



VIGNAN'S

Foundation for Science, Technology & Research

(Deemed to be **UNIVERSITY**)

-Estd. u/s 3 of UGC Act 1956

R22.1

**Academic
Regulations**

In Compliance with NEP 2020

w.e.f. batch 2024-28



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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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ACADEMIC REGULATIONS, CURRICULUM AND COURSE CONTENTS

EXECUTIVE ABSTRACT

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 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 oriented towards multi-disciplinary holistic education at the undergraduate level that includes integrated and rigorous exposure to science, humanities, management, and professional domains, as well as sufficient flexibility in curricular structures that allow students to choose electives from the same and other disciplines. Such holistic and diverse education will assist the candidate in transforming into all-rounded persons. Similarly, in line with NEP-2020, more weight will be given to continuous/ formative assessment, which is an Integrated learning model comprising 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 B.Tech. degree offered will be for four years' (8 semesters) duration with lateral entry and honorable exit options within this period, with suitable certifications 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 three years of study and the completion of the required credits, an Engineering diploma or a Bachelor's degree will be conferred. However, the intention of the learners is not to join for the award of the diploma / degree with lateral exit, but to acquire a B.Tech. degree which offers add-on certifications such as Honours/ Minor/ Add-on Diploma.

Salient features of the regulation

- Multidisciplinary
- Continuous learning
- Continuous assessment

- Honours/ Research Honours / Minor / Add-on Diploma / Add-on Certification
- Lateral entry and honorable exit options
- Sabbatical Semester Drop option to pursue innovation, incubation, entrepreneurial and advanced exploratory activities and subsequent re-entry
- Dual B.Tech. + M. Tech. / MBA degree of 5 years
- Credit earning by credit transfer

1 INTRODUCTION

This document contains the academic regulations, scheme of assessments, curriculum, detailed syllabi, course contents with text / reference books recommended, course outcomes, skills acquired and the projects / assignments that are to be performed for each course for the conduct of 4-year B.Tech. degree programmes. The various B.Tech. degree programmes under different schools in VFSTR are as listed below. The 2-character codes indicated in parentheses are their branch discipline codes.

- I. School of Agriculture and Food Technology**
 - Agriculture Engineering (AG)
 - Food Technology (FT)
- II. School of Biotechnology and Pharmaceutical Sciences**
 - Bioinformatics (BI)
 - Biotechnology (BT)
- III. School of Computing and Informatics**
 - Computer Science and Engineering (CS)
 - Computer Science and Engineering - Artificial Intelligence and Machine Learning (AI)
 - Computer Science and Business Systems (CB)
 - Computer Science and Engineering - Cyber Security (CY)
 - Computer Science and Engineering – Data Science (DS)
 - Computer Science and Engineering – Internet of Things (CI)
 - Information Technology (IT)
- IV. School of Core Engineering**
 - Chemical Engineering (CH)
 - Civil Engineering (CE)
 - Mechanical Engineering (ME)
 - Robotics and Automation (RA)
 - Textile Technology (TT)
- V. School of Electrical, Electronics and Communication Engineering**
 - Biomedical Engineering (BM)
 - Electrical and Electronics Engineering (EE)
 - Electronics and Communication Engineering (EC)
 - Electronics Engineering - VLSI Design and Technology (VL)

1.1 Definition

For the purpose of R22 regulation, definitions as follows shall apply:

- “**Degree**” shall refer to the B.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 (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 / Lab experiments / Field Studies / Case Studies etc. activities that enable the student to acquire the requisite skill).
- “**Continuous Assessment**” shall refer to the assessment of the student spread over the entire semester on the various constituent components of the prescribed course.
- “**Semester**” shall refer to a period covering the two assessment periods viz Formative and Summative Assessment period. A semester would generally be spread over twenty weeks.
- “**Course Drop**” shall refer to a student having to undertake a repeat 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 Semester - End summative assessment component.
- “**Blank Semester**” shall refer to a Semester in which a student either does not register for any course at the beginning of the Semester OR chooses to DROP all courses OR is so compelled to DROP all the courses, as the case may be.
- “**Semester Drop**” shall refer to availing a blank semester. However, if drop is availed to pursue a creative extension activity, then it is defined as **semester sabbatical**.
- “**Spill Over Semester**” shall refer to the additional semester(s) beyond the completion of prescribed normal semesters.
- “**AAA Section**” shall refer to the Academics, Assessment and Award Section of the Institute.
- “**Attendance**” refers to the Physical personal presence in an academic activity session.
- “**Summer Semester**” refers to a Semester that is scheduled to be held during the intervening period of Even and Odd Semester (*i.e.* Summer Vacation period).
- “**Themes**” refer to the courses offered in a particular stream other than offered by the regular departments, for example NCC, Entrepreneurship, Fitness and Living, *etc.*
- “**School**” refers to a division of institute dealing with two or more specific areas of discipline / study comprising of the departments related with exclusive emphasis on trans-disciplinary research.
- “**Department**” refers to a division of institute dealing with a specific area of discipline / study.
- “**HoD**” refers to the Head of the respective Department, where the student is enrolled for his / her Branch of Study.
- “**Center**” refers to a structured unit within the school / department established with the purpose to carry out advanced research.
- “**Grade Point**” refers to the quantification of the performance of a candidate in a particular course as defined herein.

- “**SGPA**” refers to the Semester Grade Point Average and is calculated as detailed in the regulations subsequently.
- “**CGPA**” refers to the Cumulative Grade Point Average and is calculated as detailed in the regulations subsequently.
- “**Division**” refers to the Division awarded to the student as per the mechanism detailed in the regulations subsequently.
- “**Internship**” refers to onsite Practical Training offered by reputed companies / Institutions, in India or abroad. To be undertaken with (or seeking) prior approval of the respective HoD.
- “**Project**” refers to a course executed by a candidate on a specific research problem 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 four-year B.Tech. Degree program in seven successive years.

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 intended revision in regulations (R22) was in principle accepted and recommended by the Academic Council in its 30th meeting on 07-05-2022. Subsequently respective Board of Studies brought necessary recommendations accordingly, which were duly placed before the Academic Council in its 31st meeting on 30-07-2022. Minor revisions made in the curricular and credit structure were approved by the Academic Council in its 36th meeting on 24-04-2024.

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 four years in eight semesters. The normal duration to complete the B.Tech. program is four years. However, a student can avail the benefit of spill over period for 3 years, that is the maximum duration of seven years can be availed by a candidate to complete the B.Tech. 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’, ‘laboratory’, ‘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 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. Add-on credits can also be obtained by successful completion of other recognized co-curricular and extra-curricular activities such as NCC, NSS, Yoga, Dance, Music, Painting, etc. The details of credits of such activities will be provided by the respective course coordinators and assessment of student performance in the activities will be carried out objectively by the constituted committees appointed by the Dean AAA. The criteria of assessment for these activities will include aspects like regular attendance in the programme and satisfactory completion of it through tests conducted at University level or by participation / performance at university level events, state level or national level participation etc. Add-on credits earned in a specified manner will lead to earning B.Tech., B.Tech. with Honours, B.Tech. with Research Honours, B.Tech. with Minor, B.Tech. with Add-on Diploma and B.Tech. with Add-on Certification. Provision is also created for a candidate to migrate from 4-years B.Tech. to 5 years of dual B.Tech. + M.Tech. / MBA degree

1.4.1 Content Delivery of a Course

Content delivery of a Course in the B.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 B.Tech. Degree

All students formally and conventionally enroll for B.Tech. degree programme. They have to earn **160 + 7** credits for the award of degree as specified in the Curriculum. Wherein 160 credits shall be referred as ‘Graduating credits’ and assigned towards courses such as Professional Core, Electives, Basic Engineering, Humanities and Management, Basic Sciences and Projects. Additional 7 credits are referred as ‘Compulsory Binary Grade Credits’ and shall be awarded for various binary grade courses specified in the curriculum. However, additionally he/she can opt to earn up to 20 more credits as Add-on credits, to earn the academic benefits as specified below.

1.5.1 B.Tech. with Honours Specialization: XX

A candidate may earn additional 20 credits, cumulatively totalling to **180+7** credits in the respective discipline spread over fourth to eight semesters to become eligible for the award of B.Tech. with Honours in YY Engineering (Specialization: XX)

If the add-on credits are designed to take-up a research activity and to complete a research thesis under the scope of 180+7 credits, then he/she become eligible to receive the award of B.Tech. with Research Honours in YY Engineering (Specialization: XX). However, admission stipulations are applicable for a candidate to pursue B.Tech. with Research Honours. Annexure-1 provides the supplement regulations for the award of B.Tech. with Research Honours.

1.5.2 B.Tech. with Minor Specialization in XX

A candidate may earn additional 20 credits, cumulatively totalling to 180+7 credits in anyone of the other disciplines spread over fourth to eight semesters to become eligible for the award of B.Tech. in YY Engineering with Minor Specialization in XX.

1.5.3 B.Tech. with Add-on Diploma

If a candidate earns add-on 20 credits from assorted disciplines/ themes/ centers, then he/ she will be eligible for the award of B.Tech. with Add-on Diploma.

1.5.4 B.Tech. with Add-on Certification

If a candidate in accordance with the sections of 1.5.1, 1.5.2, and 1.5.3 earn additional credits, but will not satisfy the completion of 20 credits, then he / she will be eligible to receive B.Tech. with Add-on Certification. However, such a candidate may also avail a spill over semester to complete 20 credits.

1.5.5 Dual (B.Tech. + M.Tech. / MBA) degree programme of 5-years*

A provision is also created for a candidate who is enrolled for B.Tech. degree to switch over to Dual (B.Tech. + M.Tech. / MBA) degree. Annexure-2a & 2b provides the supplement regulations for Dual degree programme.

*Programme will be offered based on satisfactory strength of students willing to register, after receiving the formal AICTE approval.

Note: The consolidated transcript will contain the credits and grade details of all courses amounting to 160+7 + up to 20 credits.

Every candidate should express his/ her provisional intent at the time of B.Tech. admission for pursuing B.Tech. with Honours/ B.Tech. with Minor/ Dual (B.Tech. + M.Tech. / MBA) degree. However, he / she can exercise his option to change his intent and final confirmation should be submitted at 5th sem. for Research Honours and at 6th sem. for Dual degree.

YY refers to name of the Branch discipline (E.g. 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.

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.

1.6.4 Summer internship credits will also be appended to the credits of Honours / Minor / Add-on certification provided the theme of internship is in accordance with the specialization of Honours/ Minor.

1.7 Semester wise provisions

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

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

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

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

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

2. CURRICULUM

Each School offers different B.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 instructions (T) and practical sessions (P). Amalgamation of theory courses with practical sessions is predominantly seen in this curriculum. Specifically, during the first year, some of the courses may be offered in a swap mode, that is the same course is offered in both the semesters of I-year to accommodate the student strength and for operational convenience.

2.1 Distribution of credits

The overall distribution of credits for various categories of courses in the curriculum of B.Tech. programmes 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	AICTE Recommendation (%)
Professional Core	50	31.25%	30 - 36%
Electives (Department & Open / I2C)	33	20.63%	19 - 23%
Basic Engineering	20	12.42%	10 - 18%
Humanities and Management	13	8.13%	08 - 09%
Basic Sciences	30	18.75%	12 - 16%
Projects	14	08.75%	08 - 11%
Total	160	100%	
Binary graded	7	-	-

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. Content 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 2 to 3 weeks and the second unit of the module maybe of 5 to 6 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.

2.3 Prerequisite Knowledge

Wherever prerequisite knowledge was mentioned it should be treated as registering for the courses covering the content mentioned in prerequisite knowledge is mandatory for the student before he / she register in a higher level course.

3. NATIONAL CREDIT FRAMEWORK / CHOICE BASED CREDIT SYSTEM

Each branch discipline of the B.Tech. programme comprises of a set of courses - basic sciences, humanities and management, basic engineering, professional core, electives, employability & life skill 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 (1).

3.1 Common (Core) Courses for all branch disciplines

First year curriculum is intended to provide foundational understanding of basic concepts across various engineering disciplines. It covers fundamental subjects like basic sciences, basic engineering, humanities and management. Curriculum (C24) have common first-year course structure (two streams – M.P.C & Bi.P.C background) to ensures that all students regardless of their prior education should have similar level of knowledge and skills before they start their specialized courses in the second year. In some cases, students might want to change their specialization after the first year. A common first-year structure makes it easier for them to switch between different engineering disciplines without having to repeat a significant portion of their coursework.

3.1.1 Basic Sciences and Humanities

Basic science courses are included to offer the knowledge of scientific theories that form the foundation for all the engineering solutions. Courses of Management and Humanities are also offered. The main purpose of offering Management courses is to impart Management skills to students so that they would pursue allied career opportunities. ‘Humanities’ courses are meant for gaining managerial and organisational skills. In this some aspects of civil services are also covered for the benefit of those interested students.

3.1.2 Basic Engineering

Basic engineering courses are those that every engineer, irrespective of his discipline, ought to understand to perform well in his/her discipline. Engineering drawing, IT

Tools & Cyber security, computer programming are some of the courses that fall in this category.

3.2 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.

3.3 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 'department electives' and 'open electives'. Some electives may have pre-requisites i.e., successful completion of a course / knowledge of a course / the department's consent.

3.3.1 Department Electives

'Department electives' are those courses that are aimed at offering the advanced/ additional knowledge in the chosen branch discipline.

Care should be exercised while opting for departmental elective courses and specialization courses that is a course opted as departmental elective should not be registered as a course under Specialization and vice versa.

3.3.2 Industry – Interface (I²) courses

I² courses are offered with the support of industry personnel and are also included in department elective category. These courses are of one credit, and are offered by experts from industry / academia. The I² course is offered to 3rd year B.Tech. students with 15 hours' duration as Binary graded course. The duration of 15 hours can be spread across 3 days continuously or 3 different slots of 5 hours each on consecutive weeks. Students who successfully complete the course will be awarded one credit.

3.3.3 Open Electives

The elective courses offered by the departments/ centers/ themes for other department students are called as open electives. These electives are offered to enable students

understand interdisciplinary nature of courses. A student's enrollment for pursuing an open elective course(s) is based on his/her choice and order of merit and subject to availability of seats.

Elective courses are spread over four semesters from fourth to seventh semester, to enable students earn credits from a chosen pool or otherwise.

Care should be exercised by the candidate while opting for Open electives and minor courses, that is a course opted as Open elective should not be registered as a course under Minor and vice versa.

In 'electives' category, a student is required to secure a minimum of 33 credits. These credits can be obtained through a combination of courses from his / her own department and other departments. Of these 6 credits have to be earned through MOOCs offered via Swayam platform. A student may also be permitted to earn more elective credits through MOOCS. This will promote self-learning and drive students towards 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.

3.4 Inter-departmental Project

These projects are designed and executed by students during the even semester of second and third year of their program in lieu of Field projects. By doing these projects, 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. The minimum duration of inter-departmental project during the semester is 90 hours including writing of project report and submission for assessment. A batch of 4 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.

3.5 Field projects

In lieu of Inter-departmental project, students can enrol for field projects during the even semester of second and third year of their program. These projects are intended to emphasize learning through direct experience, allowing students to apply theoretical knowledge in real-world contexts. This hands-on approach provides students with meaningful learning experiences that not only deepen their understanding of academic concepts but also cultivate essential skills and attitudes needed for success in their future careers and as responsible members of society. The minimum duration of field project during the semester is 90 hours including writing of project report and submission for assessment. A batch of 4 students can take part in each project. Performance will also be assessed in the modular framework for formative and semester-end summative with a weightage of 1 credit per project.

Students are recommended to select ‘Societal-centric projects’ during choosing a problem statement after enrolling either for field project or Inter-departmental project. Research on such problems offers students’ a platform to make meaningful contributions to their communities while developing essential skills and ethical awareness. Engaging in these projects help students to become more well-rounded, socially conscious, and professionally prepared engineers.

3.6 Project

Students may opt for Project work in lieu of internship. Such students may avail research -internship support from any institution well known for research and development (R&D). They may also take up project work in VFSTR itself. Each candidate has to submit interim reports and a final report which are mandatory requirements towards the partial fulfillment of project credits requirements. It bears a weightage of 12 credits with a duration of 90 working days. During the semester the student under the guidance of a faculty member(s) will involve in 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. 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 one complete semester during seventh/ eighth semester in lieu of major project work. If the Internship is under taken during 7th semester, then the regular course work of 7th semester should be taken up during the 8th semester (7th and 8th semester happen in a swapped mode). 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.

3.8 Binary Graded courses

Apart from I² courses, following courses shall also be offered as 'Compulsory Binary Grade Courses' with a weightage of 1-credit per course. Courses like Orientation session (Induction program); Constitution of India; Self-empowerment & Gender Sensitization; Physical fitness, Sports & Games; Life skills; Universal Human Values; and Indian Knowledge Systems will be offered to students during the first three semesters of the programme.

3.8.1 Orientation session (Induction program)

Orientation session is an induction program floated to set a positive tone for the rest of the B.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 Physical Fitness

As physical fitness contributes to physical, mental and social development, it is offered to students. Students are imparted training through physical exercises.

3.8.3 Life Skills

Realizing the VFSTR's Vision of preparing multifaceted personalities, VFSTR floats various credit based life skill activities for students such as yoga, dance, music etc.

3.8.4 Constitution of India

With an intention to transform students into responsible citizens and professionals, a course on the Constitution of India is offered for B.Tech students to provide a foundational understanding of India's legal framework, governance structure, and fundamental rights and duties.

3.8.5 Self-empowerment & Gender Sensitization

This course aims to foster personal growth, promote gender equality, and create a more inclusive and respectful campus environment. It is designed to equip students with the skills and awareness necessary to navigate and challenge societal norms related to gender, and to empower themselves and their peers.

3.8.6 Universal Human Values

Integrating Universal Human Values course into the B.Tech. curriculum aims to instill a deep understanding of ethical, moral, and human values, fostering holistic development. This course emphasizes the importance of values in personal and professional life, encouraging students to lead a life of integrity, empathy, and respect.

3.8.7 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 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.

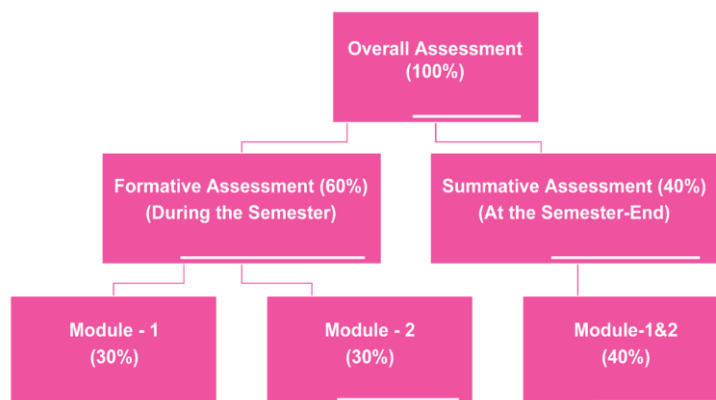


Figure 3: Categories of assessments in place for R22.

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.

5.2 Qualifying criteria

To be declared successful in a course, a student must secure at least a grade 4.0 in a scale of 10 based on the total maximum marks which is inclusive of formative and summative

assessment. The students should also get 35% from the maximum marks allotted for formative and summative assessments individually.

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 35% *i.e.* 21 marks out of 60; else the candidate is put into ‘R’ grade.
- iii. In summative assessment, a candidate should secure a minimum of 35% *i.e.* 14 marks out of 40; else the candidate is put into ‘I’ (Incomplete) grade.
- iv. Collectively the candidate should secure a min. grade of 4.0 in a scale of 10 after relative grading (section 7); else the candidate has to choose either ‘R’ or ‘I’ grade duly being counselled.
- v. 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’ grade 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 S	
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 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 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) **Pre-T1** shall be conducted twice / thrice by course instructor as classroom test / assignments during the first 4-weeks of each module.

Assignments can be conducted on pre-announced modular problems or broad concepts covered during the L-sessions with a weightage of 10 marks. Structure of the assignment shall be under four sub-heading: Objective envisaged, expected theoretical background, Suggestive proposal and Anticipated outcomes.

Consolidated pre-T1 scores shall be manually mapped down by course instructor to a max. of 10 marks and entered into portal along with T1 scores.

- b) **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 20 marks. 30 marks obtained from T1 and Pre-T1 will be 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.

- c) **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 / Experimentation. 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 reviewing (based on at least two reviews).

- d) **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.

- e) **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.

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

- f) **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 totalling up to 20 per module.

- g) 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.
- h) 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).
- i) 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.
- j) 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.
- k) A candidate put under 'R' will not be permitted to take up the summative assessment.

5.3.2 Summative Assessment

Summative assessment activities including timetables, question paper model, duration of the examinations will be informed to the students well before the commencement of the examinations in the form of circulars from Dean-AAA office. Unless specified otherwise the following scheme of assessment shall be followed.

a) An instructor may choose one of the two formats for conducting summative assessment for L-based courses integrated with T/P.

i) 15 + 25 marks format or 20 + 20 marks format (following b, c, d below).

ii) 40 marks format (following c, d below).

b) If summative assessment is in two parts format:

i) 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 lab practice assignments.

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 or 20 based on the selected pattern of format.

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 120 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 (2).

Table 2: 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. 14 out of 40 (35%).

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. The courses like IT Tools & Cyber security, Engineering Graphics, Design Thinking & Engineering will also be treated as 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 (3). 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 3: 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

This assessment is carried out for each practical session and the total marks of all practical 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 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 (4).

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
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.

5.6 Inter-departmental Project / Field Projects

Inter departmental project / Field Projects work is undertaken in the even semester of II and III-year of programme for earning 1 credit per project 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 (5).

Table 5: Schedule and parameters followed for formative assessment.

Module	Schedule	Review	Points to be considered	Formative assessment marks
Module - 1	7 th – 8 th week	Review - 1	<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. • Identification of tools / equipment / surveys / training needs / etc. • Completion of literature survey • Readiness of about 25% documentation 	30
Module - 2	15 th – 16 th week	Review - 2	<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 	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 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.

- 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 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 in batches (not exceeding five students in a batch), during the VIII semester, under the guidance of a faculty member. Every batch, 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 VII semester, so that students can start of their project work immediately after VII 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

- 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 (6).

Table 6: 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	<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 / equipment / 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	12 th 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
	16 th 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 either in the VII or VIII semester by a student in an industry, under the joint supervision of industry personnel and an internal faculty member. Sixty percentage of the marks of Internship are allotted through continuous evaluation as formative assessment and the remaining 40% are based on end semester assessment.

Table 7: Assessment scheme for Internship reviews.

Module	Review	Schedule	Formative assessment marks
Module -1	First review	4th week	15
	Second review	8th week	15
Module – 2	Third review	12th week	15
	Fourth review	16th week	15
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 15 marks obtained by students for each review will be scaled to allotted marks as given in Table (7).

- 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 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.

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. Students will enroll in these 1-credit courses during the I, II and III semesters of programme. 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 40% score (i.e. 32 marks out of 80) in each course; else the candidate shall be placed into 'R'-grade. No summative assessment activities 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 (9).

Table 9: Schedule for formative assessment

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

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 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 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.

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:

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

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

$$\text{Course wise percentage equivalence} = (\text{m/Th}) \times 100$$

[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 (10). The grade and the corresponding letter grade represent the outcomes and assessments of a student's performance in a course.

Table 10: 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
≥ 4.00 to 4.99	Marginal	M
Transitional Grade	Repeat	R
Transitional Grade	Incomplete	I

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 summative assessment of Project / Internship will be announced only if the candidate successfully earns all the credits in courses registered during the program. If the candidate is with 'R' / 'I' graded courses the results will be kept under '**Announced Later (L)**' status and will be announced only after candidate clears these courses.

9. GRADE POINT AVERAGE

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

9.1 SGPA

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

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

Where

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

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

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

9.2 CGPA

The Cumulative Grade Point Average (CGPA) shall be computed after successful completion of the programme. The CGPA shall be expressed in different flavours to reflect B.Tech. of 160 credits, B.Tech. with Research Honours of 180 credits, and different Add-on provisions up to 20 credits leading to Minor / Add-on Diploma/ Add-on certification.

Accordingly, the computations will be as below:

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

Where

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

P_j = grade points secured for the jth course.

C_j = the number of credits assigned to jth course

and $\sum C_j = 160$

$\sum C_j = 180$ for CGPA calculations in case of B.Tech. with Research honours

$\sum C_j = 20$ for CGPA calculations of specialization part in case of B.Tech. with honours

$\sum C_j = 180$ for CGPA calculations in case of B.Tech. with honours

$\sum C_j = 20$ for CGPA calculations of minor part in case of B.Tech. with Minor

$\sum C_j = 180$ for CGPA calculations in case of B.Tech. with Minor

$\sum C_j = 20$ for CGPA calculations of Add-on Diploma part in case of B.Tech. with Add-on Diploma

$\sum C_j = 180$ for CGPA calculations in case of B.Tech. with Add-on Diploma

$\sum C_j < 20$ for CGPA calculations of Add-on certification part in case of B.Tech. with Add-on certification

$\sum C_j < 180$ for CGPA calculations in case of B.Tech. with Add-on certification

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 (11) given below:

Table 11: Class/ Division information.

Sl. No.	CGPA	Class / Division
1	7.0 and above	First Class with Distinction
2	6.0 and above but less than 7.0	First Class
3	5.0 and above but less than 6.0	Second Class
4	4.0 and above but less than 5.0	Pass Class
5	Less than 4.0	Incomplete / No class

- a) For the purpose of rewarding the accomplisners with ranks and awards, toppers in each branch discipline are identified, based on their academic performance (CGPA) in the following categories:

- i. Ranking in B.Tech.
 - ii. Ranking in B.Tech. with Research Honours
 - iii. Ranking in B.Tech. in Specialization
 - iv. Ranking in B.Tech. in Minor
- 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 160 credits (+20 credits) in the first 8 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.

11. AWARD OF DEGREE

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

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

- a) a bonafide student and undergone the course work of not less than 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. 160 credits for the award of B.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, BoM of the institute.

12. LATERAL ENTRY AND LATERAL EXIT OPTIONS

12.1 Lateral Entry into II year of B.Tech.

The students who have completed their diploma programme in recognized institutes can be admitted into the third semester of the undergraduate programme. The committee constituted by Vice-Chancellor, will establish the eligibility of admission into different branches offered by VFSTR. The committee may recommend additional courses to be studied by the candidate, which students will complete during their first year of study at VFSTR however subject to a maximum of 25 credits per semester. To earn B.Tech. degree the student has to earn the same number of credits specified for regular B.Tech. in their 2nd, 3rd and 4th year of study. The student is eligible to register for Add-on credits as presented in section (1.5).

12.2 Inter- Institutional Credit Transfer

Students pursuing an undergraduate programme in other recognized Higher Education Institute (HEI) could be admitted into VFSTR without appearing for the entrance exam to continue their studies, subject to the approval by a committee constituted by Vice-Chancellor. In this case, the student shall furnish the transcripts or grade cards, syllabus copies, educational certificates, and other relevant documents while applying for admission. The committee constituted by Vice-Chancellor, will establish the equivalency based on the marks / credits obtained in the courses in the previous institute by following the Inter- Institutional Credit Transfer policy (Annexure-3).

VFSTR students also may earn credits by Inter- Institutional Credit Transfer.

12.3 Honorable exit with B.Sc. or Engineering Diploma

In line with NEP-2020, an optional exit is provided for a candidate who has earned a min. of 120 credits and has completed all the requirements up to the end of six semesters.

B.Sc. degree / Engineering Diploma will be awarded in respective branches of specialization. Candidates opted to exit with Engineering Diploma will also be awarded with B.Sc. equivalence certificate in case of disciplines existing in the University system.

In case the candidate fails to earn 120 credits, a suitable certification will be awarded during his / her exit from B.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 B.Tech. by surrendering the B.Sc. Degree / Engineering 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 seven years and further extension beyond the stipulated max. duration of study has to be approved by Academic Council, if the candidate appeals for an extension.

12.4 Volunteer ‘Drop’ with Sabbatical Semester option

A candidate may exercise his option to voluntarily exit from B.Tech. programme temporarily for a semester during the B.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 8 semesters of B.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 B.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 seven years and further extension beyond the stipulated max. duration of study has to be approved by Academic Council, if the candidate appeals for an extension.

12.5 Volunteer ‘Drop’ with Semester Drop option

A candidate may exercise his option to voluntarily exit from B.Tech. programme temporarily for a semester during the B.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 (12.4) shall be applicable for the candidates utilizing semester drop option.

13. CHANGE OF BRANCH DISCIPLINE

The students can request for change of branch after completing the first two semesters of study. One percent of the seats in each branch subject to a minimum of one seat is made available for accommodating such requests. These requests are considered subject to the following conditions:

- a) Top one percent of the students in each branch based on CGPA at the end of the second semester subject to a minimum of one student in each branch are eligible for a change of branch.
- b) If only one student is eligible from a branch and if he / she is not willing to change specialization, the opportunity can be availed by the second or third ranker of the branch in that order.
- c) The seats must be available in the branch to which a student intends to change.
- d) The student opting for a change should have completed all the credit requirements of the first two semesters.
- e) The decision of the Institution is final in this regard.

All the above points are applicable for branch change cases based on the merit criterion. There may be branch change requests of another kind, from the students who are not able to cope up with the studies of the branch they are admitted into. All such requests are to be referred to a committee constituted for the purpose. The committee takes the decision based on the merit of each case, the availability of seats and various other factors. The decision of the committee in this regard is final. Because there is a difference of one or two courses in the first year curriculum among different specializations, when the student changes his specialization after completing first year, he / she is required to complete those first year courses of the new specialization which were not studied by him/her during the first year, which can be taken up in the immediate summer semester.

14. 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 BoM.

- c) The Institution may change or amend the academic rules and regulations or curriculum at any time, and the changes or amendments made shall be applicable to all the students with effect from the dates, notified by the Institution.
- d) Procedure and explanation to any section can be floated by the office of Dean AAA as applicable from time to time with due approval by the chairman of Academic Council.

ANNEXURE -1

SUPPLEMENT REGULATION FOR PURSUING B.TECH. WITH RESEARCH HONOURS (SPECIALIZATION: XX)

A candidate willing to transform his / her B.Tech. programme into research orientation should meet the following terms and conditions.

1. He / she should register add-on credits for Honours specializing in a particular stream XX in his discipline of study.
2. He / she should have maintained a CGPA of 8.0 up to the end of 4th semester (II-year Even semester).
3. He / she should have successfully completed all the credit requirements up to the end of 4th semester.
4. He / she should indicate willingness to transfer his/her study from B.Tech. with Honours to B.Tech. with Research Honours during the Module-2 period of III year- Odd semester (5th Semester), when the applications are floated by the office of the Dean AAA for the purpose.
5. He / she has to appear for an aptitude test / interaction and the corresponding committee of experts constituted for the purpose has to recommend his / her name.
6. All recommended candidates may take up research project in a research lab / a research institution/ an institute of repute / a research organization or in the department of VFSTR.
7. All such candidates may compete for research internship support from the external research institutions or may be supported with research internship within VFSTR. This internship support will be for one full semester duration during his 8th semester extendable by one or two months during the Summer semester that falls in the sequel to 8th semester, in which case the extended period will be treated as 8th semester itself.
8. Such candidates are normally expected to pursue research in the area of specialization chosen for B.Tech. with Honours study.
9. Such candidates should register for a course on Research Methodology in III year- II semester as Open elective-3.
10. Such candidates should have identified a broad research problem by the end of 6th semester, as a part of his / her Module-2 requirement in the course on Research Methodology (Open elective-3).

11. In the 7th semester (IV year- I semester) he / she has to take up Research preliminaries for his / her Honours- 4 credit requirements. This will be a research project work by itself in the broad area of the proposed research problem. The candidate shall be able to complete a good literature survey, execute basic / preliminary implementations and by the end of module-2 of Honours – 4, he / she should have identified the specific research problem on which he / she will take up research during 8th semester. The entire course (Honours - 4) will be evaluated as per the requirements of a project work.
12. The candidate takes up the intensive research work during IV year – II semester for 16 credits (which is combined project work of 12 credits and Honours-5 of 4 credits). He / she should spend a minimum duration of 5 months on the research work. If required, he / she will be considered for research internship period in the extended period also. In fact, he/ she may conserve time by starting the research work immediately after the completion of 7th semester.

Thus a candidate should have successfully earned $160 + 20 = 180$ credits following the aforementioned procedure to qualify for B.Tech. in YY Engineering with Research Honours (Specialization: XX).

ANNEXURE – 2(a)
SUPPLEMENT REGULATION FOR PURSUING DUAL B.TECH. + M.TECH.
DEGREE

The proposal to institute Dual B.Tech. + M.Tech., 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. immediately after B.Tech. the following scheme is proposed:

1. Every candidate should express his / her provisional intent at the time of B.Tech. admission for pursuing Dual B.Tech. + M.Tech. degree. However, he / she can exercise his option to change his intent and final confirmation should be submitted by the end of III-year B.Tech. programme (VI semester) for Dual degree.
2. A candidate needs to be well informed about the advantages that he / she will reap by completing a Master's degree in one stretch as an immediate follow up to B.Tech. degree program. Such M.Tech. program could enhance his orientation to research studies and could elevate as a researcher.
3. To make the proposal very attractive, the scheme incorporated to effectively reduce the study period from $4+2 = 6$ years to around five years only by exploiting the continuity of the study sustaining the tempo and through making use of two Summer semesters between III & IV year and between IV & V year, and still technically maintaining the requirement to complete 8 semesters of B.Tech. + 4 semesters of M.Tech. = 12 Semesters intact.

A candidate willing to continue Dual B.Tech. + M.Tech. instead of regular B.Tech. programme should follow the following terms, conditions and procedures:

1. He / she should be a candidate maintaining his studentship through proper registration process of his B.Tech. programme.
2. He / she can exercise his / her option to earn Add-on credits up to 20 along with his / her regular B.Tech. to receive B.Tech. with Honours / with Minor / with Add-on Diploma.
3. He / she should have completed all the credit requirements up to the end of 5th semester successfully with a CGPA of at least 7.5. the candidate is expected to likely to complete 6th semester successfully and to maintain the CGPA of at least 7.

4. He / she should indicate his willingness to continue his study in Dual B.Tech. + M.Tech. during the Module-2 period of III-year – Even semester (6th semester). When the call is given by the office of the Dean AAA for the purpose.
5. He / she has to appear for an aptitude test / interaction and the corresponding committee of experts constituted for the purpose has to recommend his / her name.
6. The candidate formally enrolls for Dual B.Tech. + M.Tech. by the end of VI semester before the semester-end summative assessment period of VI semester.
7. The study pattern will be as follows:

Period	M.Tech. semester count	Cumulative semester count	Expected study coverage
Sandwiched summer semester between III & IV year	I semester	7 th semester	14 credits of M.Tech. aligning with M.Tech. Odd semester
Regular VII semester		<ul style="list-style-type: none"> ▪ Regular B.Tech. VII semester ▪ 8th semester 	As per B.Tech VII semester curriculum
Regular VIII semester	II semester	<ul style="list-style-type: none"> ▪ Internship/ Project 12 credits of B.Tech. is suspended. ▪ 4 credits of Honours/ Minor would continue in 9th semester 	16 credits of M.Tech. aligned with M.Tech. even semester
Sandwiched summer semester between IV & V year	III semester	10 th semester	Remaining core/ electives required in M.Tech. - 14 credits
Regular odd semester in V year	Suspended B.Tech. VIII semester credits as a preamble to M.Tech. project work	11 th semester	<ul style="list-style-type: none"> • Internship/ project work 12 credits corresponding to B. Tech. • 4 credits of IV semester of M. Tech. on Research methodology • 4 credits of IV semester of M. Tech. on preliminary Research work with a project
Regular even semester in V year	IV semester	<ul style="list-style-type: none"> ▪ 12th semester 	Research project of M. Tech. 16 credits.

		<ul style="list-style-type: none"> ▪ If required IV semester may be extended by 1 or 2 months to complete the research work. 	
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Thus the credit requirements specified for both B.Tech. and M.Tech. are satisfied along with the 12 semester requirement for B.Tech. and M.Tech. put together

- B.Tech. degree = 160 + 20 Add-on credits (opted)
- M. Tech degree = 68 (14+ 16 +14 +08 +16 credits)

A higher research orientation is created.

8. In the convocation after V year the candidate receives both the degrees B. Tech. & M. Tech. under dual mode.
9. The candidate should not opt for campus placements during III year / IV year beginning. He / she will be permitted to pursue for campus placement during 4th year end / 5th year.
10. Such a candidate may try for fellowship support during V year if he / she gets qualified in GATE; such candidates may also be eligible for support consideration by VFSTR during V year.
11. Such a candidate during his / her V year could be considered as Teaching cum Research Assistant and suitable compensation may be provided for his / her association as a Teaching Assistant in the VFSTR campus.

The proposed Dual B.Tech. + M.Tech. may be offered as a customized Dual B.Tech. + M.Tech. program jointly with an Industry for the candidates freshly placed in that industry. Then the orientation would be towards on-Job training, Advanced Industry skills and Job basis internship & project work.

ANNEXURE – 2(b)

SUPPLEMENT REGULATION FOR PURSUING DUAL B.Tech. + MBA DEGREE

The proposal to institute Dual B.Tech. + MBA, 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 / management competency of the Technocrats. In order to attract the committed learners towards earning MBA immediately after B.Tech. the following scheme is proposed:

1. Every candidate should express his / her provisional intent at the time of B.Tech. admission for pursuing Dual B.Tech. + MBA degree. However, he / she can exercise his option to change his intent and final confirmation should be submitted during the III semester of B.Tech. programme for Dual degree.
2. A candidate needs to be well informed about the advantages that he / she will reap by completing a Master's degree in one stretch as an immediate follow up to B.Tech. degree program. Such MBA program could enhance his orientation to management studies and could elevate as a Manager / Entrepreneur.
3. To make the proposal very attractive, the scheme incorporated to effectively reduce the study period from $4+2 = 6$ years to around five years only by exploiting the continuity of the study sustaining the tempo and through making use of two Summer semesters between III & IV year and between IV & V year, and still technically maintaining the requirement to complete 8 semesters of B.Tech. + 4 semesters of MBA = 12 Semesters intact.

A candidate willing to continue Dual B.Tech. + MBA instead of regular B.Tech. programme should follow the following terms, conditions and procedures:

1. He / she should be a candidate maintaining his studentship through proper registration process of his B.Tech. programme.
2. He / she should opt Engineering Management stream as Minor during regular B.Tech and the 20 credits earned in Minor will be considered for extension into dual B.Tech. + MBA.
3. He / she should have completed all the credit requirements up to the end of 3rd semester successfully and the candidate is expected to likely to complete 4th semester successfully.

4. He / she should indicate his willingness to continue his study in Dual B.Tech. + MBA during the Module-2 period of II-year – odd semester (3th semester). When the call is given by the office of the Dean AAA for the purpose.
5. The study pattern will be as follows:

Period	MBA semester count	Cumulative semester count	Expected study coverage
Regular B.Tech. IV Semester	-	4 th semester	4 credits of Management Minor
Regular B.Tech. V Semester	-	5 th semester	4 credits of Management Minor
Regular B.Tech. VI Semester	-	6 th semester	4 credits of Management Minor
Sandwiched summer semester between III & IV year	I Year I semester	7 th semester	16 credits of MBA
Regular B.Tech. VII semester	-	8 th semester	4 credits of Management Minor
Regular B.Tech. VIII semester	-	9 th semester	4 credits of Management Minor
Sandwiched summer semester between IV & V year	I Year II Semester	10 th semester	16 credits of MBA
Regular odd semester in V year	II Year I semester	11 th semester	20 credits of MBA
Regular even semester in V year	II Year II semester	12 th semester	Internship of MBA 12 credits

Thus the credit required of both B.Tech. and MBA are satisfied along with the 12 semester requirement for B.Tech. and MBA put together

- B.Tech. degree = 160
 - MBA degree = 64 (16+ 16 +20 +12 credits) +20 Add-on credits (opted in B.Tech. for Management minor)
 - Total credits = 160 + 20 + 64 = 244
6. In the convocation after V year the candidate receives both the degrees B. Tech. & MBA under dual mode.
 7. The candidate should not opt for campus placements during III year / IV year beginning. He / she will be permitted to pursue for campus placement during 4th year end / 5th year.

COURSE STRUCTURE – C24 (M.P.C stream)

I Year I Semester

Course Title	L	T	P	C	Course category
Linear algebra & Ordinary differential equations / Calculus	3	2	0	4	Basic Sciences
Engineering Physics / Engineering Chemistry	3	0	2	4	Basic Sciences
Basic of Electrical & Electronics Engineering/ Engineering Graphics	2	0	2	3	Basic Engineering
Programming in C	3	0	2	4	Basic Engineering
English Proficiency & Communication Skills (PET)	0	2	0	1	Humanities
IT Tools & Cyber security	0	2	2	2	Basic Engineering
Environmental Studies / Management Sciences	2	2	0	3	Basic Sciences / Humanities
	13	8	8	21	
Orientation Session	0	0	2	1	Binary grade
Physical Fitness, Sports & Games / Self-empowerment & Gender Sensitization	0	0	2	1	Binary grade
Constitution of India / Indian Knowledge Systems	0	0	2	1	Binary grade
	0	0	6	3	
	35			24	

I Year II Semester

Course Title	L	T	P	C	Course category
Linear algebra & Ordinary differential equations / Calculus	3	2	0	4	Basic Sciences
Engineering Physics / Engineering Chemistry	3	0	2	4	Basic Sciences
Basic of Electrical & Electronics Engineering/ Engineering Graphics	2	0	2	3	Basic Engineering
Problem Solving through Python	2	0	2	3	Basic Engineering
Technical English Communication	1	2	2	3	Humanities
Environmental Studies / Management Sciences	2	2	0	3	Basic Sciences / Humanities
	13	6	8	20	
Physical Fitness, Sports & Games / Self-empowerment & Gender Sensitization	0	0	2	1	Binary grade
Constitution of India / Indian Knowledge Systems	0	0	2	1	Binary grade
	0	0	4	2	
	31			22	

COURSE STRUCTURE – C24 (Bi. P. C stream)

I Year I Semester

Course Title	L	T	P	C	Course category
Elementary Mathematics / Matrices & Differential Equations	3	2	0	4	Basic Sciences
Applied Physics / Organic Chemistry	3	0	2	4	Basic Sciences
Basic of Electrical & Electronics Engineering/ Engineering Graphics	2	0	2	3	Basic Engineering
Programming in C	3	0	2	4	Basic Engineering
English Proficiency & Communication Skills (PET)	0	2	0	1	Humanities
IT Tools & Cyber security	0	2	2	2	Basic Engineering
Environmental Studies / Management Sciences	2	2	0	3	Basic Sciences / Humanities
	13	8	8	21	
Orientation Session	0	0	2	1	Binary grade
Physical Fitness, Sports & Games / Self-empowerment & Gender Sensitization	0	0	2	1	Binary grade
Constitution of India / Indian Knowledge Systems	0	0	2	1	Binary grade
	0	0	6	3	
		35		24	

I Year II Semester

Course Title	L	T	P	C	Course category
Elementary Mathematics / Matrices & Differential Equations	3	2	0	4	Basic Sciences
Applied Physics / Organic Chemistry	3	0	2	4	Basic Sciences
Basic of Electrical & Electronics Engineering/ Engineering Graphics	2	0	2	3	Basic Engineering
Problem Solving through Python	2	0	2	3	Basic Engineering
Technical English Communication	1	2	2	3	Humanities
Environmental Studies / Management Sciences	2	2	0	3	Basic Sciences / Humanities
	13	6	8	20	
Physical Fitness, Sports & Games / Self-empowerment & Gender Sensitization	0	0	2	1	Binary grade
Constitution of India / Indian Knowledge Systems	0	0	2	1	Binary grade
	0	0	4	2	
		31		22	

COURSE STRUCTURE – C24 (All stream)

II Year I Semester

Course Title	L	T	P	C	Course category
Maths – 3 (Dept. Specific) / P&S	3	2	0	4	Basic Sciences
Data Structures and Algorithms	3	0	2	4	Basic Engineering
Branch specific basic science course	2	0	2	3	Basic Sciences
Professional core – 1	3	0	2	4	Professional core
Professional core – 2	3	0	2	4	Professional core
Professional core – 3	3	0	2	4	Professional core
Design Thinking & Engineering Orientation	0	0	2	1	Basic Engineering
	17	2	12	24	
Life skills / Universal Human Values	0	0	2	1	Binary grade
	33			25	

II Year II Semester

Course Title	L	T	P	C	Course category
Maths – 3 (Dept. Specific) / P&S	3	2	0	4	Basic Sciences
Inter-departmental Project / Field projects	0	0	2	1	Project
Professional core – 4	3	0	2	4	Professional core
Professional core – 5	3	0	2	4	Professional core
Professional core – 6	3	0	2	4	Professional core
Open Elective – 1	-	-	-	3	Open Elective
Life skills / Universal Human Values	0	0	2	1	Binary grade
	12	2	10	21	
Honour / Minor	3	0	2	4	Honour / Minor
	29			25	

COURSE STRUCTURE – C24 (All stream)

III Year I Semester

Course Title	L	T	P	C	Course category
Soft Skills Laboratory	0	2	0	1	Humanities
Professional core – 7	3	0	2	4	Professional core
Professional core – 8	3	0	2	4	Professional core
Department Elective – 1	3	0	2	4	Department Elective
Department Elective – 2	2	0	2	3	Department Elective
Open Elective – 2	-	-	-	3	Open Elective
Industry interface course (Modular course)	0	2	0	1	Department Elective
BEC Certification	0	2	0	1	Humanities
	11	6	8	21	
Honour / Minor	3	0	2	4	Honour / Minor
	30			25	

III Year II Semester

Course Title	L	T	P	C	Course category
Quantitative aptitude & Logical reasoning	0	2	2	2	Humanities
Professional core – 9	3	0	2	4	Professional core
Professional core – 10	3	0	2	4	Professional core
Professional core – 11	2	0	2	3	Professional core
Department Elective – 3	3	0	2	4	Department Elective
Open Elective – 3	2	2	0	3	Open Elective
Inter-departmental Project / Field projects	0	0	2	1	Project
	13	4	12	21	
Honour / Minor	3	0	2	4	Honour / Minor
	34			25	

COURSE STRUCTURE – C24 (All stream)

IV Year I Semester

Course Title	L	T	P	C	Course category
Professional ethics – Dept. specific	0	4	0	2	Humanities
Professional core – 12	3	0	2	4	Professional core
Department elective – 4	3	0	2	4	Department Elective
Professional core – 13	2	0	2	3	Professional core
Department Elective – 5	3	0	2	4	Department Elective
Department Elective – 6	3	0	2	4	Department Elective
	14	4	10	21	
Honour / Minor	3	0	2	4	Honour / Minor
	33			25	

IV Year II Semester

Course Title	L	T	P	C	Course category
Internship / Project Work	0	2	22	12	Project
Honour / Minor	3	0	2	4	Honour / Minor
	29			16	

the 1990s, the number of people in the world who are under 15 years of age has increased from 1.1 billion to 1.3 billion. The number of people aged 65 and over has increased from 200 million to 350 million. The number of people aged 15–64 years has increased from 2.5 billion to 3.5 billion.

There are a number of reasons for the increase in the number of people in the world. One of the main reasons is the increase in life expectancy. People are living longer and longer, and this is increasing the number of people in the world. Another reason is the increase in the number of people who are having children. This is also increasing the number of people in the world.

The increase in the number of people in the world is a major challenge for the world. It is a challenge because it is increasing the demand for resources, such as food, water, and energy. It is also a challenge because it is increasing the demand for services, such as education and health care. The world must find ways to meet these demands in a sustainable way.

There are a number of ways that the world can meet these demands. One way is to increase the efficiency of resource use. This can be done by using less energy and less water. Another way is to increase the production of food and other resources. This can be done by using better farming practices and by increasing the number of people who are working in agriculture.

Another way to meet these demands is to increase the number of people who are working in the service sector. This can be done by providing better education and training. This will help people to get better jobs and to earn more money. This will help to meet the demand for services, such as education and health care.

The world must find ways to meet these demands in a sustainable way. This means that we must not use resources in a way that will deplete them for future generations. We must also find ways to reduce the amount of waste that we produce. This will help to protect the environment and to ensure that we have a better future for ourselves and for our children.

The world is a beautiful and diverse place. It is a place where we can learn from each other and where we can work together to make a better world. We must all do our part to make sure that the world is a better place for everyone. We must all work together to meet the challenges of the future and to ensure that we have a better future for ourselves and for our children.

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