council, if the candidate appeals for an extension.

12.2 Volunteer ‘Drop’ with Semester Drop option

A candidate may exercise his option to voluntarily exit from MCA programme temporarily for a semester during the MCA programme, by registering for a ‘DROP option’ in the beginning of the semester to meet the family / personal exigencies. All the norms as mentioned in the section (12.4) shall be applicable for the candidates utilizing semester drop option.

12.3 Onward continuation to M. Tech degree

A provision is created for candidates enrolled in the MCA program to continue their academic progression toward an M.Tech. degree upon successful completion of the prescribed credit requirements of the MCA. The detailed supplement regulations governing this onward continuation are provided in Annexure–1.

13. INTERPRETATION OF RULES

- a) The academic rules and regulations should be read as a whole for the purpose of any interpretation.
- b) For the matter(s) NOT covered herein above or for unforeseen circumstances, but arising during the course of the implementation of the above regulations. The Vice-Chancellor shall be authorized to remove the difficulties and decide upon the matters. The same shall be reported in the next meeting of Academic Council for ratification and subsequently informed to Executive Council.
- c) The Institution may change or amend the academic rules and regulations or curriculum at any time, and the changes or amendments made shall be applicable to all the students with effect from the dates, notified by the Institution.
- d) Procedure and explanation to any section can be floated by the office of Dean AAA as applicable from time to time with due approval by the Chairman of Academic Council.

ANNEXURE – 1

SUPPLEMENTARY REGULATION FOR ONWARD CONTINUATION TO M. TECH DEGREE

The proposal to institute continuation to M. Tech degree after MCA is designed in line with the practices in Institutions of National Importance is to elevate the Gross Qualification Index (GQI) of India, and specifically to enhance the technological / engineering competency of the Technocrats.

In order to attract the committed learners towards earning M. Tech degree immediately after MCA the following scheme is proposed:

1. He / she should be a candidate maintaining his studentship through proper registration process of his MCA program and fulfills all the credit requirements of MCA.
2. He / she has to appear for an aptitude test / interaction and the corresponding committee of experts constituted for the purpose has to recommended his/ her name.
3. The regulations that were in force during that Academic year will be applicable for his / her continuation M.Tech programme.
4. The candidate should earn all the credits pertaining to MCA programme before commencing the M.Tech programme. The program structure designed for M. Tech will be followed from V semester onwards
 - MCA degree = 80 credits
 - M. Tech degree = 68 credits

MASTER OF COMPUTER APPLICATIONS (MCA)

R26 COURSE STRUCTURE

I Year I Semester

Course Code	Course Name	L	T	P	SL	C	Course Category
26MC101	Data Structures	2	2	2	2	4	Professional Core
26MC102	Python Programming	2	0	2	2	3	Professional Core
26MC103	Web Technologies	0	2	2	0	2	Professional Core
26MC104	Computer Organization & Operating Systems	3	2	0	3	4	Professional Core
26MC105	Software Engineering	2	2	0	2	3	Professional Core
26MC106	Technical English Communication	1	0	2	1	2	Humanities
26MC107	Mathematical Foundations for AI	2	2	0	2	3	Basic Sciences
26MC108	Agentic Tools	0	0	2	0	1	Professional Core
Sub Total		12	10	10	12	22	
Total		32			12	22	

I Year II Semester Structure

Course Code	Course Name	L	T	P	SL	C	Course Category
26MC109	Database Systems	3	0	2	3	4	Professional Core
26MC110	Object-Oriented Programming	3	0	2	3	4	Professional Core
26MC111	Computer Networks	2	2	0	2	3	Professional Core
26MC112	Soft Skills Laboratory	0	0	2	0	1	Humanities
26MC113	Socially Relevant Project using Design Thinking	0	0	4	0	2	Skill Development
	Elective-I	3	0	2	3	4	Elective
	Elective-II	2	0	2	2	3	Elective
26MC114	Management Science	2	2	0	2	3	Professional Core
26MC115	Indian Knowledge System	0	0	2	0	1	Humanities
Sub Total		15	4	16	15	25	
Total		35			15	25	

II Year I Semester

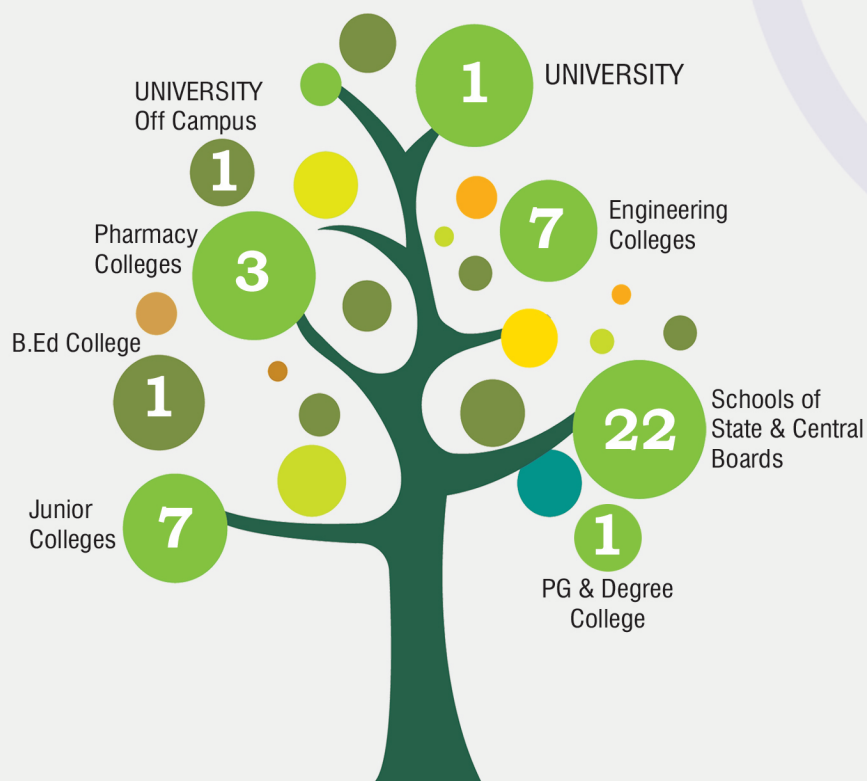
Course Code	Course Name	L	T	P	SL	C	Course Category
26MC201	Cryptography and Network Security	2	2	0	2	3	Professional Core
26MC202	Full Stack Technologies	3	0	2	3	4	Professional Core
26MC203	Big Data Analytics	2	2	0	2	3	Professional Core
	Elective-III	3	0	2	3	4	Elective
	Elective –IV	2	0	2	2	3	Elective
	Elective – V	3	0	2	3	4	Elective
Sub Total		15	4	8	15	21	
Total		27			15	21	

II Year II Semester

Course Code	Course Name	L	T	P	SL	C	Course Category
26MC204	Internship	0	2	22	0	12	Project
26MC205	Project						
Sub Total		0	2	22	0	12	
Total		24			0	12	

List of Department Elective Courses

Course Code	Course Name	L	T	P	SL	C
26MC801	Machine Learning	3	0	2	3	4
26MC802	Cloud Computing with DevOps	3	0	2	3	4
26MC803	Deep Learning	3	0	2	3	4
26MC804	Generative AI	2	2	0	2	3
26MC805	DevOps and MLOps	3	0	2	3	4
26MC806	Mobile Application Development	3	0	2	3	4
26MC807	Cyber Security	2	2	0	2	3
26MC808	Block Chain Technology	2	2	0	2	3
26MC809	Natural Language Processing	2	2	0	2	3
26MC810	Computer Vision	3	2	0	3	4
26MC811	Mobile Computing	2	2	0	2	3
26MC812	Biometrics	2	2	2	2	4
26MC813	Internet of Things	2	2	2	2	4
26MC814	Software Quality Assurance and Automation	2	2	0	2	3
26MC815	Data Wrangling and Visualization	2	0	2	2	3
26MC816	Data Analysis and Visualization	2	0	2	2	3
26MC817	Text Analytics	2	2	0	2	3
26MC818	Quantum Computing	2	2	0	2	3
26MC819	Artificial Intelligence and Neural Networks	3	2	0	3	4
26MC820	Reinforcement Learning	2	2	0	2	3
26MC821	Intellectual Property Rights	1	2	0	1	2
26MC822	Research Methodology	0	4	0	0	2
26MC823	Digital Marketing	1	2	0	1	2
26MC824	Agentic AI	2	0	2	2	3



VIGNAN'S

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(Deemed to be University) - Estd. u/s 3 of UGC Act 1956