VIGNAN'S
Foundation for Science, Technology & Research
(Deemed to be UNIVERSITY)
-Estd. u/s 3 of UGC Act 1956

R22 Academic Regulations

In Compliance with NEP 2020

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PREFACE

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

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

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

R-22 eliminates the melancholy 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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R22 B.Tech.
4 YEAR
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4 **YEAR**

DEGREE PROGRAMME

R-22 Academic Regulations, Curriculum and Course Content

R22 B.Tech. 4 YEAR DEGREE PROGRAMME

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.

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. Such holistic and diverse education will assist the candidate in transforming into all-rounded persons. Similarly, in line with NEP-2020, Emphasis on formative and creative summative assessment will facilitate the candidate to "Move away from high stake examinations – towards more continuous and comprehensive evaluation".

The Department of Applied Engineering (Agricultural Engineering) is one of the glorious departments of Vignan's Foundation for Science Technology and Research. Our well qualified and experienced faculty working under the guidance of Board of Studies play a crucial role in improvening the students with latest knowledge and skills. The University's collaboration with number of Agriculture input industries and Research institutes gives scope for the students to experience real - time needs of Agriculture industries.

Salient features of the regulations

- Multidisciplinary
- Continuous learning
- Continuous assessment
- Special courses for IT, IPR and Employment skills
- Sabbatical Semester Drop option to pursue innovation, incubation, entrepreneurial and advanced exploratory activities and subsequent re-entry
- Industrial / R&D labs internship options
- Inculcating research oriented skills

1 INTRODUCTION

This document contains the academic regulations, curricula and course contents for governing the conduct of 4 years B.Tech. Agricultural Engineering degree programme offered by VFSTR. The students enrolled for B.Tech. Agricultural Engineering degree programme have to complete the prescribed courses to earn a minimum of **187** credits to become eligible for the award of the B.Tech. Agricultural Engineering.

1.1 Definition

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

- **"Degree"** shall refer to the B.Tech. Agricultural Engineering 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.

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- **"Academic activities"** shall refer to the activities like Lecture (Physical Lecture Session), Tutorial (Participatory discussion / Self-Study / Desk Work / Quiz / Seminar Presentation, etc activities that make the student absorb & assimilate, the delivered contents effectively) and Practical / Practice sessions (includes Hands on Experience / 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 to twenty-two 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.
- **"AAA Section"** shall refer to the Academics, Assessment and Awards Section of the Institute.
- **"Attendance"** refers to the Physical personal presence in an academic activity session.
- **"Summer Semester"** refers to a Semester that is scheduled to be held during the intervening period of Even and Odd Semester (i.e. Summer Vacation period).
- **"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.

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 tune with the ICAR recommendations. 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 31st meeting on 30-07-2022.

1.3 Program Duration

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. Agricultural Engineering 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. Agricultural Engineering programme in a slower pace if he / she desires.

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 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 week. 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. 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 B.Tech. Agricultural Engineering 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 Studies / Case Studies / Minor / Major Project, that equip the students to acquire the much required skill component. Denoted by "P".

1.5 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 95 working days exclusive of days earmarked for summative assessment.

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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

1.5.1 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. The intended semester wise coverage will be as presented in the curriculum.

1.5.2 **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 maximum of 16 credits in a summer semester.

1.6 Semester wise provisions

A student may register for a maximum 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 maximum 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.

1.6.1 During the first four years from the date of admission to B.Tech. Agricultural Engineering 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.

1.6.2 If a candidate gets into spillover 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.

1.6.3 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

The curriculum follows the guidelines given by the ICAR and encompasses theory courses, practical courses, and theory courses integrated with practical sessions. The theory courses comprise of lectures (in the form of assignments/seminars wherever required) whereas the practical course include laboratory instructions, field and practical sessions. Amalgamation of theory courses with practical session is predominantly seen in this curriculum. In addition to these, skill-oriented projects and Industry related projects and Experiential learning, skill development training also included in the curriculum. The curriculum and the course contents document provides details of semester wise scheme of instructions and detailed syllabi with text / reference books recommended, course outcomes, skills acquired and the projects / assignments that are to be performed for each course. Swapping of the courses between semesters is normally done for operational advantage and convenience of the students. The overall distribution of credits for various categories of courses in the curriculum of B.Tech. Agricultural Engineering programme is represented as given below.

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2.1 Credits distribution for various Categories of Courses

Sl.No.	Category of Courses	Allotted Credits	Percentage
1	Basic Engineering	44	23.53
2	Applied Sciences	31	16.58
3	Professional Core	56	29.95
4	Electives	9	4.81
5	Project	40	21.39
6	Binary Graded Courses	7	3.74
Total		**187**	**100%**

2.2 Organization of course contents

Courses offered in the program is composed of two modules covering all the course contents required for a candidate to obtain knowledge and skill. 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 may be 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.

3. CHOICE BASED CREDIT SYSTEM

VFSTR offers flexibility for students to choose courses of their choice and obtain the credits satisfying the minimum credits criterion.

3.1 Basic Engineering

Basic engineering courses are included to offer the knowledge of scientific theories that form the foundation for all the Agricultural solutions.

3.2 Applied Sciences

Basic science courses are included to offer the knowledge of scientific theories that form the foundation for all the Agricultural solutions.

3.3 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.

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3.4 Elective Courses

Elective courses are offered in three semesters, to enable students earn credits from a chosen stream or individual courses.

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

A course opted as departmental elective should not be registered as a course under Specialization and vice versa.

3.5 Project (Student READY Programme)

The term READY refers to "Rural Entrepreneurship Awareness Development Yojana". To reorient graduates of agriculture for ensuring and assuring employability and develop entrepreneurs for emerging knowledge on intensive agriculture, it envisages the introduction of the programme as an essential prerequisite for the award of degree to ensure hands on experience and practical training.

3.6 Binary Graded courses

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.

3.6.1 Physical Fitness and Life skills

Realizing the VFSTR's Vision of preparing multifaceted personalities, VFSTR floats various credit based for students such as physical fitness and yoga contributes to physical, mental and social development, it is offered to students. The one credits course (Non gradial) offered to the students during II semester in I year. Students are imparted training through physical exercises and yoga practices.

3.6.2 Education Tour

University includes education tour as a part of the curriculum provide students the joy of discovery and opportunity to learn new things through travel. Education tours are a great way for students and educators to absorb, interact and to grasp theory practically.

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.

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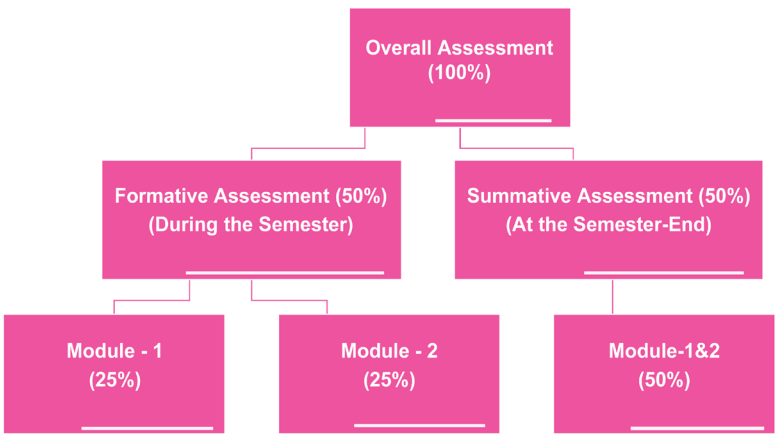

Figure 3: Categories of assessments in place for R22.

5.1 Marks distribution

For each course, the maximum sum of formative and summative assessment marks put together is 100, in the ratio of 50:50, respectively.

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 35% from the maximum marks allotted for formative i.e. 42.5 marks and 50% from Practical End Examination i.e. 7.5 marks and 50% from marks allotted for summative assessments individually for L+P category and The students should get 50% from the maximum marks allotted for formative i.e. 50 marks and 50% from marks allotted for summative assessments individually for L+T category and The students should

get 50% from the maximum marks allotted for formative i.e. 50 marks and 50% from marks allotted for summative assessments individually for P category.

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.

L+P category:

- T1, T2 and T4 for both module shall be suitably mapped down into 30 marks (10 marks from each), T3 for both module shall be suitably mapped down into 5 marks and T5 for both module shall be suitably mapped down into 7.5 marks, which total comprises of 42.5 marks. Out of which student should secure minimum 35% marks. Later Practical End Examination shall be suitably mapped down into 7.5 marks and student should secure minimum 50% of 7.5 marks. Total Formative assessment in L+P category is 42.5+7.5 marks = 50 marks.
- A student should secure minimum 50% of summative assessment, else the candidate is put into "I" (Incomplete grade).
- Overall a student should secure minimum 5 grade out of 10 scale combining formative and summative assessment, else the candidate has to choose either 'R' or 'I' grade duly being counselled.

L+T category:

- T1, T2 and T4 for both module shall be suitably mapped down into 30 marks (10 marks from each), T3 for both module shall be suitably mapped down into 10 marks and T5 for both module shall be suitably mapped down into 10 marks, which total comprises of 50 marks. Out of which student should secure minimum 35% of formative assessment i.e. 17.5 marks out of 50 marks. Total Formative assessment in L+T category is 50 marks.
- A student should secure minimum 50% of summative assessment, else the candidate is put into "I" (Incomplete grade).
- Overall a student should secure minimum 5 grade out of 10 scale combining formative and summative assessment, else the candidate has to choose either 'R' or 'I' grade duly being counselled.

P category:

- T5 for both module shall be mapped down into 50 marks and student should secure minimum 35% of formative assessment i.e. 17.5 marks.
- A student should secure minimum 50% of summative assessment, else the candidate is put into "I" (Incomplete grade).
- Overall a student should secure minimum 5 grade out of 10 scale combining formative and summative assessment, 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.

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

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

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

5.3 L- based courses integrated with P/T

5.3.1 Formative Assessment

The scheme of formative assessment is designed to promote the continuous learning. Scheme consists of assessments planned at institute level and assessment that may be scheduled by the course instructor (Figure 4). Institute level assessments shall be scheduled by the office of AAA. Respective Faculty Member(s) shall declare the schedule of Continuous 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) **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**) for all the students from outside the module bank.

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

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

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

T2 is primarily an extension of problem received in T1 for carrying out validation study: Case studies / Simulations / 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 maximum of 10 marks based on his observation, interaction and / or reviewing (based on at least two reviews).

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

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

d) **T4:** T4 is a comprehensive module test, conducted for 30 min. comprising of 20 multiple choice questions (MCQs) covering the holistic content of module. T4 shall be evaluated for a maximum 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.

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

At least 4 such continuous 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.

f) 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.

g) 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).

h) Total marks for both the modules from formative assessment will be added up to 120, which will be ***suitably mapped down*** to a maximum of 50 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.

i) The marks scored in Module-1 for a maximum 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 maximum of 120 ***suitably mapped down*** to a maximum of 50 marks should be submitted latest by 18th week of semester enabling the declaration of 'R'- grade before the commencement of summative assessment.

j) A candidate put under 'R' will not be permitted to take up the summative assessment.

5.3.2 Summative Assessment

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

i) 30+20 marks format or 25 + 25 marks format (following b, c, d below) .

ii) 50 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 maximum marks of 80, as in c & d below, which is ***scaled down*** to 25 based on the 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 150 min. and for a maximum of 80 marks. Contents for summative assessment shall cover the breadth and depth of the complete syllabus that is mentioned in the two modules of a course.

d) The question paper for end-semester theory examination consists of two parts as given in Table (1).

Table 1: Theory Examination Question Paper Pattern.

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

e) The questions will be comprehensive covering the entire course syllabus and any single question should not necessarily be limited to any particular unit/ module.

f) The marks scored out of 80 is ***suitably mapped down*** into a score out of 50.

g) Total marks of summative assessment will be for a maximum of 50 irrespective of format of evaluation.

h) The award of 'I' grade is solely based on marks scored in summative assessment out of 50, if he / she does not score a minimum 25 out of 50 (50%).

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 equipments, 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.

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 Assessment (CLA) are given in Table (2). 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.

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Table 2: Continuous Lab Assessment (CLA).

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 50.

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 maximum marks of 50. The general scheme of assessment is given in table (3).

Table 3: General scheme of assessment.

Component	Marks		
	Examiner 1	Examiner 2	Total
Objective & Procedure write up including outcomes	5	5	10
Experimentation and data collection	5	5	10
Computation of results	5	5	10
Analysis of results and Interpretation	5	5	10
Viva Voce	0	10	10
Total Marks	**20**	**30**	**50**

5.5 Projects

Performance of ELP and B. Tech projects will be assessed in the modular framework for formative and summative assessment. The detailed assessment procedure are outlined in the 'ELP and B. Tech projects programme operational guidelines' manual.

6. SEMESTER-END ASSESSMENT ACTIVITIES

6.1 Setting of semester-end summative assessment question papers will be coordinated by the lead instructor assigned for a particular course. Two sets of question papers will be submitted latest by 12th week of the semester.

6.2 There shall be 'Summative Assessment Question Paper Scrutiny Committee' which would be constituted with external experts. Experts are empowered to modify/ rephrase the questions to maintain a high standard of the semester-end assessment. The review should be completed by the 14th week of the semester. The review process will be coordinated by a committee of School Dean, HoDs and external experts.

6.3 The question wise marks scored in the summative assessment out of a total of 80 will be made available online within two weeks from the last date of examination and would be kept active for 24 hours. Latest by the end of 48 hours from the instant of notification any candidate can submit an appeal online providing question wise claim.

6.4 Claims for re-assessment on P-based courses are not allowed.

6.5 The appeals will be attended within next three working days. Fees for appeal, as decided from time to time, has to be remitted online along with the appeal.

6.6 Final results and grades will be computed as explained in the next section

6.7 Final results and grades shall be announced within four weeks of completion of the last examination of the summative assessment (within two weeks from the last date of appeal). Grades are published on the University website, and also informed to the parents and students through SMS.

6.8 Provisional Grade cards will be issued within two weeks after the announcement of grades. Grade card will contain three parts. Part 1: Details of successfully completed courses. Part 2: Details of 'I' grade courses. Part 3: Details of 'R' grade courses.

7 COMPUTATION OF GRADING

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

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

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

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

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

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

7.6 After relative grading, a student is assigned a 'Letter Grade (G)' for each course as per Table (4). The grade and the corresponding letter grade represent the outcomes and assessments of a student's performance in a course.

Table 4: Grading information

Relative Grading Range (P)	Category	Grade (G)
10.00	Outstanding	O
≥ 9.00 to 9.99	Excellent	S
≥ 8.00 to 8.99	Very good	A
≥ 7.00 to 7.99	Good	B
≥ 6.00 to 6.99	Fair	C
≥ 5.00 to 5.99	Average	M
Transitional Grade	Repeat	R
Transitional Grade	Incomplete	I

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8. SUPPLEMENTARY EXAMINATIONS

8.1 The supplementary examinations shall be conducted once in summer semester. Notifications will be released by the examination section informing the students about registration procedures, details of fee and timetables. Apart from these examinations the students who have courses with 'I'-grade can also write the supplementary examinations along with regular semester-end examinations of that academic (Odd / Even) semester.

8.2 Whenever a candidate clears courses with 'I' grade in a supplementary examination that are conducted during a regular semester, the Threshold value for computing his / her grade will be obtained from the same batch in which he / she had completed his/ her formative assessment.

8.3 Whenever a candidate clears courses with 'R' / 'I' grade in a summer semester, the Threshold value for computing his / her grade will be carry forwarded from the preceding Odd / Even semester for the respective courses.

8.4 Whenever a candidate clears courses with a 'R' grade in a regular semester along with his / her junior batch then even 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 i^{th} course registered in the semester under consideration.

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

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. Agricultural Engineering of 182 credits.

Accordingly, the computations will be as below:

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

Where

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

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

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

and $\sum C_j = 187$

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 (5) given below:

Table 5 : Class / Division information.

Sl. No.	CGPA	Class / Division
1	≥8.00	First class with Distinction
2	≥7.00 to 7.99	First class
3	≥6.00 to 6.99	Second class
4	≥5.00 to 5.99	Pass

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 fulfil 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. 182 credits for the award of B. Tech. Agricultural Engineering.

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 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-1).

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

12.2 Volunteer 'Drop' with Sabbatical Semester option

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

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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. Agricultural Engineering, 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 (Hons.) Agricultural Engineering 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.

12.3 Volunteer 'Drop' with Semester Drop option

A candidate may exercise his option to voluntarily exit from B.Tech. Agricultural Engineering programme temporarily for a semester, 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 (12.2) shall be applicable for the candidates utilizing semester drop option.

13. INTERPRETATION OF RULES

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

b) For the matter(s) NOT covered herein above or for unforeseen circumstances, but arising during the course of the implementation of the above regulations. The Vice-Chancellor shall be authorized to remove the difficulties and decide upon the matters. The same shall be reported in the next meeting of Academic Council for ratification and subsequently informed to 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.

Procedure and explanation to any section can be floated by the office of Dean AAA as applicable from time to time with due approval by the chairman of Academic Council.

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ANNEXURE -1

INTER – INSTITUTE 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 admission policy as mentioned below.

PROCEDURE

- Admissions are only at the beginning of an academic year and depends on availability of vacancies in the respective program.
- The courses studied by the candidates elsewhere will be mapped with the courses offered by VFTSR and the committee may suggest for study of additional courses for maintaining credit equivalency or for satisfying pre-requisites. The committee may also recommend the plan of study for the courses identified.
- After admission, the student has to submit the following documents
    - Migration certificate
    - Grade card / Marks Memo
    - "No objection certificate (NOC)" from the concerned Institute / University where the candidate completed part of the programme.
- Provisional admission of the candidates will be confirmed only after verification of the authenticity of the certificates from the concerned authorities.
- Min. 50% of the credits have to be earned at VFSTR.
- Courses which are completed by the candidate in the previous institute will be transferred as recommended by the equivalence committee under credit cum grade transfer. Inclusive these credits the candidate has to complete the credit requirements as per VFSTR.
- Consolidated grade card / transcript will clearly show the credits under credit transfer and corresponding CGPA and credits earned in VFSTR and corresponding CGPA. Overall CGPA may also be indicated.

EXTENSION:

VFSTR candidates may also be permitted to earn credits up to max of 20% by the way of credit transfer from taking up the courses from other institutes of repute.

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COURSE STRUCTURE - R22

I Year I Semester

Course Code	Course Title	L	T	P	C
22BEAS101	Ordinary Differential Equations and Linear Algebra	1	2	2	3
22BEAS102	Physics for Agricultural Engineers	2	0	2	3
22BEAS103	Chemistry for Agricultural Engineers	2	0	2	3
22BEAS104	Principles of Agronomy	2	0	2	3
22BEAS105	Environmental Science and Disaster Management	2	0	2	3
22BEAS106	Engineering Mechanics	2	2	0	3
22BEAS107	Engineering Drawing	0	0	3	2
22BEAS108	Communication Skills and Personality Development	1	0	2	2
22BEAS109	Workshop Technology and Practices	1	0	4	3
Total		**13**	**4**	**19**	**25**

I Year II Semester

Course Code	Course Title	L	T	P	C
22BEAS110	Advanced Calculus and Partial Differential Equations	1	2	2	3
22BEAS111	Surveying and Levelling	1	2	2	3
22BEAS112	Fluid Mechanics and Open Channel Hydraulics	1	2	2	3
22BEAS113	Principles of Soil Science	2	0	2	3
22BEAS114	Computer Programing and Data Structures	1	2	2	3
22BEAS115	Applied Electronics and Instrumentation	2	0	2	3
22BEAS116	Strength of Materials	1	0	2	2
22SA101	Physical Education, Sports and Games-1	0	0	2	1*
22SA102	Orientation Session	-	-	6	3*
22TP101	Constitution of India	0	2	0	1*
Total		**9**	**10**	**16**	**25**

COURSE STRUCTURE - R22

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II Year I Semester

Course Code	Course Title	L	T	P	C
22BEAS201	Mathematical Methods	1	2	2	3
22BEAS202	Principles of Horticultural Crops and Plant Protection	1	0	2	2
22BEAS203	Heat and Mass Transfer	1	2	0	2
22BEAS204	Soil Mechanics	1	0	2	2
22IADE201	Ground Water, Wells and Pumps	2	0	2	3
22SWCE201	Watershed Hydrology	1	0	2	2
22BEAS205	Theory of Machines	1	2	0	2
22BEAS206	Electrical Machines and Power Utilization	2	0	2	3
22BEAS207	Entrepreneurship Development and Business Management	2	0	2	3
Total		**12**	**6**	**14**	**22**
		32 Hrs			

II Year II Semester

Course Code	Course Title	L	T	P	C
22BEAS208	Thermodynamics, Refrigeration and Air Conditioning	2	0	2	3
22BEAS209	AutoCAD Applications	0	0	4	2
22BEAS210	Machine Design	1	2	0	2
22FMPE201	Tractor and Automotive Engines	2	0	2	3
22PAFE201	Engineering Properties of Agricultural Produce	1	0	2	2
22IADE202	Irrigation Engineering	2	0	2	3
22SWCE202	Soil and Water Conservation Engineering	2	0	2	3
22REE201	Fundamentals of Renewable Energy Sources	2	0	2	3
22ELCT201/202/203/204	Elective Course-1	2	0	2	3
Total		**14**	**2**	**18**	**24**
		34 Hrs			

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COURSE STRUCTURE - R22

III Year I Semester

Course Code	Course Title	L	T	P	C
22BEAS301	Building Construction and Cost Estimation	1	2	0	2
22FMPE301	Tillage and Sowing Operation	2	0	2	3
22PAFE301	Agricultural Structures and Environmental Control	2	0	2	3
22PAFE302	Post-Harvest Engineering of Cereals, Pulses and Oilseeds	1	2	2	3
22IADE301	Sprinkler and Micro Irrigation Systems	1	0	2	2
22SWCE301	Watershed Planning and Management	1	0	2	2
22REE301	Renewable Power Sources	1	2	2	3
22BEAS302	Design of Structures	1	0	2	2
22FMPE302	Tractor and Farm Machinery Operation and Maintenance	0	2	2	2
22ELCT201/202/203/204	Elective Course-2	2	0	2	3
Total		**12**	**8**	**18**	**25**
		38 Hrs			

III Year II Semester

Course Code	Course Title	L	T	P	C
22FMPE303	Intercultural, Harvesting and Threshing Equipment	2	0	2	3
22PAFE303	Post-Harvest Engineering of Horticultural Crops	1	0	2	2
22SWCE302	Water Harvesting and Soil Conservation Structures	2	0	2	3
22PAFE304	Dairy and Food Engineering	1	2	2	3
22REE302	Bio-Energy Systems: Design and Applications	2	0	2	3
22BEAS303	Web Designing and Internet Applications	1	0	2	2
22IADE302	Drainage Engineering	1	0	2	2
22FMPE304	Tractor Systems and Controls	2	0	2	3
22ELCT201/202/203/204	Elective Course-2	2	0	2	3
Total		**14**	**2**	**18**	**24**
		34 Hrs			

COURSE STRUCTURE - R22

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IV Year I Semester

Course Code	Course Title	L	T	P	C
22SDT401	Skill Development Training-I	0	0	10	5
22SDT402	Skill Development Training-II	0	0	10	5
22ELP401	Experiential Learning on Campus	0	2	18	10
Total		0	2	38	20
		40 Hrs			

IV Year II Semester

Course Code	Course Title	L	T	P	C
22IAP401	Internship	0	2	18	10
22ET401	Educational Tour	0	0	4	2*
22PPRW401	Project Planning and Report Writing	0	2	18	10
Total		**0**	**4**	**40**	**22**
		44 Hrs			

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COURSE STRUCTURE - R22

Department Electives

Course Code	Course Title	L	T	P	C
SOIL & WATER CONSERVATION ENGINEERING					
22ELCT201	Floods and Control Measures	2	0	2	3
22ELCT202	Wasteland Development	2	0	2	3
22ELCT203	Remote Sensing and GIS Applications	2	0	2	3
22ELCT204	Management of Canal Irrigation System	2	0	2	3
FARM MACHINERY & POWER					
22ELCT301	Precision Farming Techniques for Protected Cultivation	2	0	2	3
22ELCT302	Hydraulic Drives and Controls	2	0	2	3
22ELCT303	Tractor Design and Testing	2	0	2	3
22ELCT304	Farm Machinery Design and Production	2	0	2	3
FOOD PROCESS ENGINEERING					
22ELCT305	Food Quality and Control	2	0	2	3
22ELCT306	Food Packaging Technology	2	0	2	3
22ELCT307	Development of Processed Products	2	0	2	3
22ELCT308	Process Equipment Design	2	0	2	3

ABSTRACT OF TOTAL CREDITS DISTRIBUTION WITH HOURS R 22

Semester	Credits	Hours
I	25 (14+11)	13+4+19=36
II	25 (13+12)	9+10+16=35
III	22 (15+7)	12+6+14=32
IV	24 (15+9)	14+2+18=34
V	25 (15+10)	12+8+18=38
VI	24 (15+9)	14+2+18=34
VII	20 (0+20)	0+2+38=40
VIII	22 (0+22)	0+4+40=44
Total	**187**	**293**

Total Credits for 4 years (8 Semesters): ICAR 182 Credits

Credit Hours @ 35 per Week in a Semester: 8 x 35 = 280 Credit Hours: 293