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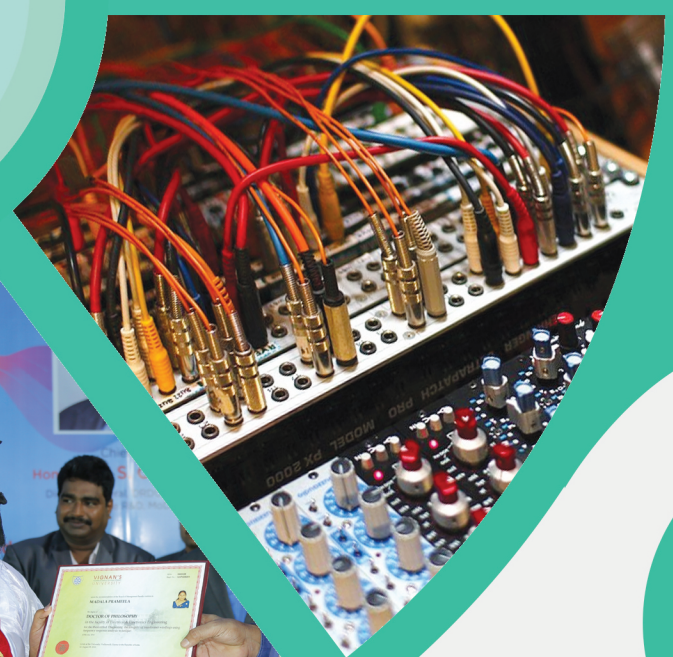

R25
Regulations for MASTER OF TECHNOLOGY PROGRAMME

M.Tech

VIGNAN'S

FOUNDATION FOR SCIENCE, TECHNOLOGY & RESEARCH

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R25 Academic Regulations

In Compliance with NEP 2020

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PREFACE – R25

Change is the only permanent thing. The happening of Change implies continues morphing, - iterative refinement, leading to evolution. There cannot be an end in the process of evolution, however an imagined target could be the goalpost to drive the change. The regulation R-25 could be one such stage during the saga of transition in pursuit of quality in learning.

The focal point in higher education should be learning, which should serve as foundational premise for unlearning, relearning and continuing to learn lifelong. This ability for the creativity towards learning has got to be seeded and allowed to be sprouted by the mentors who would provide handholding and lead the potential and untapped youngsters to be able to think, because learning should imbibe thinking ***– thinking logically; thinking on how to internalise, how to imbibe and then how to invent and implement.***

The regulation R-25, is in the sequel to R-22. As focused in R-22, R-25 aims to more effectively channelize the policies brought out in National Educational Policy – NEP 2020, into practice.

The anticipated challenges in store for the future, the agenda of accomplishing Sustainable Development Goals (SDGs) and the largely unexplored hidden treasure of Indian Knowledge System (IKS), if could be modulated through the carrier framework of NEP-2020, would be impactful in bringing out an eminent thinker in every genuine learner. And realising this objective is the motivation in bringing out VIGNAN's Regulation R-25.

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PREFACE – R22

'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 inforce 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 ofexaminations. The expected severity ofbreakdown 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. Men will young people stop taking exams and do something worthwhile?" (Thought for the Day, Times ofIndia 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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Academic Regulations, Curriculum and Course Contents

EXECUTIVE ABSTRACT

The Academic Regulations - R25, 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 experiences gained during the implementation of R-22 since AY 2022-23, which was also an exercise of inculcating and internalizing NEP-2020. Insights from R-22 have led to refinements in the curriculum, course structure, pedagogy, and assessment tools, resulting in a more mature, robust, and adaptive educational framework-R25.

The new 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 engineering 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.

The curriculum is oriented towards providing a rigorous and in-depth learning experience at the postgraduate level, with a strong focus on professional core and elective courses. It promotes academic depth while offering sufficient curricular flexibility, enabling students to choose electives that align with and enhance their area of specialization. This ensures meaningful learning within and across related domains, fostering a cohesive and advanced understanding of their chosen field. This fosters a 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, R25 introduces a provision of **'Creative Work-in-Lieu of a Course',** enabling students to substitute a conventional elective with creativity driven exploration that leads to research-based outcomes such as peer-reviewed publications, patents, or innovative projects. This initiative encourages students to engage with impactful research and real-world problem-solving, fostering a culture of innovation and intellectual contribution. Additionally, experiential learning has been infused throughout the curriculum, ensuring students gain hands-on experience through industry collaborations, prototype development, and applied research initiatives. Experiential learning is seamlessly integrated into the academic structure, with assessments aligned to capture the depth and authenticity of learning through experience.

The assessment strategy is structured into six formative assessment stages (Pre-T1, T1, T2, T3, T4 & T5), ensuring a **continuous and comprehensive assessment model** that progressively aligns with revised Bloom's Taxonomy and the T-shaped learning framework, reinforcing Learning–Thinking–Understanding–Skilling–Applying–Creating at each stage. The emphasis on continuous assessment is driven by the principle of continued learning, where students are consistently engaged with concepts and skills throughout their academic journey.

The Two-year M.Tech. program follows a flexible and student-centric approach, incorporating **honorable exit option.** Students completing the required credits after one year may earn an Engineering PG Diploma Degree, 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 M.Tech. degree. Additionally, for students who wish to progress at a slower pace, a spillover period of up to two additional

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years is available for degree completion, ensuring academic flexibility without compromising learning outcomes. An 'Onward Continuation to Ph.D. Program' provision allows eligible M.Tech. students to obtain provisional admission into the Ph.D. program after completing the first two semesters, enabling early initiation of doctoral research aligned with their project work. By integrating **multidisciplinary exposure, skill-based learning, and holistic assessment,** VFSTR reaffirms its commitment to developing well-rounded, future-ready professionals in accordance with NEP-2020's transformative vision.

SALIENT FEATURES OF THE REGULATION

- Multidisciplinary.
- Continuous learning.
- Continuous assessment.
- T-Shaped Learning Philosophy.
- Creative Work-in-Lieu of a Course.
- Onward Continuation to Ph.D. Program.

VALUE ADDITION

- Add-on Certification.
- Honorable exit options.
- Sabbatical Semester Drop option to pursue innovation, incubation, entrepreneurial and advanced exploratory activities and subsequent re-entry.

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 M.Tech. degree programmes. The various M.Tech. degree programmes under different schools in VFSTR are as listed below. The 3-character codes indicated in parentheses are their branch discipline codes.

I. School of Agriculture and Food Technology

- Food Processing Technology (FTB)
- Farm Machinery (FMB)

II. School of Biotechnology and Pharmaceutical Sciences

- Biotechnology (BTB)

III. School of Computing and Informatics

- Computer Science & Engineering (CSB)
- Artificial Intelligence and Data Science (ADB)

IV. School of Core Engineering

- Structural Engineering (SEB)
- Machine Design (MDB)

V. School of Electrical, Electronics and Communication Engineering

- VLSI (VLB)
- Power Electronics and Drives (EEB)
- Embedded Sytems (ESB)
- Electric Vehicle Technology (EVB)
- Internet of Things (EIB)

1.1 Definition

For the purpose of R25 regulation, definitions as follows shall apply:

- **"Degree"** shall refer to the M.Tech. 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.
- **"Pre-Semester"** refers to a 10-day program conducted before the start of the first-year, first semester. It is designed to orient students to university regulations, administrative hierarchy, and campus culture, while fostering interaction among classmates.
- **"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 Awards 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.

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- **"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 M.Tech. Degree program in four 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 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 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 (R25) was accepted and recommended by the Academic Council in its **40th meeting** on 22-02-2025.

1.3 Program Duration

For the branch disciplines listed in section (1), the regular courses including theory and practical are offered over a period of two years in four semesters. The normal duration to complete the M.Tech. program is two years. Additionally, a student can avail the benefit of spill over period for 2 years, allowing a maximum duration of four years to complete the M.Tech. programme at a slower pace if he / she desires. This flexibility caters to diverse learner needs and career aspirations. 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', 'laboratory / practice', 'inter-departmental / field project', 'major-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 practice (P) sessions done in a week are considered equivalent to one credit respectively. Depending on the course two hours of transaction (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 M.Tech. 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 M.Tech. Degree

All students formally and conventionally enroll for M.Tech. degree programme. They have to earn 68 credits for the award of degree as specified in the Curriculum. However, additionally he/she can opt to earn up to 12 more credits as Add-on credits, to earn the academic benefits as specified below.

1.5.1 M.Tech. with Add-on Certification

If a candidate earns add-on 12 credits in the respective discipline, then he/ she will be eligible for the award of M.Tech. in YY Engineering with Add-on Certification in XX

Note: The consolidated transcript will contain the credits and grade details of all courses amounting to 68 + up to 12 credits.

YY refers to name of the Branch discipline (Eg. CSE / ECE / BT); XX refers to a particular specialization within a Branch discipline.

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.

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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 two years from the date of admission to M.Tech., a candidate has to pay the semester / annual fees as prescribed irrespective of the less 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.

1.8 Pre-Semester Program

The Pre-Semester Program is a 10-day structured and essential component of the M.Tech academic framework, conducted before the commencement of regular coursework. It is designed to orient newly admitted students to the university's academic regulations, administrative hierarchy, campus culture, and available academic resources, while also fostering peer interaction and collaborative learning.

Recognizing that M.Tech entrants come from varied academic and institutional backgrounds, the Pre-Semester Program is designed to align them with the expectations of postgraduate engineering education. The core emphasis is on building institutional awareness, digital readiness, and a shared academic foundation among all incoming students.

The program comprises two 1-credit courses (Table 1), namely the Orientation Session and an IT Workshop with Cybersecurity fundamentals. These are delivered through activity-based learning with 100% formative assessment, encouraging reflection, participation, and practical application over traditional scoring. This approach supports a smooth transition into the more intensive, research-driven M.Tech curriculum.

Table 1. List of courses and credits offered during the Pre-Semester Program

Course Title	Credits
Orientation Session	1
IT workshop and cyber security	1
Total	**2**

2. CURRICULUM

Each School offers different M.Tech. degree programmes and the departments concerned 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 transactions (T) and practice sessions (P). Amalgamation of theory courses with practical sessions is predominantly seen in this curriculum. 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 M.Tech. programmes is represented in Table (2) as given below.

Table 2 : Credits Distribution for Various categories of courses

Category of Courses	Number of Credits	Credits (%)	AICTE Recommendation (%)
Professional Core	20	29.4	29.4
Electives	14	20.5	26.4
Inter disciplinary courses	2	2.94	2.94
Projects	27	39.7	41.1
Binary graded	5	7.35	-
Add-on certification	12		-
M.Tech. with Add-on certification	**80**	**-**	**-**

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 mentioned, a student must register for the required courses covering the specified content before he/she register in a higher-level course. There are two types of prerequisites: for some courses, successful completion of the prerequisite (i.e., earning credits) is mandatory before registration in the higher-level course; for others, completion of formative assessments in the prerequisite course is sufficient, and students become eligible to register for the higher-level course as long as they do not have an 'R-grade' in the prerequisite course.

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3. NATIONAL CREDIT FRAMEWORK / CHOICE BASED CREDIT SYSTEM

Each branch discipline of the M.Tech. programme comprises of a set of courses - professional core, electives, projects and audit courses. VFSTR 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-2.

3.1 Professional Core

Professional Core courses are individualized for each programme and they are mandatory for every student opting for that branch discipline. These are designed to offer the essential fundamental knowledge and skills required for that specific programme.

3.2 Electives

A candidate has a choice to choose the elective courses. 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 offered for each programme are categorized as 'program electives' that are aimed at offering the advanced/ additional knowledge in the chosen branch discipline.

Care should be exercised while opting for program elective courses and Add-on degree courses that is a course opted as program elective should not be registered as a course under Add-on degree courses and vice versa.

Apart from 68 credits, additionally candidate may earn 12 credits from program electives. These elective credits can optionally be earned in part or full through MOOCs offered via the SWAYAM platform. Students are encouraged to explore such online learning opportunities to foster self-directed and innovative learning approaches. To facilitate the process of acquiring the elective credits through MOOCS, VFSTR has constituted "Online course committee" at Central level with 1-2 members represented from each of the department to guide students in selection of courses and to assist them with further steps if required until completion of the courses

Under the "Creative Work-in-Lieu of a Course" category, students must earn up to 2 credits in place of Departmental Electives (DE) through notable academic and professional achievements such as research paper publications, book chapters, patents, presentations (oral/poster), global certifications, and internships. This initiative encourages creative and holistic exploration of academic and professional avenues, fostering deep exploration of specialized fields. This provision applies between the 1st and 4th semesters. A range of 0.5 to 2 credits shall be awarded to the student's based on the significance of contributions. Students can earn credits through a single activity or by accumulating credits from multiple activities. The exact allocation of full or partial credits depends on the student's level of contribution and will be decided by department-level committee chaired by Head of the department.

3.3 Inter Disciplinary Course

The course Research Methodology & IPR is offered in the second semester to equip M.Tech. students with essential research skills and awareness of intellectual property rights under the category of Inter Disciplinary Courses. As students are encouraged to engage in research activities across both academic and industry settings, this course plays a vital role in preparing them for responsible and impactful research practice.

3.4 Teaching Assistantship

Candidates are required to enroll in the Teaching Assistantship course during their first and second semesters to earn 2 credits. As part of this course, each student will assist faculty in conducting practical or project-based activities for B.Tech. students, thereby developing essential teaching and communication skills such as session handling, student interaction, doubt clarification, and assessment techniques. In both academic and industry settings, the ability to present ideas and concepts effectively is crucial—this activity-based course is designed to cultivate that competency. Performance will be assessed accordingly.

3.5 Inter-departmental Project (IDP)

IDP projects are designed and executed by students during the second semester of their program. By doing this project, students will get an idea of how technologies or processes, prototype or working model can be developed by culmination of technologies from courses of different programs / departments. One of objectives identified for successful execution of the project should be of other departmental nature which may influence either process adopted or product developed. A batch of students from across or within the departments can take part in the inter-departmental projects. Performance will also be assessed in the modular framework for formative and semester-end summative with a weightage of 1 credit per project.

3.6 Project

Students may opt for yearlong 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 26 credits with a duration of 180 working days. During the project work 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 / 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 lieu of project work in industry for two complete semesters during second year in lieu of major project work. It bears a weightage of 26 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.

3.8 Binary Graded courses

Apart from Teaching Assistantship, the following courses shall also be offered as Binary Grade Courses with a weightage of 1-credit per course. Courses like the Orientation session; IT Tools and Cyber Security; and Indian Knowledge Systems will be offered to students during the programme. This list is not comprehensive; the institution may add or remove courses based on their relevance and student registrations.

3.8.1 Orientation session (Induction program)

Orientation session is an induction program floated to set a positive tone for the rest of the M.Tech program by helping students feel welcomed, informed, and prepared. This course

is intended to play a crucial role in ensuring that students start their engineering education on the right foot, with a clear understanding by organizing activities related to Campus Tour, Orientation to the Institution, Academic Preparedness, Social Integration, lectures by eminent personalities, Team-Building Activities, Introduction to Student Clubs, Cultural Programs and Recreational Activities.

3.8.2 IT Tools and Cybersecurity

The IT Tools and Cybersecurity course is designed to equip students with essential digital skills required for academic and professional success. It covers the use of standard productivity tools such as PowerPoint, Word, and spreadsheets, focusing on creating well-structured and formal documents. Additionally, the course introduces fundamental concepts of cybersecurity, promoting safe and responsible use of digital platforms in an increasingly connected world.

3.8.3 Indian Knowledge Systems

A course on Indian Knowledge Systems (IKS) is designed to provide insights into the rich and diverse heritage of traditional Indian knowledge, encompassing various domains such as science, technology, philosophy, arts, and culture. This course aims to create an appreciation for the indigenous knowledge systems and their relevance in contemporary times.

In case the candidate does not successfully complete the binary graded courses, they will be placed under 'R' category. However, such R should be completed in regular Odd / Even semester whenever these courses are offered. In special cases provision of summer semester may be provided.

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 L-based 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 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.

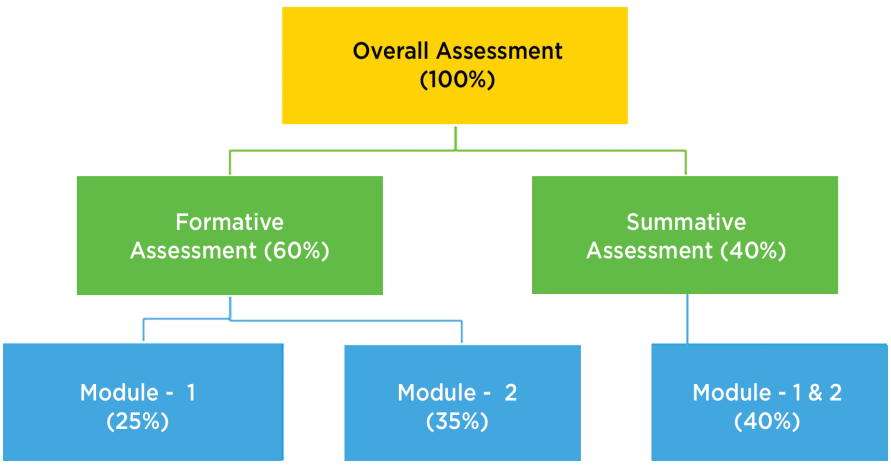

Figure 2: Categories of assessments in place for R25.

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 maybe divided between P-based and L-based assessments in a ratio as recommended by the faculty and approved by Dean AAA.

5.2 Qualifying criteria

To be declared successful in a course, a student must secure at least a grade 5.0 in a scale of 10 based on the total maximum marks which is inclusive of formative and summative assessment. The students should also get 50% from the maximum marks allotted for formative assessment and 40% from the maximum marks allotted for summative assessment.

The hierarchy of qualifying criteria is as follows:

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.

iv. Collectively the candidate should secure a min. grade of 5.0 in a scale of 10; else the candidate has to choose either 'R' or 'I' grade duly being counselled.

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

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. Institute level assessments shall be scheduled by the office of AAA. Respective Faculty Member(s) shall declare the schedule of Continuous Laboratory Assessments (CLA), 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 six targets (Pre-T1, T1, T2, T3, T4 and T5) is advocated for a maximum of 60 marks. Students in each section are randomly grouped into batches comprising of 3 to 4 members. 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 suggestive modality of evaluation of five targets is listed here under:

a) **Pre-T1** shall be conducted once in module-1 and twice in module-2 by course instructor as classroom test / assignments. Assignments may cover pre-announced modular bank problems or broad concepts covered during the L-sessions, with a weightage of 10 marks.

b) **Module -1-T1:** 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 could be based on Revised Bloom's Taxonomy Levels 1, 2, and 3, with an emphasis on remembering (recalling), understanding, and applying. To assess these skills, Module-1 T1 will be a paper-based, proctored test conducted for 90 minutes and graded for 30 marks. The question paper will consist of two 5-mark questions and two 10-mark questions. There will be no module bank for this module. The test will be held between the 34th and 36th days after commencement of the course, typically around the 6th week.

c) **Module-2-T1:** T1 for module-2 commences by the announcement of module bank containing 10 problems covering the course contents of the module. 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 purpose of assigning one problem to two batches is to create a healthy competitive spirit between the two batches. During 7th week of module-2, T1 consisting of two parts: A and B shall be conducted.

   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 90 min (maximum) which shall be assessed for 20 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.

d) **T2:** Immediately follows Module -2-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 / Experimentation. Each batch shall interact with the course instructor to finalize the nature of validation and expected to complete the exercise within 10 to 12 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 reviewing (based on at least two reviews).

e) **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 / APA 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.

f) **T4:** T4 is a comprehensive test covering contents of both the modules conducted for 30 min. comprising of 40 multiple choice questions (MCQs) covering the holistic content of both the modules. T4 shall be evaluated for a max. of 20 marks @ ½ mark for each question. T4 will be conducted in ON-LINE mode.

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 'a' nor 'b', all the three a, b, c will not be set.

g) **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 lab practice assessments (CLPA) / assignments per module shall be conducted by course instructor. The marks will be @ 5 marks per assignment.

h) The scores of the targets are to be normally announced within three working days on completion of the assessment and the performance is to be discussed in the class.

i) **The total marks for module-1 is 50 – Pre-T1 (10), T1 (30) and T5 (10)**

j) **The total marks for module-2 is 70 - Pre-T1 (10), T1 (20), T2 (5), T3 (5), T4 (10) and T5 (20).**

k) The total marks from formative assessments for both modules will be added up to 120. These absolute scores will first be scaled down to a max. of 60 marks. The lead instructor, in consultation with the HoD, will review the scaled-down marks and determine a suitable mapping. The finalized mapping approach must be shared with Dean AAA for documentation.

l) The marks scored in Module-1 should be entered / submitted latest by 7th week and of Module-2 latest by 16th week of the semester. The consolidated score (max. of 120), after scaling down and suitable mapping to a maximum of 60 marks, must be submitted by the 18th week to facilitate the declaration of the formative 'R'-grade before the commencement of the L-based summative assessment.

m) A candidate placed under 'R' will not be permitted to take up the L-based summative assessment.

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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. 20 (P) + 20 (L) marks format.

   iii. 40 marks format (L+T courses).

b. If summative assessment is in two parts format:

   i. Part-I will be the assessment of the capstone project, which is pre-assigned during the module-2 period, or will be the exploratory review assessment of all lab practice assignments. This summative assessment activity may be completed during the 15th week after the start of the semester, at the end of the formative assessment.

   ii. Part-II will be based on a written examination for a max. marks of 60, as in c & d below, which is ***scaled down*** to 25.

   iii. 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 60 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 (3).

Table 3: L-based Summative Assessment Question Paper Pattern.

Part No.	No. of Questions	Marks for each Question	Marks	Choice
A	4	8	32	No
B	2	14	28	No
Total Marks			**60**	

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 experiments, batch formations, experiment schedules, etc., will be displayed / informed to the student in the first week of the semester so that the student comes prepared for the lab sessions. Copies of the lab manual will be made available to the students along with the schedule. The lab manual will consist of the list of equipment's, detailed procedure to conduct the experiment, format for record writing, outcomes for each experiment and possible set of short questions to help students gain critical understanding. Courses that include only Transactions (T), only Practices (P), or a combination of T & P without a Lecture (L) component will be classified under the category of P-based courses.

5.4.1 Formative Assessment

During laboratory sessions, a brief viva-voce is conducted for each student on the experiment he/she is carrying out on that day. Some of the parameters that could be included in the Continuous Lab Practice Assessment (CLPA) are given in Table (4). The set of parameters may slightly differ from one laboratory to the other, and will be announced before the commencement of the lab session. These parameters are assessed for each laboratory session.

Table 4: Suggested parameters for Lab Practice Assessment (CLPA)

S. No	Component	Marks
1	Report of about 1 page on proposed experimental layout and background theory before the start of lab session	4
2	Viva and interaction to evaluate understanding of concepts	4
3	Experimentation and data collection	4
4	Analysis of experimental data and interpretation	4
5	Finalized report submitted in the next week	4
	Total	**20**

Each practice session is assessed for a total of 20 marks. The cumulative scores from all sessions will be ***suitably mapped down*** to a max. of 60 marks, with Module-1 contributing 25 marks and Module-2 contributing 35 marks toward the consolidated formative assessment.

5.4.2 Summative Assessment

End semester examination for each practical course is conducted jointly by two examiners. The end-semester examination for each practical course is conducted jointly by two examiners. The panel of examiners is constituted by the respective School Dean. The internal examiner is the faculty member who has conducted all practical sessions and associated activities throughout the semester. The external examiner is nominated from within the department and is familiar with the course's practical components but has not been directly involved in its delivery. The scheme of assessment may vary depending on the nature of the laboratory, which shall be shared with student by the laboratory in-charge. The summative assessment will be conducted for a max. marks of 40. The general scheme of assessment is given in Table (5).

Table 5: 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
Experimentation and data collection	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 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.

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5.6 Inter-departmental Project

Inter departmental project is undertaken in the even semester of I year of programme for earning 1 credit by each candidate. It is expected that these inter-departmental projects result in publication of a technical paper in a peer-reviewed journal / top-notch conference. For this purpose, Heads of Department will identify and appoint faculty mentors who offer technical expertise/ guidance to students for defining clear, achievable objectives and milestones for their projects.

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.

a. Presentation of results, analyses and conclusions.
b. Meeting of objectives defined in first review.
c. Preparation of report.
d. Understanding by individual students on the overall project.
e. Individual student contribution.

5.7 Project

Those students who do not opt for the year-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 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 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

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	4th 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-2	12th 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
	16th 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

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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 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 and the remaining 40% are based on end semester assessment.

Table 8: Assessment scheme for Internship reviews.

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

a) 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.

b) The Internship Review Committee (IRC) consists of Head of Department or his/her nominee (Chairperson), the internal and external (industry) supervisors.

c) 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.

d) 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 20 marks obtained by students for each review will be scaled to allotted marks as given in Table (9).

a) 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.

b) 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: 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 – 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.

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.

5.9 Binary graded courses

Binary graded courses aim to simplify the grading process and encourage students to focus on learning and achieving the mastery rather than the pursuit of specific grades. Unlike traditional grading systems, binary graded courses offer only two possible outcomes i.e., Pass grade / R-grade. To obtain Pass grade, a candidate should maintain 75% of attendance and secure a minimum of 50% score (i.e. 50 marks out of 100) in each course; else the candidate shall be placed into 'R'-grade. There shall not be any summative assessment activity for Binary graded courses.

5.9.1 Formative assessment

The assessment will be carried in a systematic way wherein two reviews per module shall be conducted as mentioned in the Table (10).

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Table 10: Schedule for formative assessment

Module	Review	Formative assessment marks
Module -1	Activity - 1	20
	Activity - 2	20
Module -2	Activity - 1	30
	Activity - 2	30

5.10 Creative Work-in-Lieu of a Courses

The "Creative Work-in-Lieu of a Course" initiative aims to foster a culture of *creative exploration, holistic learning, and deep engagement* with academic and professional pursuits. By integrating diverse activities such as research, innovation, global certifications, and advanced internships, this program empowers students to achieve excellence beyond traditional coursework. The structured assessment ensures that each contribution is recognized fairly, promoting a transformative educational experience that aligns with global academic and industry standards. This provision applies between the 1st and 4th semesters. Two credits for various academic activities shall be awarded based on individual contributions ranging from 0.5 to 2 credits. For each category of achievement, credits may be awarded as specified in Table 11.

Table 11: Credit Allocation for Different Achievement Categories

Categories	First Author / Sole Author	Co-Author (Max. 2 M.Tech. students)
SCI / SCI-E - Q1 & Q2	5	4.5
SCI / SCI-E - Q3 & Q4	4	3.5
Scopus / E-SCI	3.5	3
Book Chapter / Top-notch Conference publications (Scopus / SCI indexed)	3	2.5
Idea Patent Grant	3	2
Utility Patent Publication / Grant	3 / 4	2 / 3
Paper / Poster Presentations & Working Models in the top 100 NIRF rankings institutes (excluding VFSTR)	0.5	0
Prizes - Paper / Poster Presentations & Working Models in the top 100 NIRF rankings institutes (excluding VFSTR)	1	0
Global certifications	2	0
Special Internships (Govt. sponsored / BIRAC SITARE/ IITs/ IISc/……)	2	0

In the case of paper publications, credits shall be granted only for papers published online or with volume and page numbers. Students must submit the manuscript's initial version, review reports, responses, and the final published version for credit defense.

If credits fall short, the deficit can be addressed by reading advanced research papers under a mentor's guidance, with individual assessments conducted by the mentor. Manuscripts under review may also be considered for credit allocation. Students who are unable to provide any proof of earning the two credits under the 'Work-in-Lieu' category by the end of 2(1) must earn credits through advanced-level NPTEL courses in 2(2).

Collaborative publications involving students from different departments are treated as sole authorship, with equal credits awarded to contributors. Surplus credits beyond the 2-credit limit are categorized as Add-on Credits and linked to Add-on certification.

Ethical practices must be upheld in all activities, and any shortcuts or unethical behaviour are strictly prohibited. A committee, chaired by the Head of the Department and comprising four members—the School Dean, counsellor, one senior faculty member, and a representative from the Board of Research & Development (BoR)— shall oversee students' academic achievements to finalize and authorize credit transfer details and communicate them to the Office of Dean AAA.

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 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.

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. GRADING POLICY

To ensure fair and context-sensitive assessment of student performance, a **Bilateral Relative Grading System** shall be adopted for all credit-based courses. This system permits the possibility of upward scaling, downward scaling, or retention of absolute scores, based on a holistic analysis of marks distribution, course complexity, assessment deign, and class performance. The decision regarding the direction and extent of scaling shall be made by a committee duly appointed by the Honourable Vice-Chancellor.

The grading for each course shall be finalized by the committee, ensuring that the influence of outlier scored is minimized while accurately representing the performance of the major cohort. This method supports equitable grade interpretation across diverse course deliveries and upholds the integrity of the assessment process.

8. COMPUTATION OF GRADING

8.1 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.

8.2 The candidates who have successfully completed both formative and summative assessments will be considered for computation of relative grading.

8.3 Threshold value **(Th)** for relative grading in each course is arrived after studying the marks distribution in that course by a committee constituted by office of 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.

8.4 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) X 10 [and limited to 10]

8.5 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]

8.6 After relative grading, a student is assigned a 'Letter Grade (G)' for each course as per Table (12). The grade and the corresponding letter grade represent the outcomes and assessments of a student's performance in a course.

Table 12: Grading information

Relative Grading Range (P)	Category	Grade (G)
≥ 9.50	Outstanding	O
≥ 9.00 to 9.49	Excellent	S
≥ 8.00 to 8.99	Very good	A+
≥ 7.00 to 7.99	Good	A
≥ 6.00 to 6.99	Fair	B
≥ 5.00 to 5.99	Marginal	C
Transitional Grade	Repeat	R
Transitional Grade	Incomplete	I

9. SUPPLEMENTARY EXAMINATIONS

9.1 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.

9.2 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.

9.3 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.

9.4 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.

9.5 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.

10. 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).

10.1 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 i^{th} course registered in the semester under consideration.

C_i = the number of credits assigned to i^{th} course registered in the semester under consideration.

10.2 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 M.Tech of 68 credits, and Add-on provisions up to 12 credits leading to Add-on certification.

Accordingly, the computations will be as below:

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

Where

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

P_j = grade points secured for the j^{th} course.

C_j = the number of credits assigned to j^{th} course.

11. 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 (13) given below:

Table 13: 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
5	Less than 5.0	No class

a) For the purpose of rewarding the accomplishers 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.

c) In addition, the institution may recognize exceptional performance such as music, dance, sports etc. and display of exceptional bravery from time to time.

d) Only such candidates who complete 68 credits in the first 4 successive semesters shall be eligible to receive awards/ ranks.

e) The candidates availing spill over semesters will not be eligible for the award of merit scholarships.

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2 YEAR
PG PROGRAMME

12. 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 four academic years and not more than seven academic years from the date of joining.

b) successfully completed all the courses as prescribed in the respective curriculum.

c) acquired a minimum eligible credits i.e. 68 credits for the award of M.Tech. 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.

13. HONORABLE EXIT WITH ENGINEERING PG DIPLOMA

In line with NEP-2020, an optional exit is provided for a candidate who has earned a min. of 40 credits and has completed all the requirements up to the end of two semesters. Engineering PG Diploma will be awarded in respective branches of specialization. In case the candidate fails to earn 40 credits, a suitable certification will be awarded during his / her exit from M.Tech. degree.

Semester-wise transcript and a consolidated transcript will be given to the candidates during their exit from the registered program. Such a candidate who has exited can seek re-entry to complete M.Tech. by surrendering the Engineering PG 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.

14. ONWARD CONTINUATION TO PH.D. PROGRAM

As per the section 6.2 of R-25 Ph.D. regulations, candidates pursuing M.Tech. at VFSTR, who have completed all the courses prescribed for the first 2 semesters with a minimum of 60% or equivalent CGPA may be considered for onward continuation to Ph.D. program with a provisional admission to Ph.D.

For such candidates, a faculty mentor is allocated after the provisional admission. Mentor could become a Research Supervisor for the Ph.D program after confirmation of Ph.D admission at VFSTR, which is after formally completing M.Tech degree requirements.

Candidate in consultation with the faculty mentor shall identify the broad area of research topic and can utilize the M.Tech Project as a preliminary work before commencing the intensive research work during Ph.D programme. The M.Tech project work under the guidance of faculty mentor should satisfy all the mandates prescribed in the regulations of M.Tech. however, candidate is required to hold a Master's degree in Engineering / Technology with a minimum of 60% or equivalent CGPA before being formally admitted into the Ph.D program.

15. VOLUNTEER 'DROP' WITH SABBATICAL SEMESTER OPTION

A candidate may exercise his option to voluntarily exit from M.Tech. programme temporarily for a semester during the M.Tech. 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 M.Tech., 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 M.Tech. 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 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.

15.1 Volunteer 'Drop' with Semester Drop option

A candidate may exercise his option to voluntarily exit from M.Tech. programme temporarily for a semester during the M.Tech. 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 (15) shall be applicable for the candidates utilizing semester drop option.

16. 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.

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M.TECH. PROGRAM
R25 C25 COURSE STRUCTURE

Pre - Semester

S.No.	Title of the course	L	T	P	C	Course type
1	Orientation Session				1	Binary graded
2	IT workshop and cyber security				1	Binary graded
	Total				**2**	

I Year I Semester

S.No.	Title of the course	L	T	P	C	Course type
1	Professional Core				4	Professional Core
2	Professional Core				4	Professional Core
3	Professional Core				4	Professional Core
4	Department Elective				4	Elective
5	Teaching Assistantship				1	Binary graded
6	Indian Knowledge System				1	Binary graded
7	Work-in-lieu of a course*				2	Elective & Floating Credit
Sub Total					**20**	
8	Add on course -1				3	
Total					**23**	

I Year II Semester

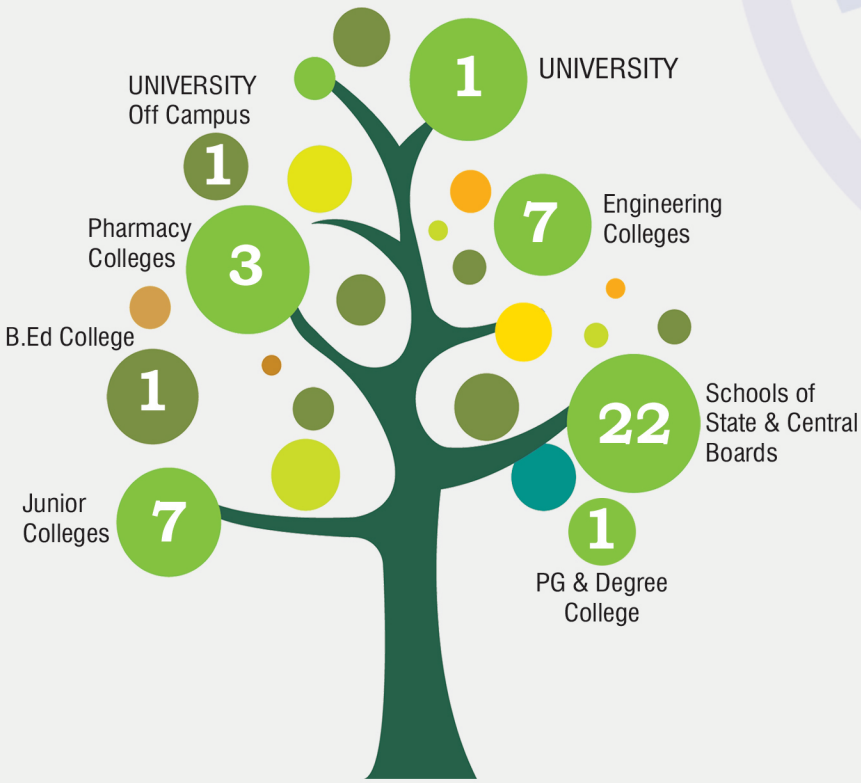
S.No.	Title of the course	L	T	P	C	Course type
1	Professional Core				4	Professional Core
2	Professional Core				4	Professional Core
3	Department Elective				4	Elective
4	Department Elective				4	Elective
5	Research Methodology & IPR				2	Interdisciplinary
6	Interdepartmental Project				1	Project
7	Teaching Assistantship				1	Binary graded
Sub Total					**20**	
	Add on course -2				3	
Total					**23**	

II Year I Semester

S.No.	Title of the course	L	T	P	C	Course type
1	Project/Internship				13	Project
Sub Total					**13**	
2	Add on course -3 (MOOCs Course)				3	
Total					**16**	

II Year II Semester

S.No.	Title of the course	L	T	P	C	Course type
1	Project/Internship				13	Project
Sub Total					**13**	
2	Add on course - 4 (MOOCs Course)				3	
Total					**16**	



VIGNAN'S

FOUNDATION FOR SCIENCE, TECHNOLOGY & RESEARCH

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

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