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# NAAC PEER TEAM VISIT



Criterion II

Teaching – learning and Evaluation

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#### INTRODUCTION

VVCET, being an affiliated institution under Anna University Chennai. The undergraduate programs at our college admit students through the Single Window Admission System managed by the Directorate of Technical Education, while admission to the postgraduate courses is based on the Tamil Nadu Common Entrance Test conducted by Anna University and Consortium. We have implemented various initiatives to support rural and underprivileged students, including offering bridge courses before the commencement of the degree program. The admission process of the first and direct second year is transparent and regulated by the Directorate of Technical Education (DOTE), Government of TamilNadu. Students from different diversity including category, gender and locality are enrolled in the institution.

We have implemented various initiatives to support rural and underprivileged students, including offering bridge courses before the commencement of the degree program. Each semester, we prepare academic calendars at the institutional and departmental levels in accordance with Anna University guidelines.

Our primary focus in the teaching and learning process is experiential, participative, and problem-solving learning. We encourage ICT-friendly teaching through platforms such as the ILMS, Google Classroom, and PowerPoint presentations. Our central library is stocked with the latest textbooks and reference materials, and we provide online access to journals and e-resources for all students.

We have also established a mentoring system to address academic and stress related issues faced by our students. Additionally, we identify both advanced and slow learners and provide tailored programs and support to meet their needs. Our approach includes remedial classes, bridge courses, and counseling for slow learners. Throughout the semester, we conduct Class Committee meetings to communicate departmental rules and regulations, discuss syllabus completion, and gather feedback on academic and administrative challenges.

Our internal assessment mechanism is transparent and robust, and we have established a time-bound and efficient process to handle examination-related grievances. We ensure that both teachers and students are well-informed about program outcomes and course outcomes.

Furthermore, our institution practices outcome-based education by defining appropriate Program Outcomes (POs), Program Specific Outcomes (PSOs), and Course VIDYAA VIKAS COLLEGE OF ENGINEERING AND TECHNOLOGY

CRITERION - II

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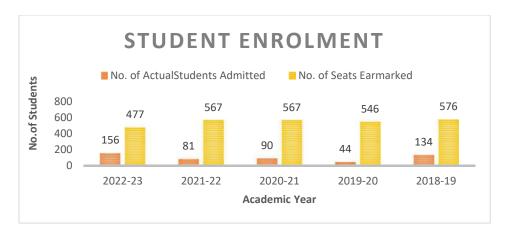
Outcomes (COs) for all programs, and we communicate this information to our faculty and students. We consistently measure student performance based on the attainment of learning outcomes in each program and incorporate appropriate improvement measures in content delivery, assessment, and evaluation to enhance skills and competencies.

### 2.1 Student Enrolment and profile

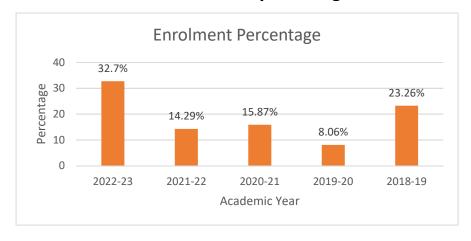
# 2.1.1.1 Number of seats filled year wise during last five years (Only first year admissions to be considered)

#### 2.1.1.2 Number of sanctioned seats year wise during last five years

Academic Year	2022-23	2021-22	2020-21	2019-20	2018-19
No. of Actual Students Admitted	156	81	90	44	134
No. of Seats Earmarked	477	567	567	546	576



#### 2.1.1 Enrolment percentage



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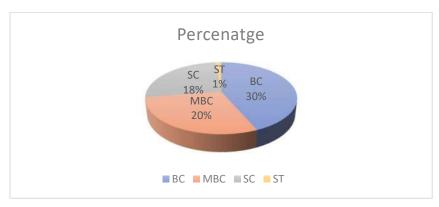
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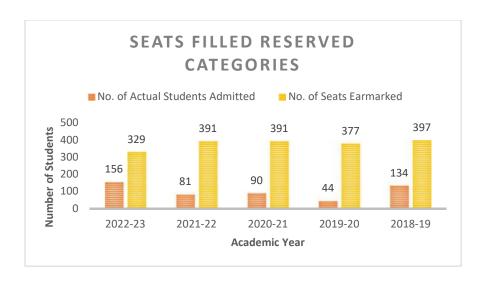
#### 2.1.2 Average percentage of seats filled against reserved categories

- 2.1.2.1 Number of actual students admitted from the reserved categories year wise during last five years
- 2.1.2.2 Number of seats earmarked for reserved category as per GOI/ State Govt rule year wise during the last five years

### Reservation Policy followed in the state of Tamilnadu



Academic Year	2022-23	2021-22	2020-21	2019-20	2018-19
No. of Actual Students Admitted	156	81	90	44	134
No. of Seats Earmarked	329	391	391	377	397



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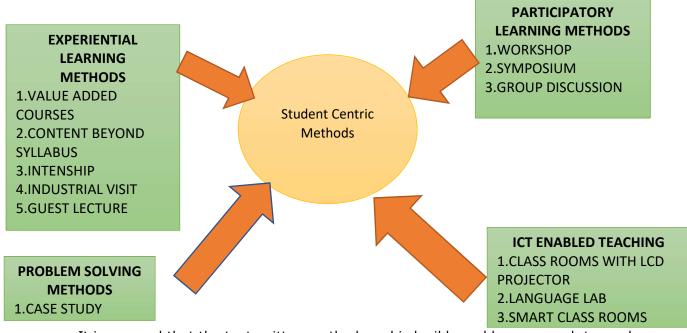
### 2.2 Student Teacher Ratio

#### 2.2.1 Student - Full time Teacher Ratio

	Total number of	Total number of full-	Students -
Academic Year	students enrolled in	time teachers in the	
	the institution	institution	Teacher Ratio
2022-23	501	132	1:4

### 2.3 Teaching- Learning Process

2.3.1 Student centric methods, such as experiential learning, participative learning and problem-solving methodologies are used for enhancing learning experiences and teachers use ICT- enabled tools including online resources for effective teaching and learning process.



It is ensured that the text written on the board is legible and large enough to read from the last bench of the room. The faculty use the green board most of the time and effectively uses the entire board by Partitioning them into columns to ensure the flow. The students take notes of whatever is presented to them on the board. The faculty also provide enough time for students to draw the illustrations/ figures on the board. Any new term introduced to the students is written on the board to ensure they learn it correctly

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on the first attempt. Faculty also makes use of colored chalk to provide differential emphasis to students.

#### **Description about centric methods**

The institution provides different centric learning methods by creating a good atmosphere through which the students think in different way, answers and pose queries. Faculties, by playing an important role of facilitators, create discussions in classrooms among students and let the brainstorming evolve from student's perspective. By different experiential learning and participative leaning activities, the students can able to broaden their scope of education by imparting valuable thinking. During the tutorial hours the students are stimulated their own way of thinking by building problems/case studies by providing individual attention to them. The faculties are encouraged to undergo different workshop activities, short term Training programs, Faculty Development Programs, online courses for effective design and exercise the student centric activities. For better classroom teaching, the teachers are advised to follow an academic plan (Lesson Plan), which contains the details regarding course objectives, details of contents to be covered, previous years internal and university question papers are referred. Special lectures, different illustration activities, field study, case studies, project-based activities, experimental and group learning methods are included in problem solving methodologies. In order to improve the interactive, collaborative and independent learning process the college organizes guest lecturers and arranges industrial visits to the student. To bring out the course interest during their library hours the students are allowed to utilize digital library with video lectures, e-books and e-journals. The performance of the students is measured through internal and class tests, during practical hours and seminar hours. Our institution followed experiential learning, participatory learning and problem-solving methodologies for enhancing learners' learning experience. Various Participatory learning activities followed in our institution.

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#### **EXPERIENTIAL LEARNING METHODS**

- Department conducts add-on/ value added programs to support students in their experiential learning.
- Value-added courses can help students gain practical exposure, industry insights, certification, networking, and career guidance.
- Laboratory Sessions are conducted with content beyond syllabus experiments.
- Internship -Students get hands on training while working in the company.
- Industrial Visits to engage them in experiential learning.
- Guest lectures by eminent experts from industry and academics are organized to provide experiential learning.

#### **Workshop to provide Experiential Learning**

Practical exposure is provided by conducting hands on wokshops and value added courses.



#### Add-on/ value added programs

Courses aim to provide learner centric technical training. The main objectives of the program are:

- To provide students an understanding of the expectations of industry.
- To improve employability skills of students
- To bridge the skill gaps and make students industry ready.
- To provide an opportunity to students to develop inter-disciplinary skills.

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Academic Year	2022-23	2021-22	2020-21	2019-20	2018-19
No. of value added courses conducted	20	20	05	06	05
No.of Students Completed	410	290	312	436	673



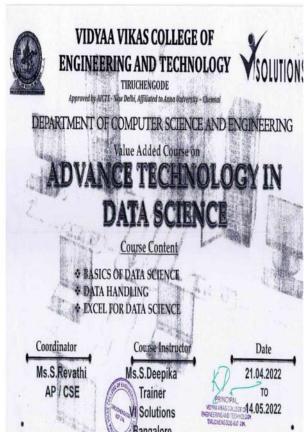
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#### **CONTENT BEYOND EXPERIMENT**

In our institution we are conducting laboratory sessions as per Anna University Chennai Curriculum. We are conducting content beyond syllabus experiments for each laboratory to meet PO and CO.

S.NO.	DEPARTMENT	LABORATORY DETAILS
1		Problem Solving and Python Programming Laboratory
2	Science and	Engineering Practices Laboratory
3	Humanities	Physics Laboratory
4		Chemistry Laboratory
5		Computer Aided Machine Drawing
6		Manufacturing Technology Laboratory
7		Strength of Materials and Fluid Machinery Laboratory
8	Mechanical Engineering	Thermal Engineering Laboratory
9		Metrology And Dynamics Laboratory
10		CAD/CAM Laboratory
11		Heat Transfer Laboratory
12		Electronic Devices and Circuits Laboratory
13		Electrical Machines Laboratory - I
14		Electrical Machines Laboratory – I
15	EEE	Linear and Digital Circuits Laboratory
16		Microprocessor and Microcontroller Laboratory
17		Control and Instrumentation Laboratory
18		Power Electronics Laboratory
19		Power System Laboratory

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S.NO.	DEPARTMENT	LABORATORY DETAILS		
20		C Programming and Data Structures Laboratory		
21		Data Structures Laboratory		
22		Object Oriented Programming Laboratory		
23	CSE	Data Science Laboratory		
24		Operating Systems Laboratory		
25		Database Management Systems Laboratory		
26		Computer Networks Lab		
27		CIRCUIT ANALYSIS LABORATORY		
28		Electronic Devices and Circuits Laboratory		
29		Digital Electronics Lab		
30	ECE	Communication Systems Laboratory		
31		Digital Signal Processing Lab		
32		Linear Integrated Circuits Laboratory		
33		VLSI Laboratory		
34		Surveying and Levelling Laboratory		
35		Water and Wastewater Analysis Laboratory		
36		Hydraulic Engineering Laboratory		
37	Civil	Materials Testing Laboratory		
38		Soil Mechanics Laboratory		
39		Highway Engineering Laboratory		
40		Building Drawing and Detailing Laboratory		

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#### **Department of Civil Engineering**

#### **Strength of Materials Lab**



Fig: 1 Students are doing Experiments in Strength of material lab

Strength of material laboratory provides the basic knowledge of strength of materials and the students can perform different tests on variety of materials. Experiments are performed to measure the properties of materials such as impact strength, tensile strength, compressive strength, hardness, etc.

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# Department of Mechanical Engineering Fluid Mechanics Lab



Fig: 2 Students are doing Experiments in Fluid Mechanics Lab

This Laboratory consists of flow measurement devices, head loss measurement in pipe flow, impact of water jet on vanes, flow visualization apparatus, hydraulic pumps and turbines. The students will experimentally demonstrate the knowledge gained from fluid mechanics.

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#### DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

#### **Measurement and Instrumentation Lab**



Fig 3: Students are doing Experiment in Measurement and Instrumentation Lab

In industrial processes, measurement and efficient control of parameters plays a crucial role so as to maintain the quality of the products produced and the process behind it. The Main Objective is to impart knowledge on handling various measurement devices, sensors and control units.

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# **Department of Electronics and Communication Engineering**

### **Digital Electronics Lab**



Fig 4: Students are doing Experiment in Digital System Design Lab

Digital systems are designed to store, process, and communicate information in digital form. They are found in a wide range of applications, including process control, communication systems, digital instruments, and consumer products. Students learn to navigate and manage the technical constraints of a project while considering business and brands.

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**Department of Computer Science and Engineering** 

**Data Science Lab** 



#### **Activities and Objectives**

- To apply quantitative modeling and data analysis techniques to the solution of realworld business problems, communicate findings, and effectively present results using data visualization techniques.
- To demonstrate knowledge of statistical data analysis techniques utilized in business decision making.
- To apply principles of Data Science to analyze the business problems.
- To develop a basic understanding of the building blocks of Artificial Intelligence as presented in terms of intelligent agents: search, knowledge representation, inference, logic, and learning.
- To apply algorithms to build machine intelligence.

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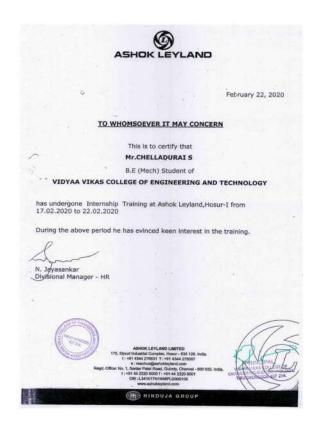
### **Internship**

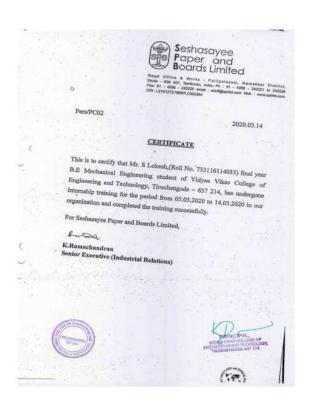
Internships assist students in developing, enhancing, and applying their communication, leadership, problem-solving, and critical-thinking skills. It allows students to reflect on their professional experiences and demonstrate their potential, proficiency, and talents.

In our Institution we encourage the students to undergo internship during summer and winter holidays.

#### **Importance of Internship for Engineering Students**

- Real-World Application of Knowledge. Classroom lectures and textbooks provide students with valuable theoretical knowledge.
- Skill Enhancement.
- Networking Opportunities.
- Insight into Industry Dynamics.
- Resume Building and Career Opportunities.



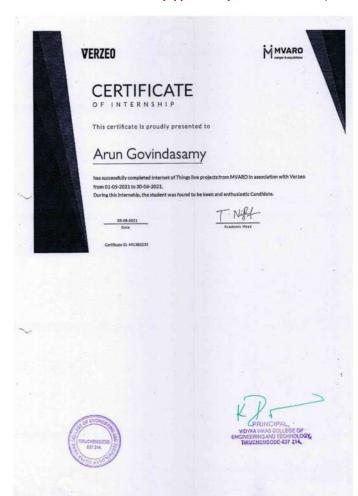


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# **INDUSTRIAL VISIT**

Main aim of industrial visit is to provide an exposure to students about practical working environment. They also provide students a good opportunity to gain full awareness about industrial practices.

Industrial visits are not merely educational outings; they are transformative experiences that mold well-rounded individuals prepared for the challenges of the professional world.

#### **INDUSTRIAL VISIT-KODAI FM-Report**

Duration: Two Days (23.09.2022 & 24.09.2022)

Number of Students: 16 Girls

Departments: Civil, CSE, ECE, EEE & Mech -Girls

Accompanied Faculty Members: Mr. B.Ravi ASP/Phy, Mr. S.Vigneshwaran AP/Eng,

Ms. P.Amutha AP/Che, Ms A. Sharlin AP/EEE

Company Name: Kodai FM 100.5 Hz, Kodaikanal

#### Day 1 (23.09.2022)

On 23.09.2022 at 2.30 Am, 16 Girls students of all departments and 4 faculty members left the college campus for an industrial visit to KODAI FM 100.5, Kodaikanal. We reached majestic Silver cascade waterfalls at 9.00 Am. Students enjoyed the beauty of the falls. After we took breakfast at a hotel, we entered marvelous man made water body and Heart of Kodaikanal, Star Lake at 11.00 am. Our students enjoyed the raiding bicycles, horses & boats to roam around seven kilometer stretch of the star shaped stunning Lake and Bryant Park in kodaikanal. Accommodation was arranged in Sri Sathya Sai Seva Organization, Kodaikanal.

We visit Kodai FM 100.5Hz at 4.00 pm, Team was welcomed by Radio Jockey Mr. John Brito and his collegues , our students are shown the each and every part of the broadcasting center and its operation such as preparing, reharsaling , and broadcasting of the events(programmes) in Kodai FM . Students and staff members are interviewed and this interview was said to be propagated in upcoming days. Our students are get knowledge on different stages of functioning of telecasing programmes in frequecy Modulation.

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Then we visit Rose garden. We were mesmarized by the beauty and variety of colourful roses and returned to Sri Sathya Sai Seva Organization, Kodaikanal at 7.00 pm.

#### Day 2 (24.09.2022)

Second day In kodaikanal starts with divine bajan and speech by Sairam, Sri Sathya Sai Seva Organization, Kodaikanal. Then after breakfast we visit Moir point, Pine Forest, Guna Cave, Pillar Rock and Green Valley. We were confirmed that kodaikanal is indeed the 'princesses of hills'. The winter season blankets the valley with a white mist that associate to form a panoramic visual that is incomparable to anything else we have ever seen.

After Lunch in a hotel, we came down from the wonderful white cloud-painted mountains, and reached Palani Arulmigu Dhandayuthapaniswamy Temple at 7.00pm and get darshan and took dinner. We started our journey to our college and reached at 11 pm.



**Majestic Silver Cascade Waterfalls** 

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Sri Sathya Sai Seva Organization, Kodaikanal



At Kodai FM 100.5Hz, Kodaikanal.

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Recording the interview at Kodai FM 100.5Hz, Kodaikanal

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#### INDUSTRIAL VISIT TO KKNPP- SUMMARY

**Date of Visit:** 09-06-2023 **Duration:** 9.30am - 4.30 pm.

Class: I & All Branches Students: 53

Accompanied faculty members: 1.Mr. B.Ravi ASP/Phy,

2. Mr.K.S.Gowtham AP/Mech,

3. Mrs.J.Padmapriya AP/Maths

4. Mrs.S.Gomathi AP/Maths

Company Name : Kudankulam Nuclear Power Plant

Keloor - Kudankulam Road, Kudankulam,

Tirunelveli, Tamil Nadu

Name of the Engineer : 1. R. Velmail Murugan

Member, Public Awareness Committee

9489046177.

2. Mr. A.V.Sathish,

Manager, Public Awareness and Press Relation

9488643657.

#### **Report**

#### Day one (08.06.2023)

On 07.06.2023 at 10.0 PM, a group of 53 First year students and 4 faculty members left the college campus in two buses for an Industrial Visit to KKNPP. On Thursday (08.06.2023) at 5.30 am, the members reached Kanyakumari. Accommodation was arranged in the hotels Triveni Tourist home and Raja Palace. All the members reached the seashore at 5.45 AM. It was a great feast for everyone's eyes to see the Sun emerging from the waters far away. After taking the breakfast, we went to Suchindram temple which is dedicated to three different deities represented by one image in the sanctum and is called **Sthanumalayam** (Sthanu-Shiva; Maal-Vishnu and Ayam-Brahma) kovil. The temple is rich in sculpture and architecture and Thiruparapu falls, which is having 50 feet height, there we took nice bath. Everybody was spell bound with falling water and nature. After having lunch, we returned to Kanyakumari to see the marvelous sun set in the sea shore. There, we saw the wonders

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of the sites, the famous Vivekananda rock memorial, which is an inspiring site and Thiruvalluvar's rock where a gigantic statue (133 feet) high of Thiruvalluvar attracts people from all over the world. Next, we visited Gandhi mandapam a memorial for the father of our nation. then we returned to hotel take rest.

#### Day Two (09.06.2023)

The second day, our team started our journey to Kudankulam Nuclear Power Project (KKNPP) on an Industrial Visit.

The team was welcomed by the Project Engineer. Before entering the power generating section, an orientation lecture was given by Mr.N.K.Asokan, the Scientific Officer in the auditorium specially meant for this purpose. The importance of power in the light of the production and consumption was clearly remarked by the project Engineer. There was a wonderful interaction between the students, staff and the project Engineer.

The Students were divided into groups and special talented persons were allotted. They explained in detail about the functioning of the Project. The team was taken quite near the sea shore and everybody enjoyed the sight besides understanding the way in which the Project functions. KKNPP officials offered tea, snacks and lunch to all the participants. At 4.00 pm the team left the campus and started journey towards their native place. Through this visit, we understood the concepts behind the power production and distribution from the atomic reactor. And also the risk factors associated with power generation.

#### **CONCLUSION**

Students have experienced the real feel of power generation and safety precautions which is adopted in KKNPP. This will help students to understand how the electricity is produced from nuclear reactions. We would like to extend our gratitude to KKNPP for giving permission and support to make our visit as a successful and memorable one.

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#### **GALLERY**









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#### **INDUSTRIAL VISIT TO -DODDAPETTA TEA FACTORY AND MEUSIUM**

**Date of Visit:** 08-03-2024 **Duration:** 2.00pm - 4.30 pm.

Year & Branch: I & CSE, CSE (SC), AI&DS, ECE, EEE and MECH Students: 50 (22 Boys

+28 Girls)

Accompanied faculty members: 1.Mr. B.Ravi ASP/Phy,

Mr.Danaseelan PL/CSE,
 K.T.Jawahar AP/MBA,

4. Mrs.G.Sowmiya AP/CIVIL

5. Mrs.Pattu PL/MBA

Company Name : DODDAPETTA TEA FACTORY AND MEUSIUM

Doddapetta Road,. Udhagamandalam, Tamil Nadu

Name of the Contact Person : 1. Mr. Diwahar,

Doddapetta Tea Factory and Museum

Ph: 7010240816

Mail:dtfstock@gmail.com

#### **REPORT**

#### Day one (8.03.2024)

On 07.03.2024 (Thursday) at 11.0 PM, a group of 50 first year students and 5 faculty members, left the college campus in two buses for an Industrial Visit to Doddapetta Tea Factory And Museum, Ooty. On Friday (08.03.2024) at 6.30 am, the members reached Ooty, which is famously known as a misty hill station spread across a lush green carpet in Tamil Nadu that nestles serenely in the Nilgiri District. Accommodation was arranged in Hills Stay Resort. After Refreshing and breakfast, we went to Karnataka Siri Horticulture Garden which is one of the best gardens maintained by Karnataka in Tamil Nadu. The real enjoyment is on seeing each and every trees and plants and huge garden with a hanging Bridge. Beautiful tea garden view from the bridge is really wonderful. Then we visited to boating house which has man-made lake in an elegant way to enjoy the serene view and rich biodiversity.

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After having lunch, we visited to **Doddapetta Tea Factory And Museum** as an Industrial Visit, which is among the highest-elevation tea factory of the Nilgiris, established 15 years ago, with a view to produce and promote purely authentic Nilgiri teas. We studied the process involving in manufacturing of different types of tea and chocolates from it raw materials. Next, we visited Government Botanical Garden in Udhagamandalam which is maintained by the Tamil Nadu Horticulture Department and I which we saw the fern house that harbors 127 species of ferns; the New Garden, which contains the rose garden, a lot of natural floral carpets and natural ponds, the Italian Garden, the Conservatory, which has lots of groups of flowering plants; and the Nurseries, which contains a series of glass houses having innumerable varieties of exotic plants.. Then we returned to resort take rest.

#### Day Two (9.03.2024)

The second day, our team started our journey to Pykara Lake. The lake is exceptional clean and blue and. set amidst lush greenery. It is an ideal picnic spot and also provides boating facilities. Then we moved to 6th Mile and 9<sup>th</sup> mile which is a The Most Indian movies featured Shooting Spot situated at a distance of exactly 6 miles and 9 miles from Ooty. This tourist spot is green, extensive and replete with dense forest. Next we went to pine forest, the one of the magical wonders for its scenic canvas of tall and magnificent trees.

#### **CONCLUSION**

Our students acquired the knowledge of manufacturing stages and processes of different Tea verities such as masala tea, ginger tea, Black tea, Green tea, Oolong tea, White tea and Yellow tea from the leaves of tea plant i.e., Camellia sinensis plant. We would like to extend our gratitude to officials of Doddapetta Tea Factory for giving permission and support to make our visit as a successful and memorable one.

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#### **ICT FACILITIES**

 ICT enabled teaching includes class rooms with LCD, Language Lab, Smart Class rooms, etc. The institution adopts modern pedagogy to enhance teaching-learning process.

#### ICT FACILITIES

ROOM NUMBER OR NAME OF	TYPES OF ICT FACILITY
CLASSROOMS/SEMINARHALLS WITH	1
LCD/WIFI/LAN FACILITIES WITH	
ROOM NUMBERS	
A106	CONFERENCE HALL -1 (LCD
	PROJECTORS FOR CLASS ROOM
	TEACHING)
	MAIN AUDITORIUM HALL
	(AUDIO/VISUAL TOOLS)
A 401	A.P.J.ABDUL KALAM HALL
	(AUDIO/VISUAL)
A 408	GROUP DISCUSSION HALL
	(PROJECTORS FOR CLASS ROOM
	TEACHING)
A 409	CONFERENCE HALL (LCD
	PROJECTORS FOR CLASS ROOM
	TEACHING)
B216	SEMINAR HALL (SMART CLASSRROM)
II ECE A	LECTURE HALL (SMART CLASS
	ROOM)
B 301	POWER ELECTRONICS LAB
	(INTERNET CONNECTIVITY, WIFI
	NETWORKS)

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#### SEMINAR HALL & LECTURE HALL



#### GROUP DISCUSSION HALL & LCD PROJECTORS CLASSROOM



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#### API ABDUL KALAM HALL



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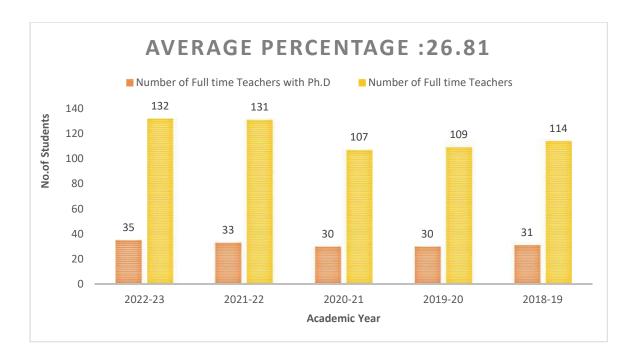
#### 2.4.1.Percentage of full-time teachers against sanctioned posts during the last five years

ACADEMIC YEAR	2022-23	2021-22	2020-21	2019-20	2018-19
Number of sanctioned posts	132	131	107	109	114
Number of Full time Teachers	132	131	107	109	114

# **Average Percentage: 100%**

#### 2.4.2 PERCENTAGE OF FULL TIME TEACHERS WITH NET/SET/SLET/ PH. D. / D.M. / M.CH. / D.N.B SUPERSPECIALITY / D.SC. / D.LITT. DURING THE LAST FIVE YEARS

ACADEMIC YEAR	2022-23	2021-22	2020-21	2019-20	2018-19
Number of Full time Teachers with Ph.D	35	33	30	30	31
Number of Full time Teachers	132	131	107	109	114



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#### 2.5 Evaluation Process and Reforms

# 2.5.1 Mechanism of internal/ external assessment is transparent and the grievance redressal system is time- bound and efficient

Our Institution is affiliated with Anna University, Chennai. The rules and regulations for the internal/external assessment are laid down by the university. The first-year students are made aware of the evaluation processes through induction programs. The university allows 80% marks for the end-semester exams and 20% internal marks. The internal Assessment marks are uploaded to the University web portal periodically based on the assessment schedule provided by the university.

#### **At Institution Level**

Three internal assessment tests (IAT) are conducted per semester. Internal Assessment test Schedules are mentioned in the Academic Calendar of every semester. The timetable for the same is announced two weeks prior to the commencement of the Internal Assessment Test. The seating plan and table marking are followed even for internal assessment tests. Faculty members should set their Course question papers and all the subject question papers duly signed by the Head of the department and Principal are handed over to the internal examination cell four days prior to the respective exam. After the successful completion of the Internal assessment test, internal marks are uploaded to the Institute ERP portal and University web portal as per the University schedule. Students can view their internal marks in their own login to the University. Grievances identified in the internal assessment test for the student are rectified by the internal examination cell Coordinator and Principal.

#### **At University Level**

Students are permitted to appear for the semester examination after they registered for courses according to Anna University regulations. The hall tickets are issued to the students well in advance. Any grievance related to the hall ticket like printing of the wrong name or delay in issuance is addressed by the exam cell. After Successful conduction of the University examination, Students are getting every university semester's result through their own login in the University portal. Grievances identified regarding the Anna University examination results such as applying photocopy, revaluation, and review process for the results they obtained, and other grievances like the correction in the grade sheet (DOB, printing mistakes, duplicate grade sheet, etc.) are rectified by college

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university examination cell and Control of examination of Anna University, Chennai. The issues of the students are addressed with high priority.

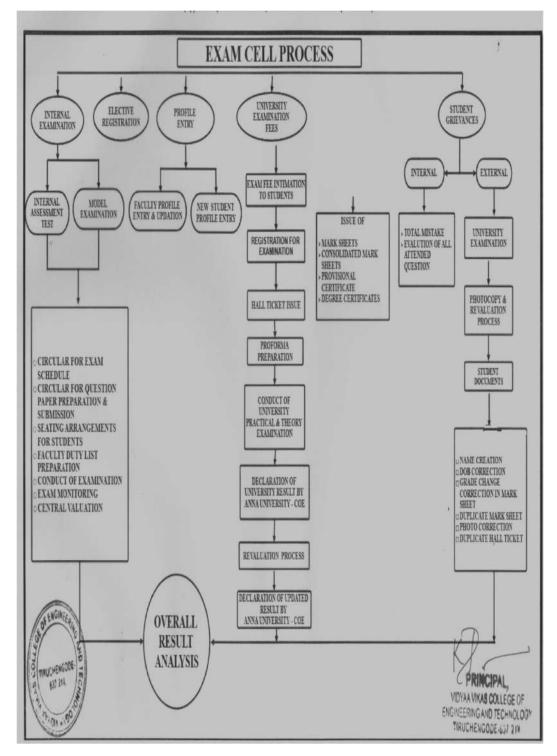
#### **Challenge Evaluation**

If the re-evaluation results are not satisfactory, a student can apply for challenge evaluation within a week after the announcement of the results. This evaluation process is carried out in the presence of students by two subject experts; one represents the institution and the other from the university.

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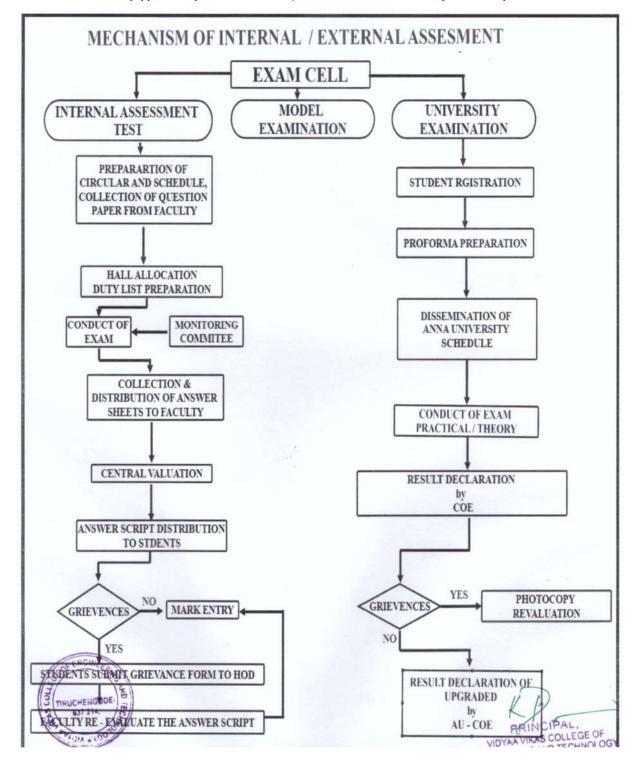
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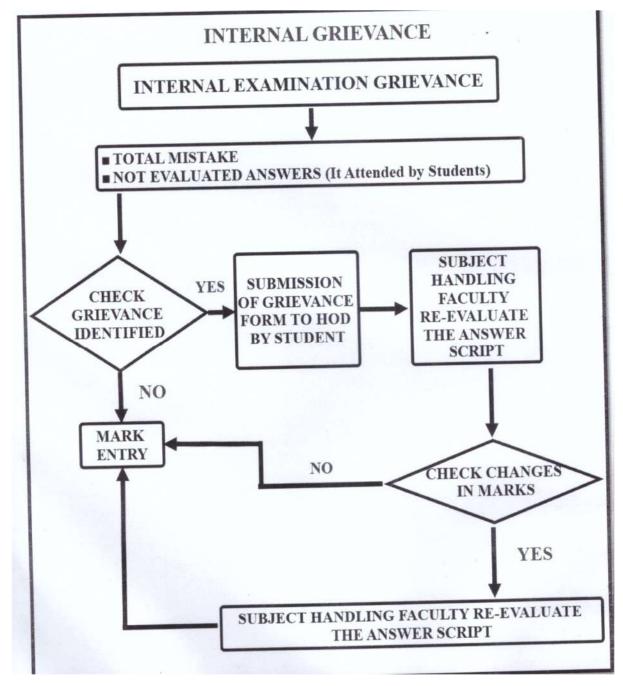
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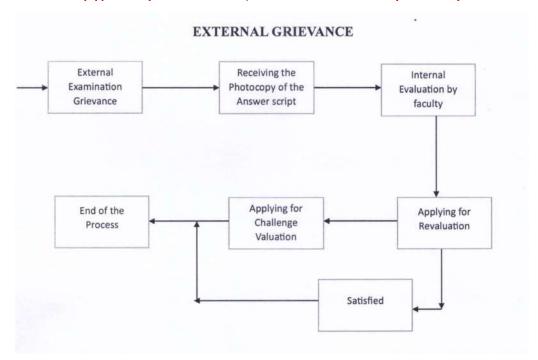


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# INTERNAL ASSESSMENT EXAMINATION GRIEVANCE FORM

## IAT#1 / IAT#2/IAT#3

Name of the Student :

Register Number :

Department :

Year of Study :

Subject Code and Name :

Grievance :

Signature of the Student

Investigation of grivance and Action Taken

Signatur of the HOD

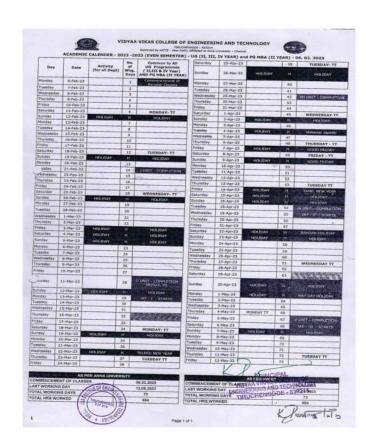
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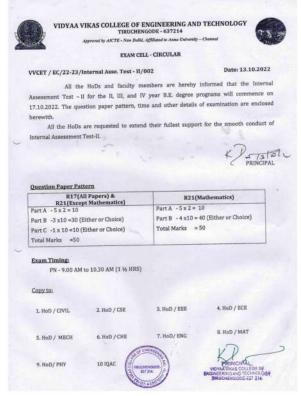
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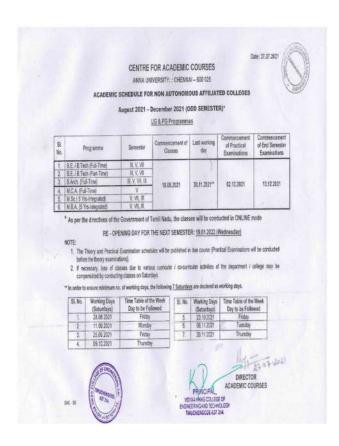
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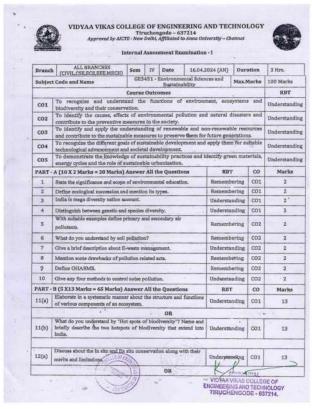
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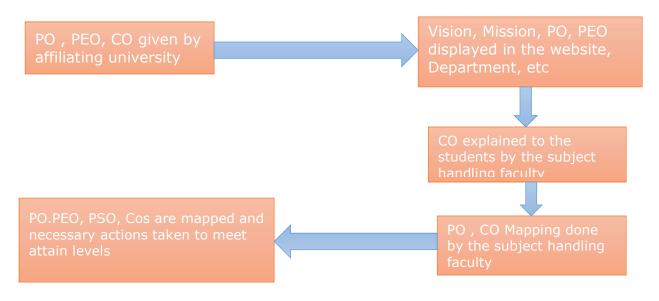
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## 2.6 Students Performance and Learning Outcomes

Our College is affiliated with Anna University, Chennai. The college has well-defined Program Outcomes (POs), Program Specific Outcomes (PSOs), and Course Outcomes (COs) that are based on its Vision and Mission statements and the course content. All faculty members receive a course file that includes POs and COs, which helps them understand the course outcomes and plan lessons accordingly.

The college takes great care to ensure that all stakeholders are informed about POs and COs. They are displayed on the college website, academic regulations, and curriculum book, and are made accessible through faculty members, student induction programs, and faculty meetings.

The curriculum is designed to achieve program outcomes and program-specific outcomes through a set of courses, each with defined course outcomes that are linked to the program outcomes and a set of performance criteria. The course outcomes are directly and quantitatively assessed and are correlated with the program outcomes and program-specific outcomes. The course outcomes of each course are mapped to the program outcomes using a correlation framework. Projects are reviewed by experts from industry to ensure that they align with the learning outcomes, with employability being one of the primary outcomes.



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# **VISION**

"To be a world class Engineering Institution in leading technological and socioeconomic development of the country by enhancing the global competitiveness of technical manpower and by ensuring high quality technical education through dissemination of knowledge, insights and intellectual contributions"

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# **MISSION**

To offer Value based Education to prepare the students to acquire engineering knowledge, to make them fit for jobs, to serve the nation and to mould them as useful citizens with exemplary character.

# **PROGRAM EDUCATIONAL OBJECTIVES (PEOs)**

- To provide the students with a strong foundation in the required sciences in order to pursue studies in Electronics and Communication Engineering.
- 2. To gain adequate knowledge to become good professional in electronic and communication engineering associated industries, higher education and research.
- 3. To develop attitude in lifelong learning, applying and adapting new ideas and technologies as their field evolves.
- 4. To prepare students to critically analyze existing literature in an area of specialization and ethically develop innovative and research-oriented methodologies to solve the problems identified.
- 5. To inculcate in the students a professional and ethical attitude and an ability to visualize the engineering issues in a broader social context.

# PROGRAM OUTCOMES (POs)

- **1. Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- **2. Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

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- **3. Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **4. Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- **5. Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- **6. The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
- **7. Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- **8. Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- **9. Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- **10.Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- **11.Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- **12.Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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## PROGRAM SPECIFIC OUTCOMES (PSOs)

- 1. Design, develop and analyze electronic systems through application of relevant electronics, mathematics and engineering principles
- 2. Design, develop and analyze communication systems through application of fundamentals from communication principles, signal processing, and RF System Design & Electromagnetics.
- 3. Adapt to emerging electronics and communication technologies and develop innovative solutions for existing and newer problems

## **COURSE OUTCOME**

#### I-SEM

#### **HS3152**

#### **PROFESSIONAL ENGLISH I**

CO1	To use appropriate words in a professional context
CO2	To gain understanding of basic grammatic structures and use them in right context.
CO3	To read and infer the denotative and connotative meanings of technical texts
CO4	To write definitions, descriptions, narrations and essays on various topics

#### MA3151

## **MATRICES AND CALCULUS**

CO1	Use the matrix algebra methods for solving practical problems.
CO2	Apply differential calculus tools in solving various application problems.
СОЗ	Able to use differential calculus ideas on several variable functions.
CO4	Apply different methods of integration in solving practical problems.
CO5	Apply multiple integral ideas in solving areas, volumes and other practical problems.

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PH3151		ENGINEERING PHYSICS
CO1	Understand t	he importance of mechanics.
CO2	Express their knowledge in electromagnetic waves.	
CO3	Demonstrate	a strong foundational knowledge in oscillations, optics and lasers.
CO4	Understand the importance of quantum physics.	
CO5	<b>5</b> Comprehend and apply quantum mechanical principles towards the formation of energy bands.	
CY3	151 ENGIN	EERING CHEMISTRY

- **CO1** To infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water.
- CO2 To identify and apply basic concepts of nanoscience and nanotechnology in designing the synthesis of nanomaterials for engineering and technology
- **CO3** To apply the knowledge of phase rule and composites for material selection requirements.
- **CO4** To recommend suitable fuels for engineering processes and applications.
- **CO5** To recognize different forms of energy resources and apply them for suitable applications in energy sectors.

#### **GE3151 PROBLEM SOLVING AND PYTHON PROGRAMMING**

- **CO1** Develop algorithmic solutions to simple computational problems.
- **CO2** Develop and execute simple Python programs.
- **CO3** Write simple Python programs using conditionals and loops for solving problems.
- **CO4** Decompose a Python program into functions.
- **CO5** Represent compound data using Python lists, tuples, dictionaries etc.
- **CO6** Read and write data from/to files in Python programs.

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#### **GE3171 PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY**

CO	L	Develop algorithmic solutions to simple computational problems.
CO	2	Develop and execute simple Python programs.
CO3		Implement programs in Python using conditionals and loops for solving problems.
		Deploy functions to decompose a Python program.
COS	5	Process compound data using Python data structures.
CO	5	Utilize Python packages in developing software applications.
BS31	71	PHYSICS LABORATORY
CO1	Un	derstand the functioning of various physics laboratory equipment.
CO2	Use	e graphical models to analyze laboratory data.
CO3	Use mathematical models as a medium for quantitative reasoning and describing physical reality.	
CO4	Aco	cess, process and analyze scientific information.
CO5	Sol	ve problems individually and collaboratively.
BS3171		CHEMISTRY LABORATORY
CO1		analyse the quality of water samples with respect to their acidity, alkalinity, rdness and DO.
CO2	То	determine the amount of metal ions through volumetric and spectroscopic hniques
соз		analyse and determine the composition of alloys.
CO4	То	learn simple method of synthesis of nanoparticles
COE	Τo	quantitatively analyse the impurities in solution by electroanalytical

techniques

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#### **GE3172**

#### **ENGLISH LABORATORY**

CO1 To listen to and comprehend general as well as complex academic information
 CO2 To listen to and understand different points of view in a discussion
 CO3 To speak fluently and accurately in formal and informal communicative contexts
 CO4 To describe products and processes and explain their uses and purposes clearly and accurately
 CO5 To express their opinions effectively in both formal and informal discussions

### **II SEM**

#### HS3252

#### PROFESSIONAL ENGLISH -II

- **CO1** To compare and contrast products and ideas in technical texts.
- **CO2** To identify and report cause and effects in events, industrial processes through technical texts
- **CO3** To analyse problems in order to arrive at feasible solutions and communicate them in the written format.
- **CO4** To present their ideas and opinions in a planned and logical manner
- **CO5** To draft effective resumes in the context of job search.

#### MA3251 STATISTICS AND NUMERICAL METHODS

- Apply the concept of testing of hypothesis for small and large samples in real life problems.
- Apply the basic concepts of classifications of design of experiments in the field of agriculture.
- Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.
- CO4 Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.
- Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.

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## PH3254 PHYSICS FOR ELECTRONICS ENGINEERING

- **CO1** Know basics of crystallography and its importance for varied materials properties
- **CO2** Gain knowledge on the electrical and magnetic properties of materials and their applications
- CO3 Understand clearly of semiconductor physics and functioning of semiconductor devices
- CO4 Understand the optical properties of materials and working principles of various optical devices
- **CO5** Appreciate the importance of nanotechnology and nanodevices.

#### BE3254 ELECTRICAL AND INSTRUMENTATION ENGINEERING

Explain the working principle of electrical machines
 Analyze the output characterizes of electrical machines
 Choose the appropriate electrical machines for various applications
 Explain the types and operating principles of measuring instruments
 Explain the basic power system structure and protection schemes

## **GE3251 ENGINEERING GRAPHICS**

- **CO1** Use BIS conventions and specifications for engineering drawing.
- **CO2** Construct the conic curves, involutes and cycloid.
- **CO3** Solve practical problems involving projection of lines.
- **CO4** Draw the orthographic, isometric and perspective projections of simple solids.
- **CO5** Draw the development of simple solids.

## EC3251 CIRCUIT ANALYSIS

- Apply the basic concepts of circuit analysis such as Kirchoff's laws, mesh current and node voltage method for analysis of DC and AC circuits.
- **CO2** Apply suitable network theorems and analyze AC and DC circuits
- CO3 Analyze steady state response of any R, L and C circuits
- Analyze the transient response for any RC, RL and RLC circuits and frequency response of parallel and series resonance circuits.
- **CO5** Analyze the coupled circuits and network topologies

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#### GE3271 ENGINEERING PRACTICES LABORATORY

- Draw pipe line plan; lay and connect various pipe fittings used in common household plumbing work; Saw; plan; make joints in wood materials used in common household wood work.
- Wire various electrical joints in common household electrical wire work.

  Weld various joints in steel plates using arc welding work; Machine various simple processes like turning, drilling, tapping in parts; Assemble simple mechanical
- processes like turning, drilling, tapping in parts; Assemble simple mechanical assembly of common household equipments; Make a tray out of metal sheet using sheet metal work.
- Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB.

#### EC3271 CIRCUIT ANALYSIS LABORATORY

- **CO1** Design RL and RC circuits.
- CO2 Verify Thevinin & Norton theorem KVL & KCL, and Super Position Theorems.

#### **GE3272 COMMUNICATION LABORATORY**

- **CO1** Speak effectively in group discussions held in formal/semi formal contexts.
- **CO2** Discuss, analyse and present concepts and problems from various perspectives to arrive at suitable solutions
- **CO3** Write emails, letters and effective job applications.
- **CO4** Write critical reports to convey data and information with clarity and precision
- **CO5** Give appropriate instructions and recommendations for safe execution of tasks

## III SEM

#### MA3355 RANDOM PROCESSES AND LINEAR ALGEBRA

- **CO1** Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.
- **CO2** Accurate and efficient use of advanced algebraic techniques.
- **CO3** Apply the concept of random processes in engineering disciplines.
- CO4 Understand the fundamental concepts of probability with a thorough knowledge of standard distributions that can describe certain real-life phenomenon.
- CO5 Understand the basic concepts of one- and two-dimensional random variables and apply them to model engineering problems.

## CS3353 C PROGRAMMING AND DATA STRUCTURES

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- **CO1** Develop C programs for any real world/technical application.
- **CO2** Apply advanced features of C in solving problems.
- **CO3** Write functions to implement linear and non-linear data structure operations.
- **CO4** Suggest and use appropriate linear/non-linear data structure operations for
- **CO5** Appropriately use sort and search algorithms for a given application.
- Apply appropriate hash functions that result in a collision free scenario for data storage and retrieval.

#### EC3354

#### **SIGNALS AND SYSTEMS**

CO1 Determine if a given system is linear/causal/stable
 CO2 Determine the frequency components present in a deterministic signal
 CO3 Characterize continuous LTI systems in the time domain and frequency domain
 CO4 Characterize discrete LTI systems in the time domain and frequency domain
 CO5 Compute the output of an LTI system in the time and frequency domains

#### EC3353

#### **ELECTRONIC DEVICES AND CIRCUITS**

- **CO1** Explain the structure and working operation of basic electronic devices.
- **CO2** Design and analyze amplifiers.
- **CO3** Analyze frequency response of BJT and MOSFET amplifiers
- **CO4** Design and analyze feedback amplifiers and oscillator principles.
- **CO5** Design and analyze power amplifiers and supply circuits

#### EC3351

#### **CONTROL SYSTEMS**

- **CO1** Compute the transfer function of different physical systems.
- **CO2** Analyse the time domain specification and calculate the steady state error.
- **CO3** Illustrate the frequency response characteristics of open loop and closed loop system response.
- **CO4** Analyse the stability using Routh and root locus techniques.
- **CO5** Illustrate the state space model of a physical system and discuss the concepts of sampled data control system.

#### EC3352

#### **DIGITAL SYSTEMS DESIGN**

- **CO1** Use Boolean algebra and simplification procedures relevant to digital logic.
- **CO2** Design various combinational digital circuits using logic gates.
- **CO3** Analyse and design synchronous sequential circuits.

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- **CO4** Analyse and design asynchronous sequential circuits. .
- **CO5** Build logic gates and use programmable devices

#### EC3361 ELECTRONIC DEVICES AND CIRCUITS LABORATORY

- **CO1** Characteristics of PN Junction Diode and Zener diode.
- **CO2** Design and Testing of BJT and MOSFET amplifiers.
- **CO3** Operation of power amplifiers.

#### CS3362 C PROGRAMMING AND DATA STRUCTURES LABORATORY

- **CO1** Use different constructs of C and develop applications
- **CO2** Write functions to implement linear and non-linear data structure operations
- CO3 Suggest and use the appropriate linear / non-linear data structure operations for a given problem
- Apply appropriate hash functions that result in a collision free scenario for data storage and Retrieval
- **CO5** Implement Sorting and searching algorithms for a given application

#### GE3361 PROFESSIONAL DEVELOPMENT

- CO1 Use MS Word to create quality documents, by structuring and organizing content for their day to day technical and academic requirements
- CO2 Use MS EXCEL to perform data operations and analytics, record, retrieve data as per requirements and visualize data for ease of understanding
- Use MS PowerPoint to create high quality academic presentations by including common tables, charts, graphs, interlinking other elements, and using media objects.

#### **IV SEM**

#### EC3452 ELECTROMAGNETIC FIELDS

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- **CO1** Relate the fundamentals of vector, coordinate system to electromagnetic concepts.
- **CO2** Analyze the characteristics of Electrostatic field.
- CO3 Interpret the concepts of Electric field in material space and solve the boundary conditions.
- **CO4** Explain the concepts and characteristics of Magneto Static field in material space and solve boundary conditions.
- **CO5** Determine the significance of time varying fields.

## EC3401

#### **NETWORKS AND SECURITY**

- **CO1** Explain the Network Models, layers and functions.
- **CO2** Categorize and classify the routing protocols.
- **CO3** List the functions of the transport and application layer.
- **CO4** Evaluate and choose the network security mechanisms.
- **CO5** Discuss the hardware security attacks and countermeasures.

#### EC3451 LINEAR INTEGRATED CIRCUITS

- **CO1** Design linear and nonlinear applications of OP AMPS
- **CO2** Design applications using analog multiplier and PLL
- CO3 Design ADC and DAC using OP AMPS
- **CO4** Generate waveforms using OP AMP Circuits
- **CO5** Analyze special function ICs

#### EC3492 DIGITAL SIGNAL PROCESSING

- **CO1** Apply DFT for the analysis of digital signals and systems
- CO2 Design IIR and FIR filters
- **CO3** Characterize the effects of finite precision representation on digital filters
- **CO4** Design multirate filters

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**CO5** Apply adaptive filters appropriately in communication systems

#### EC3491 COMMUNICATION SYSTEMS

- **CO1** Gain knowledge in amplitude modulation techniques
- CO2 Understand the concepts of Random Process to the design of communication systems
- **CO3** Gain knowledge in digital techniques
- CO4 Gain knowledge in sampling and quantization
- **CO5** Understand the importance of demodulation techniques

## GE3451 ENVIRONMENTAL SCIENCES AND SUSTAINABILITY

- **CO1** To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation.
- To identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society.
- To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations.
- To recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development.
- **CO5** To demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization.

### EC3461 COMMUNICATION SYSTEMS LABORATORY

- **CO1** Design AM, FM & Digital Modulators for specific applications.
- **CO2** Compute the sampling frequency for digital modulation.
- **CO3** Simulate & validate the various functional modules of Communication system.
- CO4 Demonstrate their knowledge in base band signaling schemes through implementation of digital modulation schemes.
- Apply various channel coding schemes & demonstrate their capabilities towards the improvement of the noise performance of Communication system.

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### EC3462 LINEAR INTEGRATED CIRCUITS LABORATORY

CO1	Analyze various types of feedback amplifiers
CO2	Design oscillators, tuned amplifiers, wave-shaping circuits and multivibrators
СОЗ	Design and simulate feedback amplifiers, oscillators, tuned amplifiers, wave-
CO4	Design amplifiers, oscillators, D-A converters using operational amplifiers.
CO5	Design filters using op-amp and perform an experiment on frequency response

#### EC3501 WIRELESS COMMUNICATION

CO1	Understand The Concept and Design of a Cellular System.
CO2	Understand Mobile Radio Propagation and Various Digital Modulation Techniques.
CO3	Understand The Concepts of Multiple Access Techniques and Wireless Networks
CO4	Characterize a wireless channel and evolve the system design specifications
<b>CO5</b>	Design a cellular system based on resource availability and traffic demands.

### EC3552 VLSI AND CHIP DESIGN

CO1	In depth knowledge of MOS technology
CO2	Understand Combinational Logic Circuits and Design Principles
CO3	Understand Sequential Logic Circuits and Clocking Strategies
CO4	Understand Memory architecture and building blocks
CO5	Understand the ASIC Design Process and Testing.

#### EC3551 TRANSMISSION LINES AND RF SYSTEMS

**CO5** Design a RF transceiver system for wireless communication

CO1	Explain the characteristics of transmission lines and its losses.
CO2	Calculate the standing wave ratio and input impedance in high frequency transmission lines.
	Analyze impedance matching by stubs using Smith Charts.
CO4	Comprehend the characteristics of TE and TM waves.

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CEC366 IMAGE PROCESSING

- Know and understand the basics and fundamentals of digital image processing, such as digitization, sampling, quantization, and 2D-transforms.
- CO2 Operate on images using the techniques of smoothing, sharpening and enhancement.
- **CO3** Understand the restoration concepts and filtering techniques.117
- **CO4** Learn the basics of segmentation, features extraction, compression and recognition methods for color models.
- **CO5** Comprehend image compression concepts.

#### CEC365 WIRELESS SENSOR NETWORK DESIGN

- **CO1** To be able to design solutions for WSNs applications
- CO2 To be able to develop efficient MAC and Routing Protocols
- CO3 To be able to design solutions for 6LOWPAN applications
- CO4 To be able to develop efficient layered protocols in 6LOWPAN
- CO5 To be able to use Tiny OS and Contiki OS in WSNs and 6LOWPAN applications

#### CEC345 OPTICAL COMMUNICATION & NETWORKS

- **CO1** Realize Basic Elements in Optical Fibers, Different Modes and Configurations.
- **CO2** Analyze The Transmission Characteristics Associated with Dispersion and Polarization Techniques.
- **CO3** Design Optical Sources and Detectors with Their Use in Optical Communication System.
- **CO4** Construct Fiber Optic Receiver Systems, Measurements and Techniques.
- **CO5** Design Optical Communication Systems and Its Networks.

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#### MX3084 DISASTER RISK REDUCTION AND MANAGEMENT

- To impart knowledge on the concepts of Disaster, Vulnerability and Disaster Risk reduction (DRR)

  To enhance understanding on Hazards, Vulnerability and Disaster Risk
- **CO2** To enhance understanding on Hazards, Vulnerability and Disaster Risk Assessment prevention and risk reduction
- CO3 To develop disaster response skills by adopting relevant tools and technology
- **CO4** Enhance awareness of institutional processes for Disaster response in the country
- Develop rudimentary ability to respond to their surroundings with potential Disaster response in areas where they live, with due sensitivity

#### EC3561 VLSI LABORATORY

- CO1 Write HDL code for basic as well as advanced digital integrated circuit
- **CO2** Import the logic modules into FPGA Boards
- **CO3** Synthesize Place and Route the digital Ips
- CO4 Design, Simulate and Extract the layouts of Digital & Analog IC Blocks using EDA tools
- **CO5** Test and Verification of IC design

#### ET3491 EMBEDDED SYSTEMS AND IOT DESIGN

- **CO1** Explain the architecture and features of 8051.
- **CO2** Develop a model of an embedded system.
- **CO3** List the concepts of real time operating systems.
- **CO4** Learn the architecture and protocols of IoT.
- **CO5** Design an IoT based system for any application.

#### CS3491 ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

- **CO1** Use appropriate search algorithms for problem solving
- **CO2** Apply reasoning under uncertainty
- **CO3** Build supervised learning models
- **CO4** Build assembling and unsupervised models

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**CO5** Build deep learning neural network models

#### CEC352 SATELLITE COMMUNICATION

CO1	Identify the satellite orbits
CO2	Analyze the satellite subsystems
CO3	Evaluate the satellite link power budget
CO4	Identify access technology for satellite
<b>CO5</b>	Design various satellite applications

#### CBM342 BRAIN COMPUTER INTERFACE AND APPLICATIONS

CO1	Describe BCI system and its potential applications.
CO2	Analyze event related potentials and sensory motor rhythms
CO3	Compute features suitable for BCI.
CO4	Design classifier for a BCI system.
<b>CO5</b>	Implement BCI for various applications.

## **CEC333 ADVANCED WIRELESS COMMUNICATION TECHNIQUES**

CO1	The student would be able to appreciate the necessity and the design aspects
	of cooperative communication
CO2	The student would be able to appreciate the necessity and the design aspects
	of green wireless communication.
CO3	The student would be able to evolve new techniques in wireless communication
CO4	The students would be able to demonstrate the feasibility of using
	mathematical models using simulation tools.
COS	The student would be able to demonstrate the impact of the green engineering

# MX3085 WELL-BEING WITH TRADITIONAL PRACTICES-YOGA, AYURVEDA AND SIDDHA

solutions in a global, economic, environmental and societal context.

AND SIDDHA
Learn the importance of different components of health
Gain confidence to lead a healthy life
Learn new techniques to prevent lifestyle health disorders
Understand the importance of diet and workouts in maintaining health

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#### EC8701 ANTENNAS AND MICROWAVE ENGINEERING

- **CO1** Apply the basic principles and evaluate antenna parameters and link power budgets
- **CO2** Design and assess the performance of various antennas
- **CO3** Design a microwave system given the application specifications

#### EC8751 OPTICAL COMMUNICATION

- **CO1** Realize basic elements in optical fibres, different modes and configurations.
- **CO2** Analyze the transmission characteristics associated with dispersion and polarization techniques.
- **CO3** Design optical sources and detectors with their use in optical communication system.
- **CO4** Construct fiber optic receiver systems, measurements and coupling techniques.
- **CO5** Design optical communication systems and its networks.

#### EC8791 EMBEDDED AND REAL TIME SYSTEMS

- **CO1** Describe the architecture and programming of ARM processor
- **CO2** Outline the concepts of embedded systems
- **CO3** Explain the basic concepts of real time operating system design
- **CO4** Model real-time applications using embedded-system concepts

#### EC8702 AD HOC AND WIRELESS SENSOR NETWORKS

- CO1 Know the basics of Ad hoc networks and Wireless Sensor Networks
- **CO2** Apply this knowledge to identify the suitable routing algorithm based on the network and user requirement
- **CO3** Apply the knowledge to identify appropriate physical and MAC layer protocols
- **CO4** Understand the transport layer and security issues possible in Ad hoc and sensor networks.
- **CO4** Be familiar with the OS used in Wireless Sensor Networks and build basic modules

## **GE8071**

## **DISASTER MANAGEMENT**

**CO1** Differentiate the types of disasters, causes and their impact on environment and society

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- **CO2** Assess vulnerability and various methods of risk reduction measures as well as mitigation.
- CO3 Draw the hazard and vulnerability profile of India, Scenarios in the Indian context,
  Disaster damage assessment and management

#### EC8711 EMBEDDED LABORATORY

- **CO1** Write programs in ARM for a specific Application
- CO2 Interface memory, A/D and D/A convertors with ARM system
- **CO3** Analyze the performance of interrupt
- **CO4** Write program for interfacing keyboard, display, motor and sensor.
- **CO5** Formulate a mini project using embedded system

#### EC8761 ADVANCED COMMUNICATION LABORATORY

- **CO1** Analyze the performance of simple optical link by measurement of losses and analysing the mode characteristics of fiber
- **CO2** Analyze the Eye Pattern, Pulse broadening of optical fiber and the impact on BER
- **CO3** Estimate the Wireless Channel Characteristics and Analyze the performance of Wireless Communication System
- **CO4** Understand the intricacies in Microwave System design

#### EC8094

#### SATELLITE COMMUNICATION

- **CO1** Analyze the satellite orbits
- CO2 Analyze the earth segment and space segment
- CO3 Analyze the satellite Link design
- **CO4** Design various satellite applications

#### **Attainment of Course Outcomes**

The Collection of data for CO attainment is done through Direct Assessment Methods. The Direct Assessment Methods used for the assessment of Cos by the Department are listed in table.

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#### **Direct Assessment Methods**

S.No.	Methods/ Tools	Frequency of Assessment		
1	1 Internal Assessment Examination 03/Semest			
2	Class Tests	05/Semester		
3	Assignments	03/Semester		
4	University Examinations	01/Semester		
5	Model Practical Examination	01/Semester		
6	Project Reviews	04/Semester		

### Quality and Relevance of assessment processes and tools used

The quality and relevance of the assessment processes and tools are described below:

#### 1. Internal Assessment Examination

Three Internal Assessment Examination are conducted in regular intervals during each semester as per the schedule mentioned in Academic Calendar. These are conducted to cover portions in stages from all the five units in each course of study to match all the Cos. The Question paper pattern

PART – A	10 x 2 = 20 Marks
PART – B	05 x 13 =65 Marks
PART – c	01 x 15 = 15 Marks

The tests are conducted for duration of three hours for each course. The question paper is set to measure the arraignment level of the respective CO directly based on the performance of the examination. A sample assessment examination question paper shown below.

#### 2. Class Tests

Class tests are being considered as one of the entity for the calculation of attainment of Cos. Five class tests are being conducted for all the courses in a semester.

#### 3. Assignments

Assignment are being considered as one of the entity for the calculation of attainment of Cos. Three assignments are given for a course to the students in a

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semester. The assignment questions are framed by the faculty handling the particular course.

## 4. University Examinations

University Examinations have an influence in the attainment of the specific Cos with respect to the Pos. University Examination accounts weightage for the assessment of the Cos. The examinations are conducted for 100 marks covering portions of all five units of the particular course. The marks are uniformly distributed over all five units. A sample Anna University question paper is given Below.

## Assessment tools and processes used for measuring the attainment of each of the Programme Outcomes and Programme Specific Outcomes

Attainments of Programme Outcomes (Pos) and Programme Specific Outcomes (PSOs) have been validated through direct (IAT, Class Tests, Assignments and University Examinations) and Indirect measurement tools (Student Feedback, Faculty Feedback, Alumni Feedback and Employer Feedback)

### **Direct Assessment Tools**

The Courses offered by the college are credit based continuous evaluation system. Evaluation is accomplished by the course faculty throughout the semester and the university examination is conducted by the university. The direct assessment for the attainment of Pos and PSOs contribute 80%.

#### **IAT # 1**

This test is conducted 04-05 weeks after the commencment of the semster. The syllabus of the assessemnt examination 30-35% of the total course content.

#### **IAT #2**

This test is conducted at the mid of the semester. The syllabus for the test is the next 30-35% of the total course content.

### IAT #3

This test is conducted at end of the semester. The syllabus is the remaining 30 % to 40 % of the total course content.

## **Assignments**

Three assignments are prepared for all the subjects to evaluate the attainment of Pos and PSOs.

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## **University Examinations**

Conducted by the university at the end of each semester.

#### **Practical Courses**

Continuous monitoring of Pos and PSOs is evaluated through student performance in the laboratory classes, Viva -voce.

#### **Indirect Assessment Tools**

PO attainment is obtained by taking Student Feedback, Faculty Feeback and Parents Feedback reports which are listed in table.

S.No.	TOOLS	Frequency of Assessment			
1	Student Feedback	01 / Semester			
2	Faculty Feedback	01/ Semester			
3	Alumni Feedback	01/ Year			
4	Employers Feedback	01/ Year			

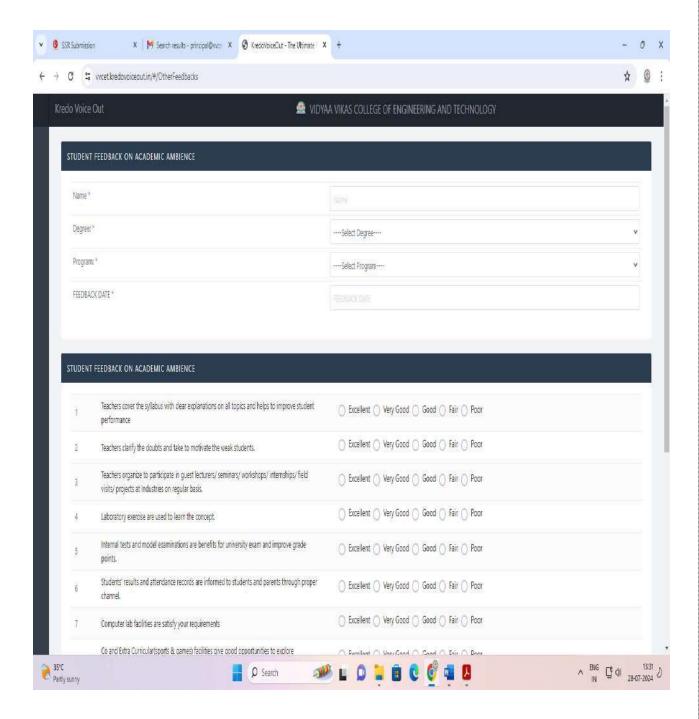
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## 1. Student Feedback



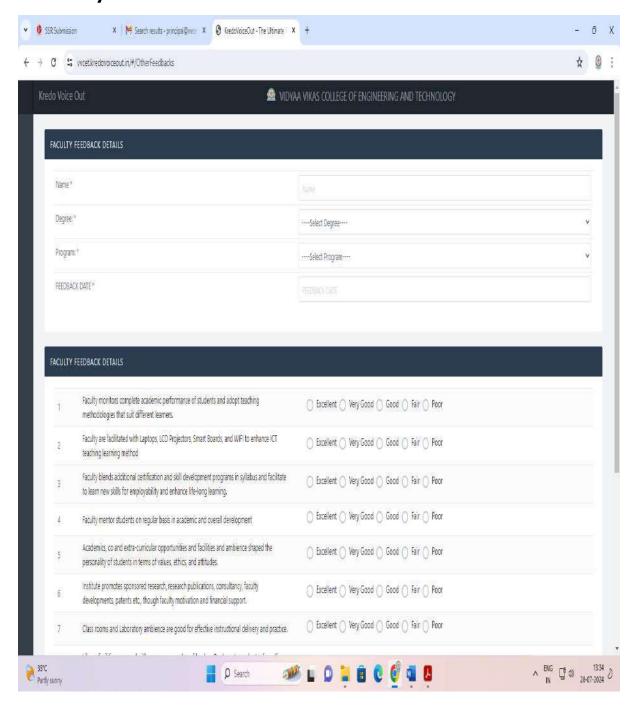
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## 2. Faculty Feedback



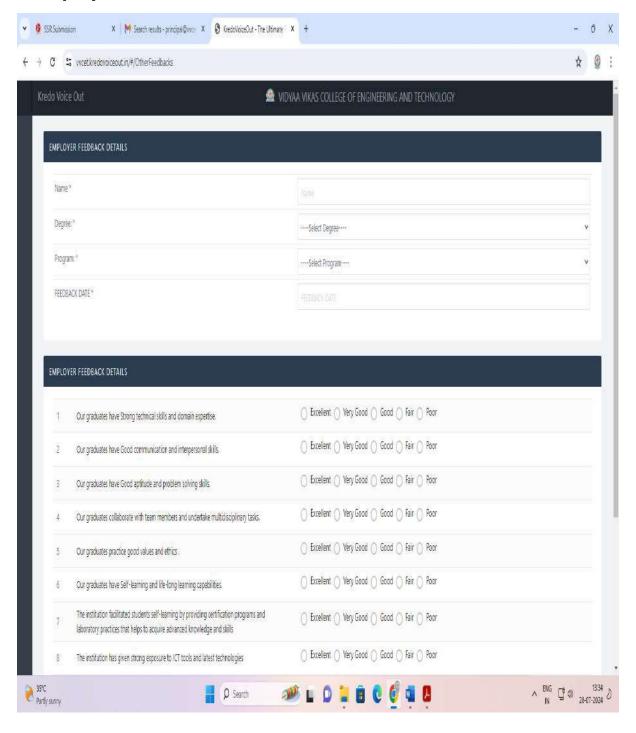
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## 3. Empolyer Feedback



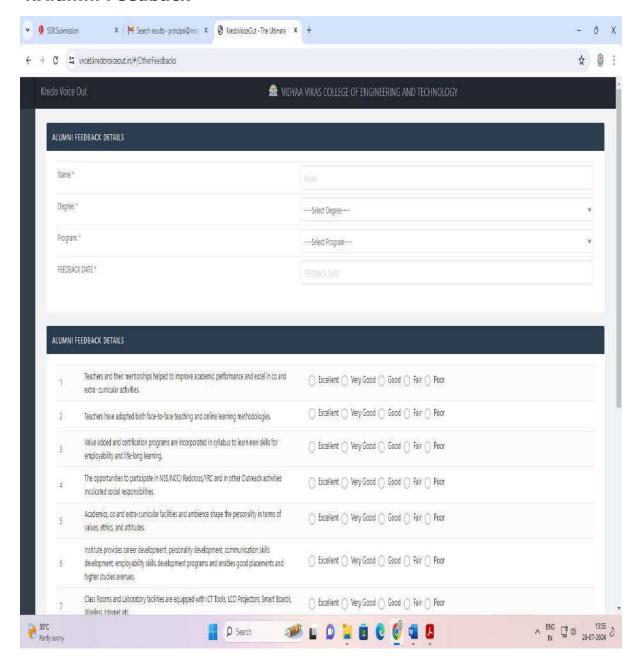
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## 4. Alumni Feedback



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#### 2.6.3 PASS PERCENTAGE OF STUDENTS DURING LAST FIVE YEARS

Academic Year	2022-23	2021-22	2020-21	2019-20	2018-19
Number of Students Appeared in the final year examination	62	103	169	206	196
Number of Students Passed in final year examination	49	81	161	197	122

