



VIGNAN'S

Foundation for Science, Technology & Research

(Deemed to be **UNIVERSITY**)

-Estd. u/s 3 of UGC Act 1956

R22 Academic Regulations

In Compliance with NEP 2020



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PREFACE

'You are born to Blossom' – What an inspiring title the book authored by APJ Abdul Kalam and Arun K Tiwari carries. The journey to blossom has got to be heralded by education. The purpose of education is to ensure that the 'Life Blossoms'. Earning a degree and getting a placement should be the just happening things, and should not become the only celebrated goals for education. In the book cited above, Honourable Kalam, Former President of India, underscores that "The scheme of civil society depends on Educating young people to become enlightened citizens and adults who are responsible, thoughtful and enterprising"

VIGNAN aims to seed these concepts in every learner who transits through this temple of learning. The doctrine of VIGNAN entitled R-22 contains the principles of policies laid down by the University, to realize the spirit of "Blossoming the lives" providing a foundation-strong professional education on the ethos of 'Creative learning for Critical thinking and Critically analysing for Creative decision making'. Certainly, our University is one of the earliest Universities, in fact the University is a trend setting one in completely internalising the concepts of the policies brought out in National Education Policy (New Educational Policy) NEP-2020, and inculcating the spirit in R-22. The R-22 document articulates the Academic Regulations of the University, which is being presented now and shall be in force with immediate effect from the academic year 2022-23, not only for those who have joined in 2022, also the aspirants of 2021-22 are enabled into the navigation.

R-22 presents a novel design for the academic pursuit, making an exploratory cross disciplinary traversal for a learner who should find learning both holistic and experiential. The learner is ensured to enjoy the continuity in learning and the learner is supported to align and realign, enroute utilising the benefits of constructive feedbacks that s/he receives because of continuous assessment. S/he will be empowered to enjoy the opportunities to explore, experiment and experience.

R-22 eliminates the melancholy of examinations. The expected severity of breakdown due to the anxiety of examination system is replaced by an affectionate assessment system, increasing the effectiveness in accomplishing the outcomes.

In brief, NEP-2020 compliant revised academic regulation of the University – the R-22, is VIGNAN's commitment to alleviate the acuteness in the present educational practices. It intends to provide a strategic solution to the critical observation made by Bharat ratna awardee, Professor. CNR Rao – "India has exam system, not education system. When will young people stop taking exams and do something worthwhile?" (Thought for the Day, Times of India 13.08.2022)

Here is R-22, which assures that the learners at VIGNAN are bound to do something worthwhile – very much worthwhile.

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MCA R22 - Academic Regulations, Curriculum and Course Contents

(Applicable for the students admitted into first year from the academic year 2022-23 onwards)

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EXECUTIVE ABSTRACT

The Document R22 Academic regulations, Curriculum and course contents, is an articulation of the VFSTR deemed to be University's commitment towards NEP-2020, with a view that it enables student(s) to maintain the spirit of continuous learning and continuous assessment to replace the normal tendency of preparing just before a test or an examination. The proposed framework accomplishes multi-disciplinary holistic education, continuous assessment along with multiple honorable exit options if a student falls short to complete the requirements to earn the degree within the stipulated period including the permissible spill over period.

R22 is in sync with NEP-2020, with higher weight given to continuous / formative assessment, in an Integrated learning frame work which comprises of Learning – Thinking – Understanding – Skilling – Applying – Creating. Emphasis on continuous formative assessment with a creative summative assessment will facilitate the candidate to “Move away from high stake examinations – towards more continuous and comprehensive evaluation”.

The MCA degree offered will be of two years' (4 semesters) duration with an exit option within this period, with suitable certification that will enable the candidate to have a professional career and as well as serve as a reminder to return and update his / her qualification in the future. Following one year of study and the completion of the required credits, a Post graduate diploma will be conferred. However, the intention of the learners is not to join for the award of the Post graduate diploma with lateral exit, but to acquire a MCA degree.

SALIENT FEATURES OF THE REGULATION

- Continuous learning
- Continuous assessment
- Post graduate Diploma
- Honorable exit options
- Sabbatical Semester option to pursue innovation, incubation, entrepreneurial and advanced
- exploratory activities and subsequent re-entry.
- Onward continuation to M. Tech degree programme

1. INTRODUCTION

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

1.1 Definition

For the purpose of R22 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. Each Course shall comprise of Lecture (L), Tutorial (T) and Practical (P) Sessions. A Course may have either or all the three Components. Project is also treated as a Course.



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- **“Academic activities”** shall refer to the activities like Lecture (Physical Lecture Session), Tutorial (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 (includes hands-on-Experience / Practice experiments/ Field Studies/ Case Studies etc activities that enable the student to acquire the requisite skill).
- **“Continuous Assessment”** shall refer to the evaluation 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 Exams period. A semester would generally be spread over twenty weeks.
- **“Course Drop”** shall refer to a student having to undertake a repeat 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 / underscored Semester - End summative assessment component, with a view to accord him an additional opportunity to improve upon his previous score.
- **“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 decided to be held during the intervening period of Even and Odd Semester (i.e. Summer Vacations period).
- **“School”** refer to a division of institute dealing with two or more specific area of discipline / study comprising of the departments related with exclusive emphasis on trans-disciplinary research.
- **“Department”** refer to a division of institute dealing with a specific area of discipline / study.
- **“Center”** refer 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.
- **“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 four successive years.
- **“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
- **“HoD”** refers to the Head of the respective Department, where the student is enrolled for his/her Branch of Study
- **“Internship”** refers to onsite Practical Training offered by reputed companies / Institutions, in India or abroad. To be undertaken only upon prior approval of the respective HoD.
- **“Project”** refers to a course executed by a candidate on a specific research problem at VFSTR / any organization of repute. To be undertaken only upon 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

1.2 Academic Administration

The academic programmes of VFSTR are governed by the rules and regulations approved by the Academic 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 stake holders 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, chaired by the Vice-Chancellor, meets at least twice or thrice 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 revised regulations (R22) was approved in its 31st Academic Council meeting on 30-07-2022.

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 of the benefit of spill-over period of 2 years, that is the maximum duration of four years can be availed by a candidate to complete the MCA programme in a slower pace if he / she desires. The candidate failing to complete the requirements will be considered for the honorable exit as applicable.

1.4 Courses and Credits

The term course is used in a broader sense to refer to so called papers such as 'theory subject', 'Computing practice', 'Socially relevant project using Design thinking', 'Internship', '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 / Computing practices / Field Studies / Case Studies / Socially relevant project / Major Project / Internship, 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.

- 1.5.1 A provision is also created for a candidate who is enrolled for MCA degree to further continue his / her course of study to M. Tech degree after completing the credit requirements of MCA. Annexure-2 provides the supplement regulations for onward continuation to M. Tech degree programme.

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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 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 two years from the date of admission to MCA a candidate has to pay the semester / annual fees as prescribed irrespective of the less number of credits that he / she would register or even opt to Drop a semester.
- 1.7.2** If a candidate gets into a spillover 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 spillover semester as prescribed from time to time.
- 1.7.3** A candidate has to pay an additional fee proportional to the number of credits for registering in a summer semester as prescribed from time to time.





2. CURRICULUM

The Department prescribes semester-wise curriculum encompassing different courses. Every course offered will be designated in a L-T-P structure. The theory courses comprise of L (and / or T & P hours) whereas the practical courses include computing practice instructions (T) and practical sessions (P). Amalgamation of theory courses with practical sessions is predominantly seen in this curriculum.

2.1 Distribution of credits

The overall distribution of credits for various categories of courses in the curriculum of MCA programme is represented in Table (1) as given below.

Table 1 : Credits Distribution for Various categories of courses

Category of Courses	Number of Credits	Percentage of Credits
Professional Core	46	57.5%
Dept. Electives	11	13.75%
Humanities and Management	6	7.5%
Basic Sciences	3	3.75%
Projects	14	17.5%
Total	80	100%

2.2 Organization of course contents

Courses offered in the program is composed of two modules covering all the course contents required for a candidate to obtain knowledge and skill. Any contents in each module is further distributed among two units; wherein Unit -1 contains 'Fundamentals and Broad perceptive' of the module. Unit-2 comprises of the extension / advanced topics of Unit-1 as well as necessary practice models for validation / applying the knowledge gained during L / T sessions. The modular period is about 8 weeks. The first unit in a module may be covered in 3 to 4 weeks and the second unit of the module may be of 4 to 5 weeks (Figure 2). 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.

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	

Module- I		Module- II			Module- I		Module- II			
U1	U2	U1	U2		U1	U2	U1	U2		

Figure 2: Unit-wise distribution of course contents in a module and their mapping with Academic Calendar; U= Unit

3. CHOICE BASED CREDIT SYSTEM

The MCA programme comprises of a set of courses - Basic sciences, Humanities and Management, Professional core and Elective courses. VFSTR offers flexibility for students to choose courses of their choice and obtain the credits satisfying the minimum credits criterion.

3.1 Basic Sciences, Humanities and Management

One Basic science course was introduced to offer the knowledge of statistics that form the foundation for all computer science related courses for 3 credits. Courses of Humanities



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and Management are also offered for 6 credits. The main purpose of offering Management courses is to impart Management skills to students so that they would pursue allied career opportunities.

3.2 Professional Core

Professional core courses are mandatory courses (46 credits). These are designed to offer the essential fundamental knowledge and skills required for the MCA Programme.

3.3 Electives

A candidate has a choice to choose the elective courses (11 credits). A list of elective courses is pooled together, enabling a candidate to choose the electives from a pool so that he/she can focus to a specific theme. Otherwise also he / she can exercise the choice to choose electives from across the pools. There may be courses which may not be listed under any pool, which are called 'Free elective courses'. Elective courses are spread over two semesters from second to third semester, to enable students earn credits from a chosen pool or otherwise. Out of 11 credits in electives category interested candidates can also earn 3 credits through MOOCs offered via Swayam platform.

3.4 Socially relevant project using Design Thinking

These projects are designed and executed by students during the first year of their program. Design thinking is a creative problem-solving approach that focuses identifying new products / processes by joining both human & social capital. It ensures that products, services and processes are rooted in the needs of people, communities and / or end users with an emphasis on solutions creating social and environmental value. The supervision of Socially Relevant Project using Design Thinking will be done by faculty of department who serve as supervisor. The minimum duration of the project is 64 hours including writing of project report and submission for assessment. A batch of maximum 2 students can take part in the project. Performance will also be assessed in the modular framework for formative and semester-end summative, successful completion will earn 2 credits.

3.5 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 an 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 / Modeling / Simulation / Computation. Through such a project work, the student is expected to demonstrate system analysis, design, presentation, and execution skills. Performance in the project will also be assessed in the modular framework for formative and semester-end summative.

3.6 Internship

A student can undertake internship in lieu of project work in the industry for one complete semester during fourth semester in lieu of major project work. It 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.

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.

- 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 15th week granting the advantage of the attendance for the 16th 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 Vice-Chancellor. 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 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, office of AAA is empowered to cancel the attended exams. 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 3). Both the formative and summative assessment marks are considered for awarding the final marks and the grade point in a particular course.

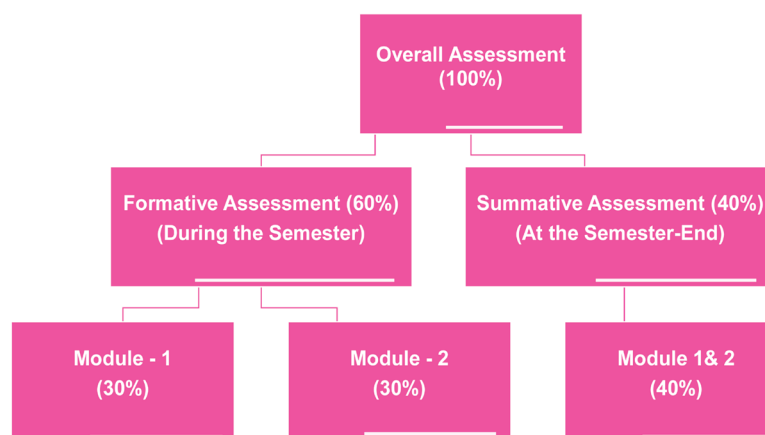


Figure 3: Categories of Assessments in place for R22

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.

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5.2 Qualifying criteria

To be declared successful in a course, a student must secure at least a grade 4.5 in a scale of 10 based on the total maximum marks which is inclusive of formative and summative assessment. The students should also get 40% from the maximum marks allotted for formative and summative assessments individually.

The hierarchy of qualifying criteria is as follows:

- Attendance compliance should be 75% or within condonable range; else the candidate is put into 'R' grade
- In formative assessment, a candidate should secure a minimum of 40% ie. 24 marks out of 60; else the candidate is put into 'R' grade
- In summative assessment, a candidate should secure a minimum of 40% ie. 16 marks out of 40; else the candidate is put into 'I' (Incomplete) grade.
- Collectively the candidate should secure a min. grade of 4.5 in a scale of 10 after relative grading (section 7); else the candidate has to choose either 'R' or 'I' grade duly being counselled.
- A candidate who has secured grade < 5 in a course may be permitted (optional) to volunteer to improve his / her grade by opting suitably 'R' or 'I' in that course.

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.

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	

Module- I		Module- II			Module- I		Module- II			
U1	U2	U1	U2		U1	U2	U1	U2		
Formative Assessment				SA	Formative Assessment				SA	

Figure 4: Schedules of formative and summative assessments in line with Academic calendar. SA = Summative assessment

5.3 L-based courses integrated with P / T

5.3.1 Formative Assessment

The scheme of formative assessment is designed to promote the continuous learning. Scheme consists of assessments planned at institute level and assessment that may be scheduled by the course instructor (Figure 4). Institute level assessments shall be scheduled by the office of AAA. Respective Faculty Member(s) shall declare the schedule of Continuous Practice Assessments (CPA), Quiz, Tutorials, Assignments, Seminars, Discussions, etc. Some of the components may also however take place in an unscheduled manner like Surprise Tests. However, students shall be made aware of the assessment modalities that are going to be followed in a course by the faculty, under information to the HoD.



To monitor the progress of students, continuous assessment comprising of five targets (T1, T2, T3, T4 and T5) is advocated in each module for a maximum of 60 marks. For a class (or section) of 60 to 70 students, formative assessment commences by the announcement of module bank containing 10 problems for each module in a course. Nature of problems in the module bank shall be at the level of creative / exploratory / design / thought provoking covering the complete syllabus of a module at somewhat advanced / challenging level.

The purpose of creating module bank of 10 problems is to assign one problem each to 2 batches of 3 - 4 members. The batches are composed of randomly picked up candidates. These batches remain same for all courses and also for the P-sessions in the courses in that semester and are created in the beginning of that semester.

The purpose of assigning one problem to two batches is to create a healthy competitive spirit between the two batches.

The modality of evaluation of five targets is listed here under:

- a) **T1:** During 5th or 6th week of each module a classroom test shall be conducted. T1 consists of two parts: A and B.

Part A consists of one random problem from the module bank and vary from batch to batch. All the questions in the module bank shall be distributed among students and students shall know the question to be answered only on the day of test in the examination hall.

Part B consists of one common problem at fairly application / advanced level (not at all prior notified) from outside the module bank for all the students.

T1 shall be paper based and proctored test for a period of 60 Min (Maximum) which shall be assessed for 30 marks and downscaled to 10 marks.

For the students who for justifiable reasons could not attend the classroom test on the scheduled day, a re-test maybe conducted. However, Part-B will contain a new question and Part-B will have higher weightage than part-A or full weightage could even be allotted for Part-B in such an event.

- b) **T2:** Immediately follows T1. Students in a specified batch who now have received the same question during T1 will work further on that problem for T2.

T2 is primarily an extension of problem received in T1 for carrying out validation study: Case studies / Simulations / Computing exercises. Each batch shall interact with the course instructor to finalize the nature of validation and expected to complete the exercise within 10 to 15 days after T1.

Course instructor should ensure assigning a different case study / a different scope for validation study for each batch in case the same problem is assigned to two batches.

Course instructor shall assess every student in a batch for a max. of 10 marks based on his observation, interaction and / or based on at least 2 reviews.

- c) **T3:** T3 shall be conducted during the last week of each module. Student batches are expected to submit a report, clearly documenting the work executed during T2. The report should be in IEEE format and additionally a voice in-built PPT should be prepared and submitted.

The report and presentation shall be assessed by the course instructor for 10 marks for every student. In certain cases, a course instructor can call for a physical presentation also by a batch.

- d) **T4:** T4 is a comprehensive module test, conducted for 30 min. comprising of 20 multiple choice questions (MCQs) covering the holistic content of module. T4 shall be evaluated for a max. of 10 marks @ ½ mark for each question. T4 will be conducted in ON-LINE mode

There shall be two tests in each course in a day and the best performance of the tests shall be considered for awarding the marks.

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Two sets of question papers each containing 20 questions should be set. The theme of the questions could be similar across the sets. When the test is administered online, every student receives the questions in shuffled sequence and also the choices in shuffled sequence. Therefore, the choice like both 'a' & 'b' above. Neither of 'a' and 'b', all the three a, b, c will not be set.

- e) **T5:** T5 assessment is based on Practice or Tutorial assignments. Implementation, Report presentation and Discussion shall happen in a continuous mode throughout the module period.

At least 4 such continuous practice assessments (CPA) / assignments per module shall be conducted by course instructor. The marks will be @ 5 marks per assignment totaling up to 20 per module.

The results of the tests are to be normally announced within three working days on completion of the assessment and the performance is to be discussed in the class.

- f) The total marks per module is 60 - T1 (out of 10), T2 (out of 10), T3 (out of 10), T4 (out of 10) and T5 (out of 20).
- g) Total marks for both the modules from formative assessment will be added up to 120, which will be suitably mapped down to a max. of 60 marks. The mapping policy should be decided by the lead instructor / instructors in consultation with the HoD. The mapping policy should be shared with Dean AAA for the purpose of documentation.
- h) The marks scored in Module-1 for a max. of 60 should be entered / submitted latest by 9th week and of Module-2 latest by 17th week of the semester. Consolidated score of for a max. of 120 suitably mapped down to a max. of 60 marks should be submitted latest by 18th week of semester enabling the declaration of 'R'- grade before the commencement of summative assessment.
- i) A candidate put under 'R' will not be permitted to take up the summative assessment.

5.3.2 Summative Assessment

- a) An instructor may choose one of the two formats for conducting summative assessment for L-based courses integrated with T / P
- 15 + 25 marks format or 20 + 20 marks format (following b, c, d below)
 - 40 marks format (following c, d below)
- b) If summative assessment is in two parts format:
- Part-I will be the assessment of capstone project which is pre-assigned during the module-2 period or will be the exploratory review assessment of all course practice assignments.
 - Part-II will be based on a written examination for a max. marks of 80, as in c& d below, which is scaled down to 25 or 20 based on the selected pattern of format.
 - A candidate should attend both the parts of summative assessments; else he will be put into I grade.
- c) For each L-based course integrated with T / P, the summative assessment shall be conducted by the Institute for a duration of 150 min. and for a maximum of 80 marks. Contents for summative assessment shall cover the breadth and depth of the complete syllabus that is mentioned in the two modules of a course.
- d) The question paper for end-semester theory examination consists of two parts as given in Table (2).



Table 2: Theory Examination Question Paper Pattern

Part No.	No. of Questions	Marks for each Question	Marks	Choice
A	4	10	40	No
B	2	20	40	No
Total Marks			80	

- e) The questions will be comprehensive covering the entire course syllabus and any single question should not necessarily be limited to any particular unit / module.
- f) These marks are suitably mapped down to a score of 40.
- g) Total marks of summative assessment will be for a max. of 40 irrespective of format of evaluation.
- h) 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

The detailed information consisting of computing practices, batch formations, practice session schedules, etc., will be displayed / informed to the student in the first week of the semester so that the student come prepared for the practice sessions. Copies of the practice manual will be made available to the students along with the schedule. The practice manual will consist of the detailed procedure to solve the problem, format for record writing, outcomes for each practice exercise and possible set of short questions to help students gain critical understanding.

5.4.1 Formative Assessment

During practice sessions, a brief viva-voce is conducted for each student on the task he / she is carrying out on that day. Some of the parameters that could be included in the Continuous Practice Assessment (CPA) are given in Table (3). The set of parameters may slightly differ from one course to the other, and will be announced before the commencement of the practice session. These parameters are assessed for each practice session

Table 3: Suggested parameters for Continuous Practice Assessment (CPA)

S. No	Component	Marks
1	Report of about 1 page on proposed design layout and background theory before the start of practice session	4
2	Viva and interaction to evaluate understanding of concepts	4
3	Validation of results	4
4	Analysis of results and interpretation	4
5	Finalized report submitted on the next week	4
Total		20

This assessment is carried out for each practice session and the total marks of all practice sessions will be suitably mapped down to a max. of 60.

5.4.2 Summative Assessment

End semester examination for each practical course is conducted jointly by two examiners. The examiners are appointed by Dean, AAA from the panel of examiners suggested by the respective Heads of the Department. In some cases, one of the examiner may be from outside the institution and will be identified as external examiner. The scheme of assessment may vary depending on the nature of the course, which shall be shared with student by the course instructor. The summative assessment will be conducted for a max. marks of 40. The general scheme of assessment is given in Table(4).

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Table 4: Suggested end-semester summative assessment pattern for P-based courses

Component	Marks		
	Examiner 1	Examiner 2	Total
Objective & Procedure write up including outcomes	4	4	08
Preparation of algorithmic lay out	4	4	08
Computation of results	4	4	08
Analysis of results and Interpretation	4	4	08
Viva Voce	0	8	08
Total Marks	16	24	40

5.5 Assessment and Grading of MOOCs based elective

Whenever a candidate opts for a course through MOOCs offered via the Swayam platform, he / she has to learn and undergo assessment as per Swayam norms. Upon the declaration by Swayam, that the candidate has successfully completed the course, the candidate is said to have earned the credits under credit equivalence and credit transfer. The online course committee will also translate the score awarded by Swayam into an equivalent grade in a scale of 10 for incorporation by Dean AAA.

In case the candidate is unsuccessful, and then if the candidate has secured less than 20% in the final examination conducted by Swayam, the candidate will be placed into 'R' grade, and if it is $\geq 20\%$, then the candidate will be placed into 'I' grade. The online committee decides the equivalence score for formative assessment for a max. of 60 based on both the scores he/ she has earned in the assessments and the final examination conducted by Swayam in case of 'I' grade. Supplementary examination for 'I' grade will be conducted by VFSTR. The candidate has to re-register for the same Swayam course or an alternative Swayam course or may choose any other elective offered by the department in place of MOOCs course in case he / she received a 'R' grade.

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 four reviews in a systematic way wherein; first two reviews are conducted in Module-1 and remaining two reviews are conducted in Module-2 by a team of two senior faculty members appointed by the Head of the department.

The detailed assessment guidelines and scheme are to be announced along with the assessment schedule as mentioned in the Table(5).

Table 5: Schedule and parameters followed for formative assessment

Module	Schedule	Review number	Points to be considered	Max. Marks
Module -1	4th week	First review	<ul style="list-style-type: none"> Identification of specific area out of broad areas under the supervisor Identification of outcomes in line with programme objectives. Feasibility of contributing to the attainment of outcomes 	15
	8th week	Second review	<ul style="list-style-type: none"> Identification of tools / equipment / surveys / training needs / etc.. Understanding by individual students on the overall aspect of the project. Completion of literature survey Design of equipment set up Acquisition / learning of the tool required Readiness of about 25% documentation 	15





Module -2	12th week	Third review	<ul style="list-style-type: none"> Progress review as per mechanism / schedule identified Evaluation or validation techniques of the project Structure of project report Individual student contribution in above activities. 	15
	16th week	Fourth review	<ul style="list-style-type: none"> Presentation of results, analyses and conclusions Meeting of objectives defined in first review Preparation of report Understanding by individual students on the overall project Submission of technical article 	15

5.6.2 Summative Assessment

Summative assessment will be done jointly by two examiners one is from VFSTR as internal examiner and the other may be from other institution as external examiner. These examiners will be appointed by Dean-AAA 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.

- Presentation of results, analyses and conclusions
- Meeting of objectives defined in first review
- Preparation of report
- Understanding by individual students on the overall project
- Individual student contribution
- Progress of project as per schedule
- Submission of technical article / prototype realization

5.7 Project

Those students who do not opt for the semester-long 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 IV semester, under the guidance of a faculty member. Every student, 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. The entire process of grouping of student batches, and identification of respective guides etc., is to be completed by the end of III semester, so that students can start of their project work immediately after III semester.

5.7.1 Formative Assessment

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

- Head of Department or his / her nominee – Chair person
- A senior faculty member identified by the HoD – member
- 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



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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(6).

Table 6: Schedule and suggested parameters to be considered for formative assessment

Module	Schedule	Review number	Points to be considered	Max. Marks
Module -1	4th week	First review	<ul style="list-style-type: none"> Identification of specific area out of broad areas. Identification of outcomes in line with programme objectives Feasibility of contributing to the attainment of outcomes 	15
	8th week	Second review	<ul style="list-style-type: none"> Identification of tools/training needs / etc.. Understanding by individual students on the overall aspect of the project Completion of literature survey Design of project set up 	15
Module -2	12th week	Third review	<ul style="list-style-type: none"> 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 	15
	16th week	Fourth review	<ul style="list-style-type: none"> 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 	15

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 Semester-long Internship

Internship work is undertaken in the IV semester by a student in an industry, under the joint supervision of industry personnel and an internal faculty member. 60% of the marks of Internship are allotted through continuous evaluation as formative assessment and the remaining 40% are based on end semester assessment.



Table 7: Formative Assessment scheme for Internship Reviews

Module	Review number	Schedule	Max. Marks
Module -1	First review	4th week	15
	Second review	8th week	15
Module -2	Third review	12th week	15
	Fourth review	16th week	20
Total			60

- The progress of internship work is reviewed twice 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 (Chairman), 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.

5.8.1 Formative assessment: Internal reviews at the place of internship

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 15 marks obtained by students for each review will be scaled to allotted marks as given in Table (7).

- 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, before the supervisors.
- The candidate should clearly present the completion of stipulated assignments set by the industry supervisor for that period.
- The evaluation will be based on a & b above and also based on regularity and discipline maintained in the internship venue.

Table 8: Suggested scheme of assessment for every review

Component	Total
Regularity and interaction	3
Application of knowledge	2
Gaining of new knowledge / skills / literature survey	5
Internship progress	3
Report	2
Total marks	15

5.8.2 Summative assessment – Internship

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.

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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

- 6.1** 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.
- 6.2** 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.
- 6.3** The question wise marks scored in the summative assessment out of a total of 80 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.
- 6.4** Claims for re-assessment on P-based courses are not allowed.
- 6.5** 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.
- 6.6** Final results and grades will be computed as explained in the next section
- 6.7** 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.
- 6.8** Provisional Grade cards will be issued within two weeks after the announcement of grades. Grade card will contain three parts. Part 1: details of successfully completed courses. Part 2: Details of 'I' grade courses. Part 3: Details of 'R' grade courses.

7 COMPUTATION OF GRADING

- 7.1** Formative assessment decides the list of 'R'- candidates. Therefore, these candidates will not be considered for grading computation. Summative assessments decide the list of 'I' candidates. Therefore, these candidates will not be considered for grading computation
- 7.2** The candidates who have successfully completed both formative and summative assessments will be considered for computation of relative grading.
- 7.3** Threshold value (Th) for relative grading in each course is arrived after studying the marks distribution in that course by a committee constituted by Dean, AAA. The threshold value is decided by the upper bound marks of the major chunk of the class keeping the top outlier scores away from consideration (the least upper bound). The threshold value will be slightly greater than upper bound marks or may be equal to the upper bound marks.
- 7.4** The total marks m = marks scored in the formative assessment + marks scored in the summative assessment is transformed into relative grade expressed accurate to two decimal places as follows:

Relative grade point (P) = $(m / Th) \times 10$ [and limited to 10]

- 7.5** If students require course wise percentage equivalence, then the calculation will be based on the following



Course wise percentage equivalence = (m / Th) X100 [truncated to two-digit integer and limited to 100]

- 7.6** After relative grading, a student is assigned a 'Letter Grade (G)' for each course as per Table (9). The grade and the corresponding letter grade represent the outcomes and assessments of a student's performance in a course.

Table 9: Grading information

Relative Grading Range (P)	Category	Grade (G)
≥ 9.50	Outstanding	O
≥ 8.50 to 9.49	Excellent	S
≥ 7.00 to 8.49	Very good	A
≥ 6.00 to 6.99	Good	B
≥ 5.00 to 5.99	Fair	C
≥ 4.50 to 4.99	Marginal	M
Transitional Grade	Repeat	R
Transitional Grade	Incomplete	I

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8 SUPPLEMENTARY EXAMINATIONS

- 8.1** 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.
- 8.2** 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.
- 8.3** 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.
- 8.4** 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.
- 8.5** The results of the summative assessment of Project / Internship will be announced only if the candidate successfully earn 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 announced only after the candidate clear these courses.

9 GRADE POINT AVERAGE

The Academic Performance of a student is indicated every semester 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



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9.2 CGPA

The Cumulative Grade Point Average (CGPA) shall be computed after successful completion of the programme.

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

C_j = the number of credits assigned to the jth course

P_j = grade points secured in the jth course.

and $\sum C_j = 80$

Percentage equivalence of SGPA & CGPA = (SGPA or CGPA) X10

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 (10) given below:

Table 10: 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	Less than 6.0	Pass Class

- For the purpose of rewarding the accomplishees with ranks and awards, toppers in each branch discipline are identified, based on their academic performance (CGPA) for MCA programme.
- 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
- The candidates who complete 80 credits in the first 4 successive semesters shall be eligible to receive awards / ranks
- 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 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.
- successfully completed all the courses as prescribed in the respective curriculum.
- acquired a minimum eligible credit i.e. 80 credits for the award of MCA degree.
- obtained no due certificates as prescribed by VFSTR.
- 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 BoM of the institute.

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12 LATERAL EXIT OPTIONS

12.1 Honorable exit with PG diploma

In line with NEP-2020, an optional exit is provided for a candidate who has earned a minimum number of credits and has completed all the requirements up to the end of respective years of study.

Post Graduate Diploma certification will be awarded for a candidate who has earned a minimum of 40 credits and completed all the requirements up to the end of second semester.

Semester-wise transcript and a consolidated transcript will be given along with a transit to the candidates during their exit from the registered program.

The candidate who has exited can seek re-entry to complete MCA by surrendering the graduate Diploma. A committee constituted by Vice-Chancellor will scrutiny all such re-entry requests and recommend the plan of action. However, the max. duration of programme should be limited to four 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 Sabbatical semester

A candidate may exercise his option to exit from MCA Degree programme temporarily for a semester, by registering for a 'DROP option' in the beginning of the semester. The DROP can be exercised to take up 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 semester.

However, 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 spillover 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 spillover period. A candidate may also submit a claim for Credit equivalence for the activities undertaken during the DROP 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 four 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.

12.3 Volunteer 'Drop' of a 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 mentioned in the section 12.2 shall be applicable for the candidates utilizing semester drop option.

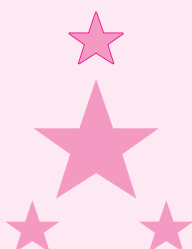
13 INTERPRETATION OF RULES

- The academic rules and regulations should be read as a whole for the purpose of any interpretation.
- 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 BoM.
- 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.
- 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.



R22 MCA 2 YEAR

POST GRADUATE
PROGRAMME



ANNEXURE -1 MASTER OF COMPUTER APPLICATIONS

I Year I Semester

Course Code	Course Title	L	T	P	C
22MC101	Data Structures	3	-	2	4
22MC102	Probability and Statistics	2	2	-	3
22MC103	Database Systems	3	-	2	4
22MC104	Computer Organization and Operating systems	3	2	-	4
22MC105	Object oriented Programming with Java	3	-	2	4
22MC106	Python Programming	2	-	2	3
22MC107	Technical English communication	1	-	2	2
	Total	17	4	10	24
		31 hrs			

I year II Semester

Course Code	Course Title	L	T	P	C
22MC108	Software Engineering and Testing	3	-	2	4
22MC109	Web Technologies	3	-	2	4
22MC110	Computer Networks	2	2	-	3
	Elective – I	3	-	2	4
22MC111	Data Mining Techniques	3	-	2	4
22MC112	Data Visualization	-	-	4	2
22MC113	Socially relevant project using Design Thinking	-	-	4	2
22MC114	Soft skills laboratory	-	-	2	1
	Total	14	2	18	24
		34 hrs			

II year I Semester

Course Code	Course Title	L	T	P	C
22MC201	Cryptography and Network security	3	-	2	4
22MC202	Organization Behavior	2	2	-	3
22MC203	Cloud Computing	2	2	-	3
22MC204	Internet of things	2	2	-	3
	Elective – II	2	2	-	3
	Elective – II (MOOCs-1 (NPTEL/SWAYAM)/ Dept. Elective	3	-	2	4
	Total	15	6	8	20
		29 hrs			

II year II Semester

Course Code	Course Title	L	T	P	C
22MC205 / 22MC206	Internship / Project	-	2	22	12
	Total		24	12	

List of Department Elective

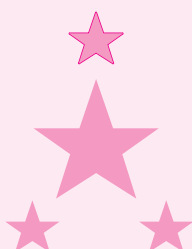
Course Code	Course Title	L	T	P	C
22MC801	Big Data Analytics	2	2	-	3
22MC802	Digital Image Processing	2	2	-	3
22MC803	Mobile Application Development	2	2	-	3
22MC804	Software Project Management	2	2	-	3
22MC805	Formal Languages and Automata Theory	3	2	-	4
22MC806	Design and Analysis of Algorithms	3	-	2	4
22MC807	Data Science using Python	3	-	2	4
22MC808	Machine Learning through Python	3	-	2	4
22MC809	Deep Learning	3	-	2	4
22MC810	Full Stack Technologies	3	-	2	4
22MC811	Medical Image Analysis	3	-	2	4
22MC812	Block Chain Technology	3	2	-	4
22MC813	Data Wrangling and Visualization	2	2	2	4

R22 MCA
2 YEAR
POST GRADUATE PROGRAMME



R22 MCA 2 YEAR

POST GRADUATE
PROGRAMME



ANNEXURE – 2

SUPPLEMENT 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 = 64 credits