VIT®
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

Report on the Activities Involved and Observations Made During the Induction Programme

Course Title: Introduction to Engineering

Course Code: BCSE103N

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Registration Number: 21BAI1830

Programme: Bachelor of Technology in Computer Science with specialization in Artificial Intelligence

School: School of Computer Science and Engineering

Declaration

I, Ms. Ashima Fatima (21BAI1830), hereby declare that the report submitted by me, as a partial fulfilment of the course on 'Introduction to Engineering (BSCE103N)' registered during Fall Semester 2021 – 22, is a record of the activities involved and the observations made by me during the induction programme during September 2021 – October 2021.

To the best of my knowledge, this document has been prepared by me keeping in mind the professional ethics and has not been copied either in part or in full.

Date: 24/12/21

Place: Doha, Qatar

Signature of the Student

(with date)

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CHAPTER 1: DETAILS ON THE ACTIVITIES INVOLVED DURING THE INDUCTION PROGRAMME

NOTE: in this section I've decided to include notes about all non-academic events and in the next chapter all academic related information.

1. Introduction to Year-round Sports Events

Events conducted at VIT include: talents hunts, intramurals, international day of yoga, Summer coaching camp for schools (not anymore) and Vibrance inter collegate sports events.

2. Career Development Centre (CDC)

The CDC oversees all campus placements. Processes included in the campus placement procedure consist of: career counselling, placement training, soft skills training, industry engagements, industry internships, industry certifications, higher education training, NASSCOM (skill development), alumni events, contests, hackathons, consortiums and industry conclaves. Its timeline is:

Jan-Feb: Registration

Feb-Mar: Training

July-Aug: Super dream/dream campus requirements

Sep: IT service companies' requirement

Sep – Dec: Super dream/ dream campus requirements

Jan-May: campus recruitment (all categories)

The criterion for participation is achieving 60% and above in academics from 10^{th} with a maximum of 2 years academic gap. The screening tests will be conducted in the Chennai campus and the interviews at the Vellore campus.

3. Office of International Relations

Aims at faculty and student exchange, joint R&D and joint programs. The office serves as the nodal point for information and assistance to all international students. It also coordinates with schools to arrange international conferences/ seminars/ lectures, prepares MoUs, arranges internships to students as well as the semester

abroad program. Additionally, it supports the students visiting universities abroad as well as helps in the logistic arrangements and accommodation for delegates, identifies funding opportunities and adjuncts professors for various programs.

i. Semester Abroad Program (SAP)

Students can go for a period of 5/6 moths to do their projects with a selected institution and have an opportunity to work with scientists abroad with cutting edge technologies.

ii. International Transfer Program

Students can transfer to a partner university for a minimum of 2 years of study. Partner universities include, Plymoth, POSTECH, Sookmyung Women's university.

iii. Short Term Courses Organised for Students from Deakin University, Australia

The university conducts the Big Data Analytics course which focuses on advanced data analytics and for the last two years has been conducted online.

4. NCC (National Cadet Corps)

Students are given basic education about high level military training and social service. It takes place for 3 years and consists of: parade, training on foot and arms drill, firing, rallies and social services such as blood donation camps. To join NCC, selection will be done by ANO along with army officers and PI staffs. Students will be selected based on personal interest, physical fitness and performance in a personal interview. Contact – balamurali.pm@vit.ac.in

CHAPTER 2: LEARNINGS DURING THE GENERAL INDUCTION

1. Ways of Conducting Learning Digitally

This section includes description about the various resources that are used in the teaching and learning process at VIT. On the side of teaching, this includes smart boards, the virtual classroom, 24x7 virtual labs, digital lecture capturing. From the learning side students are requested to mind their digital footprint, explore MOOCs and the digital library online and asked to make a digital portfolio of their studies and other extracurricular work. Students will also be examined online via exams on digital tablets and online examinations

2. VIT's Established Framework for Digital Efficiency

VIT has an established digital learning management system that includes Moodle, Google Classrooms and MS teams. On top of this is the VTOP portal which contins a slot-wise timetable, both student and parent logins plus an online fee payment feature. Aside from these are the online proctored exams, smart board tools, digital discussion tables and multimedia and ICT for faculty use in order to digitalise their teaching.

3. Provisions In Terms of Academics

VIT is a MERU i.e. a multidisciplinary education and research university with flexibility for students to do courses of higher level including minors, honours and research. When it comes to facilities, there is on-campus support provided which is of global quality standards and also industry standard tools along with research and incubation centres. Good FSR is also included, added with the empowered facility with their innovative teaching and research, providing adequate time for interaction between different parties for good research.

4. Fully Flexible Credit System

This system allows fast learners to finish all their credits early to do internships/ research in their leftover time at the university and students who failed their courses to re-register in the upcoming semesters or the summer. There are 3 semesters: Fall semester from Jul to Nov, Winter semester from Dec. to Apr. and the Summer semester from May to June. The program credit structure is built is to include the

foundation core, discipline linked engineering sciences, discipline core, discipline electives, open electives, project & internships all which total to 151 credits and aside from that also require non-graded credits worth 11 credits. The course structure consists of lectures, tutorials, practical hours. On the slot timetable, a single lecture may have multiple slots at different times and days that one can choose from. Minimum credits per semester is 16 and maximum is 27 and one needs at least 20 credits if aiming for a GPA greater than 4.0. For the first 3 days of a semester, the add/drop options are still open after which they close. One can withdraw from a course after CAT1. Assessment structure includes CAT1 – 15%, CAT2 – 15%, 3 digital assignments – 30% and then the FAT for 40%. A backlog is a N or F grade. In this case one can re-register afresh the next semester/ summer semester or just re-register a theory/lab component. While 100% attendance is recommended minimum is 75% which is a strictly enforced rule. Audit courses one can take without minding the grade and is restricted to just one course per semester. One needs a CGPA > 8.0 and can study PG courses too. For a specialization you study 18-20 credits in a focused niche area on top of the 9+ credits of a discipline elective. A double major will require an extra 30 credits and will take beyond 4 years. For additional exposure one can do a Co-op for 6 months, a Capstone project as internship or a semester abroad.

5. Grade Classifications

In format: Grade – Grade Point – P/F

S – 10 – PASS

A – 9 – PASS

B – 8 – PASS

C – 7 – PASS

D – 6 – PASS

E – 5 – PASS

F – 0 – FAIL (haven’t scored min marks)

N – 0 – FAIL (haven’t cleared a component)

W – withdrew

U – successfully completed an audit course

Y – yet to complete the course component

6. Grade System

Absolute grading is taken if the class strength is less or equal to 10 students or else relative grading is taken. Grade classification for a relative grading system is shown below:

Relative Grading formula	Letter Grade
Total Marks >= (Mean + 1.5σ) with a minimum of 90% total marks	S
Total Marks >= (Mean + 0.5σ) and Total Marks < (Mean + 1.5σ)	A
Total Marks >= (Mean - 0.5σ) and Total Marks < (Mean + 0.5σ)	B
Total Marks >= (Mean – 1.0 σ) and Total Marks < (Mean - 0.5σ)	C
Total Marks >= (Mean - 1.5σ) and Total Marks < (Mean - 1.0 σ)	D
Total Marks >= (Mean - 2.0σ) and Total Marks < (Mean - 1.5σ)	E
Total Marks < (Mean - 2.0σ)	F

7. Other Facilities Provided

These include revaluation, REFAT, scribe, transcripts in VTOP and grade sheets.

Deputy COE Chennai – for FAT and After FAT activities: chennai.dcoe@vit.ac.in

Dean ACAD Chennai – Registration, CAT, CAT- revaluation, RECAT, course substitution, etc: deadncc.acad@vit.ac.in

CHAPTER 3: LEARINGS DURING THE DISCIPLINE-SPECIFIC PROGRAM

1. SAP During Pandemic

The virtual internship in universities abroad/ industries was still conducted with the College of Electrical and Communications Engineering and College of Mechanical Engineering, Yuan Ze University, Taiwan.

2. Capstone Project

i. Selection of Project

Through the Capstone project, the student is expected to get prepared for engineering practice in the relevant industry. On the project, they are expected to identify the project based on knowledge and skills acquired in earlier course works and by incorporating relevant engineering standards and realistic constrains.

ii. Capstone Project and Internships

iii. Method

Students are encouraged to carry out the project work in multidisciplinary areas. The project can be an individual work or a group project with a maximum of 3 members. In the case of a group project, the individual's contribution to the project must be clearly identified. The project can be carried inside or outside the university, in any relevant industry/ organisation/ institution on the recommendation and approval of the Dean of the school. In case the industry project is not disclosable for viva-vose, the student is to undertake another project under a supervisor of their school for reviews and thesis.

iv. Reporting

Final year students registering for the Capstone project are required to report to their HoD/ Project coordinator. The project start date will the same as the first instructional day of the winter semester. Students who will be taking up their capstone project in

other institutions or interning in industries are requires to be on campus till they report to their respective institute/ industry

v. Schedule for the Review

Review	Project Status	Date	Weightage
1. Initial Review by Guide	Guide acceptance and finalizing the project title Define objectives of the project, Literature survey, etc...	During Registration	05%
2. Review by Panel	The progress of the work will be reviewed (on Campus). Students carrying out project outside the country can give the review through skype	During CAT1	20%
3. Review by Panel	The progress of the work will be reviewed (on Campus). Students carrying out project outside the country can give the review through skype	During CAT2	20%
4. Thesis Preparation & Submission for plagiarism check & Guide Mark	Submission of the report through guide (plagiarism check)	Before FAT	30%
	Submission of the report (Final version) to be done	Before FAT	
	CAM – From Day 1 to Final Viva-voce	From Day 1	
5. Viva-voce	Viva conducted by the External Examiners from Industry along Internal Examiners (the Same Review Panel)	During FAT	25%

3. Undergraduate Research Experience (URE)

There are 4 types of URE. URE 001 – only students having a CGPA of 8.50+ will be qualifies for this award and will work with a faculty member towards a contemporary research position. This work will be marked on the grade sheet as a ‘P’. URE 002 – awarded to exceptional quality and quantity of research work and will be judged both internally as well as by an external member from a reputed institution. URE 003 – requires a minimum of 1 year duration. URE 004 – for innovative projects. The process is set out as: 1. Choose topic of interest 2. Approach a faculty 3. With the support and guidance of faculty complete the research work 4. Apply for URE 5. Evaluation by a panel of experts.

4. VPROPEL

Gives a problem of the day for students to solve.

5. Computer Society of India (CSI)

This is the only association in India that caters directly to IT professionals. They release various publications and hold conferences, seminars and technical proceedings. www.csi-india.org contact: ed@csi-india.org

6. ACM Student Chapter

ACM (Association for Computing Machinery) is the largest and oldest international scientific and industrial computer society.

7. Sustainable Quality Learning using Free/Open Source Software (FOSS) tools

i. Cloud Security Dataset – https://sites.google.com/view/cloudddoddataset/home

FOSS used: Private Cloud formation using Open Stack Private Cloud and conducting security experiments.

ii. fossee.in – for free open-source software

8. Android Club

The android club focuses on app development, starting from the very basic and growing as you go. The tech stack that Android club focuses on predominantly on React Native although Flutter and Kotlin are also used to some extent. The club develops mainly android based applications although IOS is used sometimes during which React Native is used instead of Swift UI.

9. Research Groups

Very useful for students looking to study/work abroad. The types of research groups include: Software Engineering, Theoretical Computer Science, Imaging and computer Vision, Cyber Physical System, Network and Security, data Analysis and Artificial Intelligence.

CHAPTER 4: LEARNINGS FROM THE INSTIUTIONAL WEBSITE

1. VITCC Intranet

intranet.vit.ac.in – can find all notification about the university here

2. VTOP

Main portal for all information regarding the student. Can find their student profile, passwords, timetable, proctor and course information, grade reports, attendance reports, and course resources here. There is also a feature for online hostel booking and online fee payment on the site. Fees receipts can be found on this website too.

3. VIT Chennai Events

Vitchennaievents.com – can find information and payments about various events conducted

CHAPTER 5: LEARNINGS FROM THE 'DO-IT-YOURSELF' ACTIVITY

For my Do-it-yourself project, I decided write the python code for the following scenario: The amount of rainfall in each month is recorded. From this data, output the average rainfall of the year as well as the highest and lowest rainfall in the year.

```
months =
["January","Febuary","March","April","May","June","July","August","September",
"October","November","December"]
rainfall = [0,0,0,0,0,0,0,0,0,0,0,0]
month = 0
total = 0
highest = 0
lowest = 99999999

for i in range (0,12):
    print ("Enter the rainfall for", months[i])
    rainfall[i] = input()
    total = total + int(rainfall[i])
    if highest < int(rainfall[i]):
        highest = rainfall[i]
    if lowest > int(rainfall[i]):
        rainfall[i] = lowest

average = total/12
print ("The average rainfall for this year is", average)
```

```
print ("The highest rainfall this year was {0} and  the lowest rainfall was
{1}", (highest,lowest))
```

Through this project, I was able to refresh my previous knowledge of coding which will be useful in my python coding classes.

CHAPTER 6: ANY OTHER GENERAL OBSERVATIONS

1. Counselling

VIT has 2 on campus councillors. One of them specializes in academic counselling and the other in emotional counselling. You can get anonymous counselling and the data will not be shared with any other parties. The academic counsellor can help with time managements and other academic performance related issues and the emotional counsellor can help recommend psychiatrists and therapists if you are struggling with any mental health problems.

2. Faulty Structure at VIT

The Office of Student Welfare consists of the student council, clubs & chapters, student councillors, extension activities, campus amenities, scholarship & achievements, health & insurance, proctor scheme & other support. The student council is involved in university events planning and organisation, internal quality assurance cell, program representatives, participation in committees (hostel, campus development, library, etc) and sports & cultural activities. Events that they hols include internal events, national and international days, religious festivals and other extension activities. The student welfare office continuously invites applications from students for proposal of new clubs and chapters to increase involvement of all students on campus in co-scholastic activities. There are various outdoor and indoor sports facilities and clubs. The student council oversees the NCC, NSS, clubs & chapters and special teams. A new building is being built to accommodate resources for the special teams and encourage new teams to be formed. Main internal events include Vibrance and technoVITe,

3. Proctor Scheme

Students meet proctors a minimum of 3 times per semester who monitor and periodically communicate the student's performance to their parents. They guide

proctees about academic activities such as course registration, rules and regulations governing the programme, update the address and phone numbers of proctees periodically and oversee leave approval.

4. Monitoring Committees

   There are 3 monitoring committees – Internal Complaints Committee, Anti-discrimination Committee and Anti-ragging Committee.

5. VIT Alumni Association (VITAA)

   VITAA has domestic and international chapters. Its eligibility is the procurement of a degree from VIT for a duration of minimum 2 years. The annual alumni meet is the 26th January of every year at the Vellore Campus. There is a VITAA portal for the alumni network at www.vitaa.org

CHAPTER 7: INITIAL LEARNINGS AND OPPURTUNITIES FOR SELF DEVELOPMENT

1. Opportunities for students

Students are provided internships with local industry and businesses as well as incubation centres i.e. technology development centres. In order to build a stronger industry link while still studying, VIT conducts joint projects and publications with industries that students can participate in.

2. Ways to prepare for campus placements

Ways to prepare include: preparing for aptitude tests, improving soft skills, brushing on fundaments, creating a digital footprint, focusing on maths, participating in online contests (Facebook, Hackercup, Google CodeJam, Google APAC, Kickstart), having a Linkedin Account, practicing with algorithms and data structures, getting into leaderboards (Hackerrank, codeforces, codechef, etc) and learning more programming languages.

3. Innovation and Start-up Ecosystem at VIT

VIT has opened a start-up incubator called ‘V-nest’ to encourage the starting of businesses by university students. The start-up incubator conducts workshops and lecture sessions on innovations and business start-ups. The incubation selection process is as follows:

STEP 1 – application submission by the applicant

STEP 2 – screening of the application

STEP 3 – review of the application by expert members

STEP 4 – interview of the applicant by expert members

STEP 5 – in principle approval or rejection

STEP 6 – negotiation of terms and conditions

STEP 7 – signing of the incubation agreement

STEP 8 – services provided by the incubation centre

STEP 9 - graduation from the incubation centre

The KANO model can help illustrate the graph on customer emotional satisfaction and need fulfilment. The best service/product is one that satisfies both constraints. The Johari window helps illustrate the way ideas exist in a table which considers if an idea is known to self or not and if it is known to others or not. Success is a combination of routine work then continuous improvement and then innovation in that order. Problem solving is a step-by-step process consisting of one empathising, then defining, ideating, turning idea into a prototype and then testing, re-empathising and re-defining and so on in a loop.