



VIGNAN'S

FOUNDATION FOR SCIENCE, TECHNOLOGY & RESEARCH

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

R25

Academic Regulations

In Compliance with NEP 2020

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Prof. P. NAGABHUSHAN

B.E., M.Tech., Ph.D., FIE, FIETE, FIAPS.

Vice Chancellor, VFSTR

Life time Professor, IIIT - Allahabad, Prayagraj

(Formerly: Director, IIIT-Allahabad 2017-22)

PREFACE - R25

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

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

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

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

ACADEMIC REGULATIONS, CURRICULUM AND COURSE CONTENTS

EXECUTIVE ABSTRACT

The Academic Regulations - R25, Curriculum, and Course Structure of VFSTR Deemed-to-be University are designed in alignment with NEP-2020, emphasizing continuous learning, continuous assessment, and competency-based education. These regulations build upon the experiences gained during the implementation of R-22 since AY 2022-23, which was also an exercise of inculcating and internalizing NEP-2020. Insights from R-22 have led to refinements in the curriculum, course structure, pedagogy, and assessment tools, resulting in a more mature, robust, and adaptive educational framework-R25.

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

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

As part of the R-25 regulations, VFSTR pioneers a **Pre-Semester Initiative**, a first-of-its-kind approach that enables students to undertake preparatory learning modules before the formal

commencement of their first-year, first semester. This initiative aims to bridge knowledge gaps, strengthen foundational concepts, and provide early exposure to key subject areas, ensuring students are well-prepared for advanced coursework. In brief the pre-semester creates an interface for taking up learning at higher level.

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

The three-year BCA program follows a flexible, student-centric approach, offering multiple entry and honorable exit options. Students completing the required credits after one year will be awarded a Certificate in Computer Applications. Similarly, students completing the required credits after two years will receive a Diploma in Computer Applications facilitating early career opportunities while retaining the option to return and upgrade their qualifications. However, the primary focus remains on ensuring students acquire a full BCA degree. Furthermore, a provision allows eligible graduates to progress directly into the MCA program upon meeting the BCA degree requirements. In case a student opts to exit the MCA program after completing the first year of the two-year curriculum, they will be awarded a BCA (Honours) degree, ensuring recognition of the additional academic engagement. Additionally, for students who wish to progress at a slower pace, a spillover period of up to two additional years is available for degree completion, ensuring academic flexibility without compromising learning outcomes. By integrating multidisciplinary exposure, skill-based learning, and holistic assessment, VFSTR reaffirms its commitment to developing well-rounded, future-ready professionals in accordance with NEP-2020's transformative vision.

Salient features of the regulation

- Continuous learning.
- Continuous assessment.
- T-Shaped Learning Philosophy.
- Pre-Semester Initiative.
- Onward Continuation to MCA Degree.

- Multiple entry and honorable exit options.
- Sabbatical Semester Drop option to pursue innovation, incubation, entrepreneurial and advanced exploratory activities and subsequent re-entry.
- 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 expected to be acquired and the projects / assignments that are to be performed for each course for the conduct of 3-year BCA programme.

1.1 Definition

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

- **“Degree”** shall refer to the BCA Degree Program.
- **“Course”** shall refer to such Course(s) for which a student shall earn Credits after due assessment as per the laid provisions. Project is also treated as a Course.
- **“Academic activities”** shall refer to the activities like Lecture-L (Physical Lecture Session), Transactions (Tutorial)-T (Participatory discussion / Self-Study / Desk Work / Quiz / Seminar Presentation, etc. activities that make the student absorb & assimilate, the delivered contents effectively) and Practical / Practice Sessions-P (includes Hands on Experience / Lab experiments / Field Studies / Case Studies etc. activities that enable the student to acquire the requisite skill).
- **“Credit”** refers to a unit of measurement assigned to courses based on the weekly instructional hours. Typically, one credit corresponds to one hour of lecture (L) or two hours of transaction (T) / practices (P) sessions per week.
- **“Continuous Assessment”** shall refer to the assessment of the student spread over the entire semester on the various constituent components of the prescribed course.
- **“Semester”** shall refer to a period covering the two assessment periods viz Formative and Summative Assessment period. A semester would generally be spread over twenty weeks.
- **“Pre-Semester”** refers to a short 4-week program held before the first-year first semester. It primarily focuses on improving students' proficiency in English, Mathematics and IT Tools to help them reach the desired academic level.

- **“Course Drop”** shall refer to a student having to undertake a ‘Repeat (R)’ of the Course(s) not being able to complete the Credit requirements of the Course(s), under the conditions stipulated in the regulation.
- **“Supplementary Examinations”** shall refer to the examination(s) conducted to allow the student to appear in the un-cleared / Incomplete (I) Semester - End summative assessment component.
- **“Blank Semester”** shall refer to a Semester in which a student either does not register for any course at the beginning of the Semester OR chooses to DROP all courses OR is so compelled to DROP all the courses, as the case may be.
- **“Semester Drop”** shall refer to availing a blank semester. However, if drop is availed to pursue a creative extension activity, then it is defined as **semester sabbatical**.
- **“Spill Over Semester”** shall refer to the additional semester(s) beyond the completion of prescribed normal semesters.
- **“AAA Section”** shall refer to the Academics, Assessment and Award Section of the Institute.
- **“Attendance”** refers to the Physical personal presence in an academic activity session.
- **“Summer Semester”** refers to a Semester that is scheduled to be held during the intervening period of Even and Odd Semester (*i.e.* Summer Vacation period).
- **“Themes”** refer to the courses offered in a particular stream other than offered by the regular departments, for example NCC, Entrepreneurship, Fitness and Living, *etc.*
- **“School”** refers to a division of institute dealing with two or more specific areas of discipline / study comprising of the departments related with exclusive emphasis on trans-disciplinary research.
- **“Department”** refers to a division of institute dealing with a specific area of discipline / study.
- **“HoD”** refers to the Head of the respective Department, where the student is enrolled for his / her Branch of Study.
- **“Center”** refers to a structured unit within the school / department established with the purpose to carry out advanced research.
- **“Grade Point”** refers to the quantification of the performance of a candidate in a particular course as defined herein.

- **“SGPA”** refers to the Semester Grade Point Average and is calculated as detailed in the regulations subsequently.
- **“CGPA”** refers to the Cumulative Grade Point Average and is calculated as detailed in the regulations subsequently.
- **“Division”** refers to the Division awarded to the student as per the mechanism detailed in the regulations subsequently.
- **“Internship”** refers to onsite Practical Training offered by reputed companies / Institutions, in India or abroad. To be undertaken with (or seeking) prior approval of the respective HoD.
- **“Project”** refers to a course executed by a candidate on a specific research problem / product or process development at VFSTR / any organization of repute. To be undertaken with (or seeking) prior approval of the respective HoD.
- **“Credit equivalence and credit transfer committee”** refers to the committee designated to look into for credit equivalence and credit transfer.
- **“Honorable Exit Option”** refers to the Exit Options available to students, when they are unable to complete the prescribed three-year BCA Degree program in seven successive years or would like to voluntarily exit.

1.2 Academic Administration

The academic programmes of VFSTR are governed by the rules and regulations approved by the Academic Council from time to time. The various academic activities are conducted following a fixed time schedule duly approved by the Academic Council in line with the AICTE / UGC regulations. The academic activities of VFSTR are followed meticulously as specified in the academic calendar as approved by the Academic Council. This academic calendar is shared with all the stake holders well before the beginning of the respective academic year. The curriculum and the course contents of all the programmes are discussed by the respective Board of Studies (BoS), analyzed and recommended for implementation. The Academic Council, being the highest statutory body, chaired by the Vice-Chancellor, meets four times a year and discusses, suggests and approves all the important academic matters related to curriculum and course contents in particular including the recommendations of BoS. The intended revision in regulations (R25) was accepted and recommended by the Academic Council in its 40th meeting on 22-02-2025.

1.3 Program Duration

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

1.4 Courses and Credits

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

1.4.1 Content Delivery of a Course

Content delivery of a Course in the BCA. 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 practices / Field projects / Case Studies / Minor / Major Project, that equip the students to acquire the much required skill component. Denoted by “P”.

1.5 BCA Degree

All students formally and conventionally enroll for BCA degree programme. They have to earn **120** credits for the award of degree as specified in the Curriculum.

1.5.1 BCA with Honours:

A candidate may earn additional 40 credits, cumulatively totalling to **120+40** credits in the respective discipline spread over fifth to eight semesters to become eligible for the award of BCA with Honours. Annexure-2 provides the supplement regulations for onward continuation to BCA Honors degree programme.

A provision is also created for a candidate who is enrolled for BCA degree to further continue his/her course of study to MCA degree after completing the credit requirement of BCA. Annexure- 3 provides the supplement regulations for onward continuation to MCA degree programme.

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. However, the first-year academic calendar varies slightly to accommodate the ‘Pre-semester’ (Section 1.8 for details).

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

Figure 1: Distribution of semesters during an Academic Year.

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

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

1.6.3 Exception to the routine practice of registering for 'R' courses in summer semester, a student can register in a course offered by a visiting expert during the summer vacation which may be equivalent to an open elective or a department elective or an Add-on-course. The candidates can register for such courses within the scope of 16 credits. Candidate may also avail summer semester for summer internship opportunities, which may be considered as Add-on credits.

1.7 Semester wise provisions

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

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

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

1.7.2 If a candidate gets into spill over semester beyond 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.

1.8 Pre-Semester Program

The Pre-Semester Program is an integral addition to the first-year academic structure, complementing the existing Odd, Even, and Summer semesters. Positioned before the first regular semester, it is designed to equip newly admitted students with essential academic skills, ensuring a smooth transition into professional courses. By addressing foundational learning gaps and strengthening core competencies, this preparatory phase enhances students' readiness for the rigorous curriculum ahead.

Recognizing that students come from diverse educational backgrounds and the specific requirements of professional courses, this program bridges the gap by emphasizing the application of mathematical concepts in problem-solving and fostering effective communication skills. In addition, an Orientation Session sets a positive tone by helping students feel welcomed, informed, and prepared through activities such as a 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. Students who complete this pre-semester are better positioned to assimilate course content effectively and make the most of the skill-building opportunities embedded in the curriculum with the ability to apply foundational knowledge in real-world scenarios, making this preparatory program essential. To achieve these objectives, the Pre-Semester program encompasses four 1-credit courses (Table 1).

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

Course Title	Credits
Orientation Session	1
Fundamentals of Mathematical Structures in Computing	1
English Language and Communication	1
IT Tools	1
Total	4

The teaching-learning process in these courses is activity-based, prioritizing conceptual understanding and skill development rather than mere scoring. To align with this philosophy, the program follows an assessment structure with 100% weightage for formative assessment and no summative assessment. This ensures that learning is

continuous, interactive, and application-driven, helping students internalize concepts effectively. A dedicated academic calendar has been developed to seamlessly integrate this program into the academic structure, reinforcing continuous learning practices and preparing students for the rigors of computer education.

2. CURRICULUM

School of Computing & Informatics offers B.C.A. degree programme and the departments of Computer Applications prescribes semester-wise curriculum encompassing different courses. Every course offered will be designated in a L-T-P-SL structure. The theory courses comprise of L (and / or T & P hours) whereas the practice courses include instructions (T) and practical sessions (P). Amalgamation of theory courses with practical sessions is predominantly seen in this curriculum. The ‘SL’ represents the expected self-learning hours (to be carried out by each student) in a particular course.

2.1 Distribution of credits

The overall distribution of credits for various categories of courses in the curriculum of BCA. programmes is represented in Table (2) as given below.

Table 2: Credits Distribution for Various categories of courses

Category of Courses	Number of Credits	Percentage of Credits	AICTE Recommendation (%)
Core Courses (CC)	50	41.66	41.66
Ability Enhancement Courses (AEC)	8	6.66	2.5
Multi-Disciplinary Elective Courses (MDE)	4	3.33	1.66
Value Added Courses (VAC)	5	4.16	5
Skill Enhancement Courses (SEC)	37	30.83	23.33
Discipline Specific Elective (DSE)	16	13.33	25.83
Total	120	100%	-

2.2 Organization of course contents

Courses offered in the program are composed of two modules, covering all the course contents required for a candidate to obtain knowledge and skill. Module-1 is divided into

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

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

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

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

2.3 Prerequisite Knowledge

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

3. NATIONAL CREDIT FRAMEWORK / CHOICE BASED CREDIT SYSTEM

BCA programme comprises a set of courses - Core Courses, Ability Enhancement Courses, Multi-Disciplinary Elective Course, Value Added Courses, Skill Enhancement Courses and Discipline-Specific Elective. Department of Computer Applications offers flexibility

for students to choose courses of their choice and obtain the credits satisfying the minimum credits criterion in each category as given in Table (2).

3.1 Core Courses (CC)

Core Courses are mandatory for all students enrolled in the BCA program and are designed to provide a solid foundation in the essential domains of computing, programming, and problem-solving. They cover the primary functional areas, computer fundamentals, data structures, algorithms, databases, operating systems, computer networks, software engineering, and emerging fields like machine learning and cybersecurity. Through these courses, students gain the theoretical grounding and practical competencies for advanced study, research, and diverse IT careers.

3.2 Electives

A candidate has the flexibility to choose elective courses as part of the BBA curriculum. Electives are offered in curated pools, enabling students to either focus on a specific area of interest or diversify their learning by choosing courses across multiple pools. Elective courses in the BCA program are classified as Discipline Specific Electives (DSE). These courses are designed to offer advanced or specialized knowledge within the domain of computing. They allow students to deepen expertise in streams such as Cloud Computing, Data Science, Artificial Intelligence, Cyber Security, Full Stack Technologies, and Mobile Application Development among others. The list of streams is indicative and may be expanded based on emerging industry trends, institutional strengths, and student interests. Some electives may carry prerequisites, such as prior completion of a related course, demonstrated knowledge in the subject area, or approval from the department concerned.

3.3 Ability Enhancement Courses (AEC)

Ability Enhancement Courses are designed to strengthen essential competencies that support academic success and professional growth. They focus on communication skills, language proficiency, quantitative aptitude, and logical reasoning—capabilities that enhance students' ability to engage effectively in computing contexts. These courses also include orientation and skill development modules that promote adaptability, cultural understanding, and lifelong learning habits.

3.4 Multi-Disciplinary Elective Courses (MDE)

Multi-Disciplinary Elective Courses aim to expand students' horizons beyond the core computer applications curriculum. They allow exploration of subjects from diverse knowledge domains, fostering cross-disciplinary thinking and the ability to integrate

concepts from multiple fields. This exposure enriches problem-solving abilities and prepares students to address complex challenges in a dynamic computing environment.

3.5 Value Added Courses (VAC)

Value Added Courses complement the formal curriculum by focusing on holistic development, ethical understanding, and contextual awareness. These courses include themes such as Environmental Studies, Physical Fitness, and Universal Human Values nurture social responsibility, wellness, and moral grounding. By addressing contemporary issues and personal growth areas, they prepare students to contribute responsibly to society and the workplace.

3.6 Skill Enhancement Courses (SEC)

Skill Enhancement Courses are intended to equip students with practical, industry-relevant skills that strengthen their employability and entrepreneurial capabilities. Covering areas such as digital tools, analytics, design thinking, communication, and research, these courses emphasize application-oriented learning. Many are delivered through hands-on workshops, internships, and projects to ensure readiness for real-world challenges.

3.7 Socially Relevant Project using Design Thinking

These projects are designed and executed by students during the second year of their program. Design thinking is a creative problem-solving approach that focuses identifying new products / processes by joining both human & social capital. It ensures that products, services and processes are rooted in the needs of people, communities and / or end users with an emphasis on solutions creating social and environmental value. The supervision of Socially Relevant Project using Design Thinking will be done by faculty of department who serve as supervisors. The minimum duration of the project is 64 hours including writing of project report and submission for assessment. A batch of 2-3 students can take part in the project. Performance will also be assessed in the modular framework for formative and semester-end summative, successful completion will earn 2 credits.

3.8 Project

Students shall 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 modelling / simulation / computation. Through such a project work, the student is expected to demonstrate system analysis, design, presentation and execution skills. Performance in the project will be assessed in the modular framework for formative and semester-end summative.

4. ATTENDANCE

It is mandatory for the student to attend the course work in each semester as per the academic schedule of that semester. VFSTR expects 100% attendance. However, the attendance in each course shall not be less than 75 % of the aggregate of all L, T, P sessions conducted in that course.

- a) The attendance calculations will be periodically reviewed at the end of every 4 weeks. The details of attendance status will be shared with the parents / guardian. The final status of attendance will be reported at end of 15th week granting the advantage of the attendance for the 16th week for the purpose of attendance shortage calculations.
- b) The shortage of attendance may be condoned up to 10% on the ground of ill-health, social obligations, participating / representing in sports/cultural events, placement activities etc.
- c) Documentary evidence like medical reports and certificates issued by concerned bodies is to be produced on time as support for the attendance shortage due to ill-health. These cases are subjected to the scrutiny of a committee constituted for this purpose by the Vice-Chancellor. The decision of the committee shall be final.
- d) Prior approval has to be taken from the HoDs for the other types of leaves.
- e) The courses where the student shortage of attendance was not condoned shall be considered as 'Repeat' category courses and will be under 'R' grade in the student's semester transcript. Student should re-register for these courses during the summer semester or whenever the course is offered next time during regular semesters. These re-registrations are subjected to the regulations at the time of re-registration. In case of core courses, the same core has got to be re-registered. However, in case of an elective a candidate may exercise a choice of choosing different elective in place of 'R' graded elective.

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

5. ASSESSMENT

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

The performance of a student in each course is assessed on a continuous basis during the semester through various in-semester and end-semester assessment models. The marks awarded through continuous assessment are referred to as Formative assessment marks. The marks awarded through end-semester tests are referred to as Summative assessment marks (Figure 3). Both the formative and summative assessment marks are considered for awarding the final marks and the grade point in a particular course.

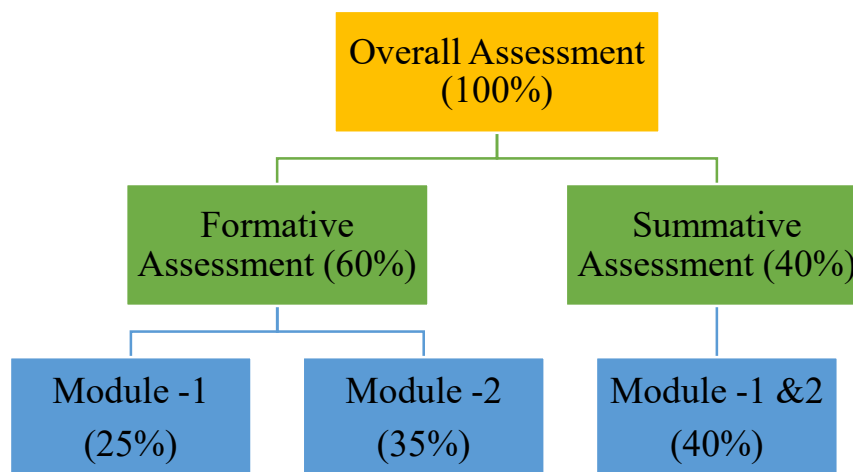


Figure 3: Categories of assessments in place for R25.

5.1 Marks distribution

For each course, the maximum sum of formative and summative assessment marks put together is 100, in the ratio of 60:40, respectively. Furthermore, the 40 marks allocated for the summative assessment maybe divided between P-based and L-based assessments in a ratio as recommended by the faculty and approved by Dean AAA.

5.2 Qualifying criteria

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

The hierarchy of qualifying criteria is as follows:

- i. Attendance compliance should be 75% or within condonable range; else the candidate is put into 'R' grade.
- ii. In formative assessment, a candidate should secure a minimum of 50% *i.e.* 30 marks out of 60; else the candidate is put into 'R' grade.
- iii. In summative assessment, a candidate should secure a minimum of 40% *i.e.* 16 marks out of 40; else the candidate is put into 'I' (Incomplete) grade.
- iv. Collectively the candidate should secure a min. grade of 5.0 in a scale of 10 after relative grading (section 7); else the candidate has to choose either 'R' or 'I' grade duly being counselled.

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

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

5.3 L-based courses integrated with P/T

5.3.1 Formative Assessment

The scheme of formative assessment is designed to promote the continuous learning. Scheme consists of assessments planned at institute level and assessment that may be scheduled by the course instructor. Institute level assessments shall be scheduled by the office of AAA. Respective Faculty Member(s) shall declare the schedule of Continuous Laboratory Assessments (CLA), Quiz, Tutorials, Assignments, Seminars, Discussions, etc. Some of the components may also however take place in an unscheduled manner like

Surprise Tests. However, students shall be made aware of the assessment modalities that are going to be followed in a course by the faculty, under information to the HoD.

To monitor the progress of students, continuous assessment comprising of six targets (Pre-T1, T1, T2, T3, T4 and T5) is advocated for a maximum of 60 marks. Students in each section are randomly grouped into batches comprising of 3 to 4 members. These batches remain same for all courses and also for the P-sessions in the courses in that semester and are created in the beginning of that semester. The suggestive modality of evaluation of five targets is listed here under:

- a) **Pre-T1** shall be conducted once in module-1 and twice in module-2 by course instructor as classroom test / assignments. Assignments may cover pre-announced modular bank problems or broad concepts covered during the L-sessions, with a weightage of 10 marks.
- b) **Module -1-T1**: As outlined in Section 2.2, Module-1 is conducted over a shorter duration, emphasizing the fundamentals and broad perspectives of the course. In tune with this, the assessment could be based on Revised Bloom's Taxonomy Levels 1, 2, and 3, with an emphasis on remembering (recalling), understanding, and applying. To assess these skills, Module-1 T1 will be a paper-based, proctored test conducted for 90 minutes and graded for 30 marks. The question paper will consist of two 5-mark questions and two 10-mark questions. There will be no module bank for this module. The test will be held between the 34th and 36th days after commencement of the course, typically around the 6th week
- c) **Module -2-T1**: T1 for module-2 commences by the announcement of module bank containing 10 problems covering the course contents of the module. Nature of problems in the module bank shall be at the level of creative / exploratory / design / thought provoking covering the complete syllabus of a module at somewhat advanced / challenging level. The purpose of creating module bank of 10 problems is to assign one problem each to 2 batches of 3 - 4 members. The purpose of assigning one problem to two batches is to create a healthy competitive spirit between the two batches. During 7th week of module-2, T1 consisting of two parts: A and B shall be conducted.

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

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

T1 shall be paper based and proctored test for a period of 90 min (maximum) which shall be assessed for 20 marks.

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

- d) **T2:** Immediately follows Module -2-T1. Students in a specified batch who now have received the same question during T1 will work further on that problem for T2.

T2 is primarily an extension of problem received in T1 for carrying out validation study: Case studies / Simulations / Experimentation. Each batch shall interact with the course instructor to finalize the nature of validation and expected to complete the exercise within 10 to 12 days after T1.

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

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

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

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

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

When the test is administered online, every student receives the questions in shuffled sequence and also the choices in shuffled sequence. Therefore, the choice like both 'a' & 'b' above. Neither 'a' nor 'b', all the three a, b, c will not be set.

- g) **T5:** T5 assessment is based on Practice or Tutorial assignments. Implementation, Report presentation and Discussion shall happen in a continuous mode throughout the module period. At least 4 such continuous lab practice assessments (CLPA) / assignments per module shall be conducted by course instructor. The marks will be @ 5 marks per assignment.
- h) The scores of the targets are to be normally announced within three working days on completion of the assessment and the performance is to be discussed in the class.
- i) **The total marks for module-1 is 50 – Pre-T1 (10), T1 (30) and T5 (10)**
- j) **The total marks for module-2 is 70 - Pre-T1 (10), T1 (20), T2 (5), T3 (5), T4 (10) and T5 (20).**
- k) The total marks from formative assessments for both modules will be added up to 120. These absolute scores will first be scaled down to a max. of 60 marks. The lead instructor, in consultation with the HoD, will review the scaled-down marks and determine a suitable mapping. The finalized mapping approach must be shared with Dean AAA for documentation.
- l) The marks scored in Module-1 should be entered / submitted latest by 7th week and of Module-2 latest by 16th week of the semester. The consolidated score (max. of 120), after scaling down and suitable mapping to a maximum of 60 marks, must be submitted by the 18th week to facilitate the declaration of the formative ‘R’-grade before the commencement of the L-based summative assessment.
- m) A candidate placed under ‘R’ will not be permitted to take up the L-based summative assessment.

5.3.2 Summative Assessment

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

- a. Unless specified otherwise one of the following formats may be used for summative assessment for L-based courses integrated with T/P.
 - i. 15 (P) + 25 (L) marks format (L+P or L+T+P courses).
 - ii. 20 (P) + 20 (L) marks format
 - iii. 40 marks format (L+T courses).
- b. **If summative assessment is in two parts format:**

- i. Part-I will be the assessment of the capstone project, which is pre-assigned during the module-2 period, or will be the exploratory review assessment of all lab practice assignments. This summative assessment activity may be completed during the 15th week after the start of the semester, at the end of the formative assessment.
 - ii. Part-II will be based on a written examination for a max. marks of 60, as in c & d below, which is *scaled down* to 25.
 - iii. A candidate should attend both the parts of summative assessments; else he will be put into I grade.
- c. For each L-based course integrated with T/P, the summative assessment shall be conducted by the Institute for a duration of 150 min. and for a maximum of 60 marks. Contents for summative assessment shall cover the breadth and depth of the complete syllabus that is mentioned in the two modules of a course.
 - d. The question paper for end-semester theory examination consists of two parts as given in Table (3).

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

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

- e. The questions will be comprehensive covering the entire course syllabus and any single question should not necessarily be limited to any particular unit / module.
- f. These marks are suitably mapped down to a score of 40.
- g. Total marks of summative assessment will be for a max. of 40 irrespective of format of evaluation.
- h. The award of 'I' grade is solely based on marks scored in summative assessment out of 40, if he/she does not score a min. 16 out of 40 (40%).

5.4 P-based Courses

The detailed information regarding activity formats, batch formations, practice schedules, and related instructions will be displayed or communicated to students in the first week of the semester, enabling them to be well-prepared for the practice sessions. Copies of the activity manual will be made available to students along with the schedule. The manual will

include guidelines for each activity, step-by-step procedures for conducting exercises or simulations, formats for report preparation, expected learning outcomes for each activity, and a set of short questions designed to promote critical understanding and application of concepts.

5.4.1 Formative Assessment

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

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

S. No	Component	Marks
1	Report of about 1 page on proposed activity/project layout and relevant background before the start of the session	4
2	Viva and interaction to evaluate understanding of concepts	4
3	Execution of the activity including data or information collection	4
4	Analysis of collected data/information and interpretation of findings	4
5	Finalized report submitted in the next week	4
Total		20

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

5.4.2 Summative Assessment

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

The summative assessment will be conducted for a max. marks of 40. The general scheme of assessment is given in Table (5).

Table 5: Suggested end-semester summative assessment pattern for P-based courses.

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

5.5 Assessment and Grading of MOOCs based elective

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

5.6 Socially Relevant Project using Design Thinking

Socially Relevant Project using Design Thinking is undertaken in the even semester of II-year of programme for earning 2 credits by each candidate. It is expected that these projects result in publication of a technical paper in a peer-reviewed journal / top-notch conference. For this purpose, Heads of Department will identify and appoint faculty mentors who offer technical expertise/ guidance to students for defining clear, achievable objectives and milestones for their projects.

5.6.1 Formative Assessment

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

Table 6: Schedule and parameters followed for formative assessment.

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

5.6.2 Summative Assessment

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

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

5.7 Project

Those students who do not opt for the 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 VI 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 VI semester, so that students can start of their project work immediately after VI 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 (7).

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

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

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

5.7.2 Summative Assessment

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

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

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

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

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

5.8 Binary graded courses

Course such as Indian Knowledge System, Universal Human Values, and Physical Fitness, Sports & Games are categorized as Binary-graded courses. These 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 IV 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 50% score (i.e. 50 marks out of 100) in each course; else the candidate shall be placed into 'R'-grade. There shall not be any summative assessment activity for Binary graded courses.

5.8.1 Formative assessment

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

Table 10: Schedule for formative assessment

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

5.9 Pre-Semester Courses

The pre-semester program is a structured four-week initiative designed to assess and strengthen students' foundational skills before the commencement of regular coursework. This program consists of one binary-graded course and three gradial category courses, including Mathematics, English and IT Tools. All courses under this program will have 100% weightage assigned towards formative assessment, ensuring continuous engagement and skill development without summative assessments. To secure a passing grade, students must maintain a minimum of 75% attendance in each course and obtain at least 50% in the assessment. Those unable to meet either criterion will be assigned an R-grade and must complete the course on a priority basis, either with the immediate subsequent batch or within the first academic year. The assessment will be carried in a systematic way as mentioned in the Table (10).

6. SEMESTER-END ASSESSMENT ACTIVITIES

- 6.1 Setting of semester-end summative assessment question papers will be coordinated by the lead instructor assigned for a particular course. Two sets of question papers will be submitted latest by 12th week of the semester.
- 6.2 There shall be ‘Summative Assessment Question Paper Scrutiny Committee’ which would be constituted with external experts. Experts are empowered to modify / rephrase the questions to maintain a high standard of the semester-end assessment. The review should be completed by the 14th week of the semester. The review process will be coordinated by a committee of School Dean, HoDs and external experts.
- 6.3 The question wise marks scored in the summative assessment out of a total of 60 will be made available online within two weeks from the last date of examination and would be kept active for 24 hours. Latest by the end of 48 hours from the instant of notification any candidate can submit an appeal online providing question wise claim.
- 6.4 Claims for re-assessment on P-based courses are not allowed.
- 6.5 The appeals will be attended within next three working days. Fees for appeal, as decided from time to time, has to be remitted online along with the appeal.
- 6.6 Final results and grades will be computed as explained in the next section.
- 6.7 Final results and grades shall be announced within four weeks of completion of the last examination of the summative assessment (within two weeks from the last date of appeal). Grades are published on the University website, and also informed to the parents and students through SMS.
- 6.8 Provisional Grade cards will be issued within two weeks after the announcement of grades. Grade card will contain three parts. Part 1: Details of successfully completed courses. Part 2: Details of ‘I’ grade courses. Part 3: Details of ‘R’ grade courses.

7. GRADING POLICY

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

The grading for each course shall be finalized by the committee, ensuring that the influence of outlier scored is minimized while accurately representing the performance of the major

cohort. This method supports equitable grade interpretation across diverse course deliveries and upholds the integrity of the assessment process.

8 COMPUTATION OF GRADING

8.1 Formative assessment decides the list of 'R'- candidates. Therefore, these candidates will not be considered for grading computation. Summative assessments decide the list of 'I' candidates. Therefore, these candidates will not be considered for grading computation.

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

8.3 Threshold value (**Th**) for relative grading in each course is arrived after studying the marks distribution in that course by a committee constituted by office of Dean AAA. The threshold value is decided by the upper bound marks of the major chunk of the class keeping the top outlier scores away from consideration (the least upper bound). The threshold value will be slightly greater than upper bound marks or may be equal to the upper bound marks.

8.4 The total marks (**m**) = marks scored in the formative assessment + marks scored in the summative assessment is transformed into relative grade expressed accurate to two decimal places as follows:

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

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

$$\text{Course wise percentage equivalence} = (m/Th) \times 100 \\ \text{[truncated to two-digit integer and limited to 100]}$$

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

Table 12: Grading information

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

9. SUPPLEMENTARY EXAMINATIONS

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

10. GRADE POINT AVERAGE

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

10.1 SGPA

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

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

Where

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

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

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

10.2 CGPA

The Cumulative Grade Point Average (CGPA) shall be computed after successful completion of the programme. The CGPA shall be expressed in different flavours to reflect BCA of 120 credits.

Accordingly, the computations will be as below:

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

Where

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

P_j = grade points secured for the jth course.

C_j = the number of credits assigned to jth course

11. AWARD OF CLASS

The students who have become eligible for award of degree shall be classified based on their CGPA secured, as per the Table (13) given below:

Table 13: Class/ Division information.

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

- 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 addition, the 'Chairman's gold medal' and other 'Endowment Awards' are awarded to the 'outstanding students' based on the overall performance which includes academic, co-curricular and extra-curricular activities, campus placements and competitive examinations. A committee appointed by the Vice-Chancellor will recommend the eligible student for the award, selected from the nominations received from the departments.
- In addition, the institution may recognize exceptional performance such as music, dance, sports etc. and display of exceptional bravery from time to time.

- d) Only such candidates who complete 120 in the first 6 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.

12. AWARD OF DEGREE

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

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

- a) a bonafide student and undergone the course work of not less than four academic years and not more than seven academic years from the date of joining.
- b) successfully completed all the courses as prescribed in the respective curriculum.
- c) acquired a minimum eligible credits i.e. 120 credits for the award of BCA 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 Executive council of the institute.

13. LATERAL EXIT OPTIONS

13.1 Honourable Exit with Suitable Certificate / Diploma

In line with NEP-2020, an optional exit is provided for a candidate who has earned a minimum number of credits and has completed all the requirements up to the end of respective years of study. Undergraduate certification will be awarded for a candidate who has earned a minimum of 40 credits and completed all the requirements up to the end of second semester. Undergraduate diploma will be awarded for a candidate who has earned a minimum of 80 credits and completed all the requirements up to the end of fourth semester. Semester-wise transcript and a consolidated transcript will be given to the candidates during their exit from the registered program.

The candidate who has exited can seek re-entry to complete BCA by surrendering the Undergraduate certification / Undergraduate 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 five 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.

13.2 Volunteer ‘Drop’ with Sabbatical Semester

A candidate may exercise his option to exit from BCA Degree programme temporarily for a semester, utilizing the DROP option.

The DROP can be exercised to take up Internship/ Innovation/ Exploratory/ Entrepreneurship/ Advanced research/ Start-up and such related activities. Under such circumstances a candidate can normally avail DROP over two successive semesters. Such drop semester will be identified as sabbatical semester.

However, such a candidate has to pay the regular semester fee if such a Drop option is utilized during the first 6 semesters of BCA, and has to pay a nominal semester maintenance fee during the spillover period, if a candidate has not yet completed the credit requirements.

Upon returning from such a temporary exit, a candidate may continue his BCA studies utilizing the provision of spillover period. A candidate may also submit a claim for Credit equivalence for the activities undertaken during the DROP period. The equivalence committee would evaluate and assess the academic equivalence of the work carried out and would recommend the credit equivalence and credit transfer to be granted together with the grades that could be attributed, if applicable. However, the max. duration of programme should be limited to five 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.

13.3 Volunteer ‘Drop’ of A Semester Drop Option

A candidate may exercise his option to voluntarily exit from BCA programme temporarily for a semester during the BCA programme, utilizing the DROP option to meet the family/ personal exigencies. All the norms mentioned in the section 14.1 shall be applicable for the candidates utilizing semester drop option.

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

ANNEXURE – 1

R25 C25 - BCA COURSE STRUCTURE

Pre-semester

Course Code	Course Title	L	T	P	SL	C	Course Category
25BC101	Orientation Session	0	2	0	0	1	Ability Enhancement Courses
25BC102	Fundamentals of Mathematical Structures in Computing	0	3	2	0	1	Core Courses
25BC103	English Language and Communication	0	3	2	0	1	Ability Enhancement Courses
25BC104	IT Tools	0	0	5	0	1	Skill Enhancement Courses
Sub-Total		0	8	9	0	4	
Total		17			0	4	

I Year I Semester

Course Code	Course Title	L	T	P	SL	C	Course category
25BC105	Digital Computer Fundamentals	2	2	0	2	3	Core Courses
25BC106	Programming for Problem Solving	3	0	2	3	4	Skill Enhancement Courses
25BC107	Technical English Communication	1	0	2	1	2	Ability Enhancement Courses
25BC108	Web Technology	0	2	2	0	2	Skill Enhancement Courses
25BC109	Mathematical Foundations for Computer Science	2	2	0	2	3	Core Courses
25BC110	Environmental Studies (Field Project)	1	2	2	1	3	Value added courses
25BC111	Physical Fitness, Sports and Games	0	0	2	0	1	Value added courses
Sub-Total		09	08	10	09	18	
Total		26			09	18	

I Year II Semester

Course Code	Course Title	L	T	P	SL	C	Course category
25BC112	Object Oriented Programming	3	0	2	3	4	Skill Enhancement Courses
25BC113	Data Structures	3	0	2	3	4	Core Courses
25BC114	Discrete Mathematics	2	2	0	2	3	Core Courses
25BC115	Computer Organization	2	2	0	2	3	Core Courses
25BC116	Introduction to Cyber Security	1	2	0	1	2	Skill Enhancement Courses
25BC117	Data visualization Laboratory	0	0	4	0	2	Core Courses
25BC118	Soft skills laboratory	0	0	4	0	2	Ability Enhancement Courses
25BC119	Indian Knowledge System	0	2	0	0	1	Multi-Disciplinary Elective Courses
Sub-Total		11	08	12	11	21	
Total		31			11	21	

II Year I Semester

Course Code	Course Title	L	T	P	SL	C	Course category
25BC201	Python Programming	2	2	0	2	3	Skill Enhancement Courses
25BC202	Database Systems	3	0	2	3	4	Core Courses
25BC203	Probability and Statistics	2	2	0	2	3	Core Courses
25BC204	Operating systems	3	0	2	3	4	Core Courses
25BC205	Management Science	2	2	0	2	3	Multi-Disciplinary Elective Courses
25BC206	Professional Communication Lab	0	0	4	0	2	Ability Enhancement Courses
25BC207	Design Thinking	0	0	2	0	1	Skill Enhancement Courses
25BC208	Competitive Coding	0	0	2	0	1	Core Courses
Sub-Total		12	06	12	12	21	
Total		30			12	21	

II Year II Semester

Course Code	Course Title	L	T	P	SL	C	Course category
25BC209	Computer Networks	3	0	2	3	4	Core Courses
25BC210	Software Engineering	2	0	2	2	3	Core Courses
25BC211	Design and Analysis of Algorithms	3	0	2	3	4	Core Courses
25BC212	Organization behavior	2	2	0	2	3	Skill Enhancement Courses
25BC213	Quantitative Aptitude and Logical Reasoning	2	2	0	2	3	Skill Enhancement Courses
25BC214	Socially Relevant Project using Design Thinking	0	0	4	0	2	Skill Enhancement Courses
25BC215	Advanced Coding Competency	0	0	2	0	1	Core Courses
25BC216	Universal Human Values	0	2	0	0	1	Value added courses
Sub-Total		12	06	12	12	21	
Total		30			12	21	

III Year I Semester

Course Code	Course Title	L	T	P	SL	C	Course category
25BC301	Machine Learning	3	0	2	3	4	Core Courses
25BC302	Cryptography & Network Security	2	2	0	2	3	Core Courses
	Elective – I	3	0	2	3	4	Discipline Specific Electives
	Elective – II	2	2	0	2	3	Discipline Specific Electives
	MooCS/NPTEL/Dept. elective					2	Discipline Specific Electives
Sub-Total						16	
Total						16	

III Year II Semester

Course Code	Course Title	L	T	P	SL	C	Course category
	Elective – III	2	2	0	2	3	Discipline Specific Electives
	Elective – IV	3	0	2	3	4	Discipline Specific Electives
25BC303	Project work	0	2	22	0	12	Skill Enhancement Courses
Sub-Total		05	04	24	05	19	
Total		33			05	19	

LIST OF ELECTIVES

Course Code	Course Title	L	T	P	SL	C
25BC801	Cloud Computing	3	0	2	3	4
25BC802	Data Science using Python	3	0	2	3	4
25BC803	Deep Learning	3	0	2	3	4
25BC804	Big Data Analytics	3	0	2	3	4
25BC805	Advanced Web Technologies	3	0	2	3	4
25BC806	Mobile Application Development	3	0	2	3	4
25BC807	Network Programming	3	0	2	3	4
25BC808	Full Stack Technologies	3	0	2	3	4
25BC809	Artificial Intelligence	2	2	0	2	3
25BC810	Natural Language Processing	2	2	0	2	3
25BC811	Reinforcement Learning	2	2	0	2	3
25BC812	Blockchain technologies	2	2	0	2	3
25BC813	Soft Computing	2	2	0	2	3
25BC814	Mobile Computing	2	2	0	2	3
25BC815	Computer Graphics	2	2	0	2	3
25BC816	Advanced Computer Architecture	2	2	0	2	3
25BC817	Digital Marketing	1	2	0	1	2
25BC818	Fundamentals of Ethical Hacking	1	2	0	1	2

ANNEXURE -2

SUPPLEMENT REGULATION FOR PURSUING BCA WITH HONOURS

The proposal to institute BCA Honours 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 Engineering degree BCA Honours which is equivalent to B.Tech (CSE/IT) is designed to equate the BCA Honours to B. Tech (CSE/IT) all engineering courses/GATE courses missed in BCA programme have been incorporated. The proposed scheme for BCA Honours is as follows:

1. Every candidate should express his/her provisional intent at the time of BCA admission for pursuing BCA Honours degree. However, he/she can exercise his option to change his intent and final confirmation should be submitted by the end of II year BCA programme.
2. A candidate needs to be well informed about the advantages that he/she will reap by completing a Honours degree in one stretch as an immediate follow up to BCA degree program.

A candidate willing to switch over to BCA Honours from the existing BCA should follow the following terms, conditions and procedures:

1. He/she should be a candidate maintaining his studentship through proper registration process for BCA programme
2. He/ she should have completed all the credit requirements up to the end of 4th semester successfully with a CGPA of at least 7.5. the candidate is expected to likely to complete 4th semester successfully and to maintain the CGPA of at least 7.
3. He/ she should indicate his willingness to switch over his study from BCA to BCA Honours during the Module-2 period of II-year – Even semester (4th semester). When the call is given by the office of the Dean AAA for the purpose.
4. He/ she has to appear for an aptitude test/ interaction and the corresponding committee of experts constituted for the purpose has to recommended his/ her name.
5. The candidate formally enrolls for BCA Honours by the end of IV semester before the semester-end summative assessment period of IV semester
6. The existing BCA fee structure will get continued for the extended IV year.
7. The candidate should earn 160 credits to get BCA Honours Degree.

BCA Honors R25 C25 Course Structure

III Year I Semester

Course Code	Course Title	L	T	P	SL	C	Course Category
25BC301	Machine Learning	3	0	2	3	4	Core Courses
25BC304	Formal Languages and Automata theory	3	0	2	3	4	Core Courses
	Elective – I					4	Discipline Specific Electives
	Elective – II					3	Discipline Specific Electives
	Elective – III					3	Discipline Specific Electives
Sub-Total						18	
Total						18	

III Year II Semester

Course Code	Course Title	L	T	P	SL	C	Course Category
25BC305	Optimization of Machine Learning	3	0	2	3	4	Core Courses
25BC302	Cryptography & Network Security	2	2	0	2	3	Core Courses
	Elective – IV					3	Discipline Specific Electives
	Elective – V					4	Discipline Specific Electives
25BC306	Capstone Project work	0	0	8	0	4	Skill Enhancement Courses
Sub-Total						18	
Total						18	

IV Year I Semester

Course Code.	Course Title	L	T	P	SL	C	Course Category
25BC401	Deep learning	3	0	2	3	4	Core Courses
25BC402	Internet of Things	3	0	2	3	4	Core Courses
	Elective – VI	2	2	0	2	3	Discipline Specific Electives
	Elective – VII	3	0	2	3	4	Discipline Specific Electives
	Elective – VIII	3	0	2	3	4	Discipline Specific Electives
Sub-Total		14	02	08	14	19	
Total		24			14	19	

IV Year II Semester

Course Code.	Course Title	L	T	P	SL	C	Course Category
	Elective – IX	3	0	2	3	4	Discipline Specific Electives
	Elective – X	3	0	2	3	4	Discipline Specific Electives
25BC403	Major Project	0	02	22	0	12	Skill Enhancement Courses
Sub-Total		06	02	26	06	20	
Total		34			06	20	

LIST OF ELECTIVES

BCA Honors

Course Code.	Course Title	L	T	P	SL	C
25BC819	Basics of Data Analytics using Spreadsheet	3	0	2	3	4
25BC820	Data Visualization	3	0	2	3	4
25BC821	Introduction to Data Science	3	0	2	3	4
25BC822	Time Series Analysis	3	0	2	3	4
25BC823	Machine Learning	3	0	2	3	4
25BC804	Big Data Analytics	3	0	2	3	4
25BC824	Exploratory Data Analysis	3	0	2	3	4
25BC825	Business Intelligence & Analytics	3	0	2	3	4
25BC826	Data Mining & Warehousing	3	0	2	3	4
25BC827	Advanced Data Visualization	3	0	2	3	4
25BC828	Cloud Computing for Data Analytics	3	0	2	3	4
25BC829	Data Security & Privacy	3	0	2	3	4
25BC830	Introduction to ML	3	0	2	3	4
25BC831	Digital Image Processing	3	0	2	3	4
25BC832	Natural Language Processing	3	0	2	3	4
25BC833	Deep Learning for Computer Vision	3	0	2	3	4
25BC834	Predictive Analysis	2	2	0	2	3
25BC835	Neural Network	2	2	0	2	3
25BC836	Feature Engineering	2	2	0	2	3
25BC837	Explainable AI	2	2	0	2	3
25BC838	Evolutionary Algorithm	2	0	2	2	3
25BC839	Speech Recognition	2	0	2	2	3
25BC840	Augmented Reality and Virtual Reality	2	0	2	2	3
25BC841	Security aspects of ML	2	0	2	2	3

ANNEXURE -3
SUPPLEMENT REGULATION FOR ONWARD CONTINUATION TO
MCA DEGREE

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

In order to attract the committed learners towards earning MCA immediately after BCA the following scheme is proposed:

1. He / she should be a candidate maintaining his studentship through proper registration process of his BCA program and fulfills all the credit requirements of BCA.
2. He/ she has to appear for an aptitude test / interaction and the corresponding committee of experts constituted for the purpose has to recommended his / her name.
3. The regulations that were in force during that Academic year will be applicable for this continuation MCA program.
4. The candidate should earn all the credits of the BCA program before commencing the MCA program. The program structure designed for MCA will be followed from VII semester onwards
 - BCA degree = 120 credits
 - MCA degree = 80 credits
5. Honorable exit option:
 - Candidate who has earned all the credit requirements till first year (48 credits) of MCA can exercise his / her option to exit the program with a BCA honours degree for candidates earned BCA credits from VFSTR. Knowledge and skill set of such candidates will be equivalent to the candidates graduated with B. Tech (CSE / IT) programme. Because Basic Engineering and GATE relevant courses are covered during their first year of MCA study.
 - In case he / she wishes to continue his / her study after returning, an option is given to the candidate to select their course of study
 - a) 4 semesters study to earn 64 credits shall be awarded with M. Tech degree.
 - b) 2 semesters study to earn remaining 32 credits shall be awarded with MCA degree. In such case he / she has to surrender their BCA Honours degree.

However, candidates awarded BCA degree from other institutes can also exit with PG diploma certification.

Credits distribution for 2 year MCA programme

S.No.	Year / Semester	Credits
1	I / I	22
2	I /II	25
3	II / I	21
4	II / II	12
	Total credits	80