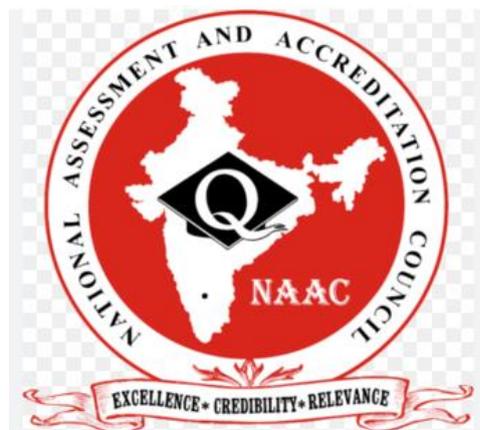


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2.6: Student Performance and Learning Outcomes

2.6.2 Attainment of Programme outcomes and course outcomes



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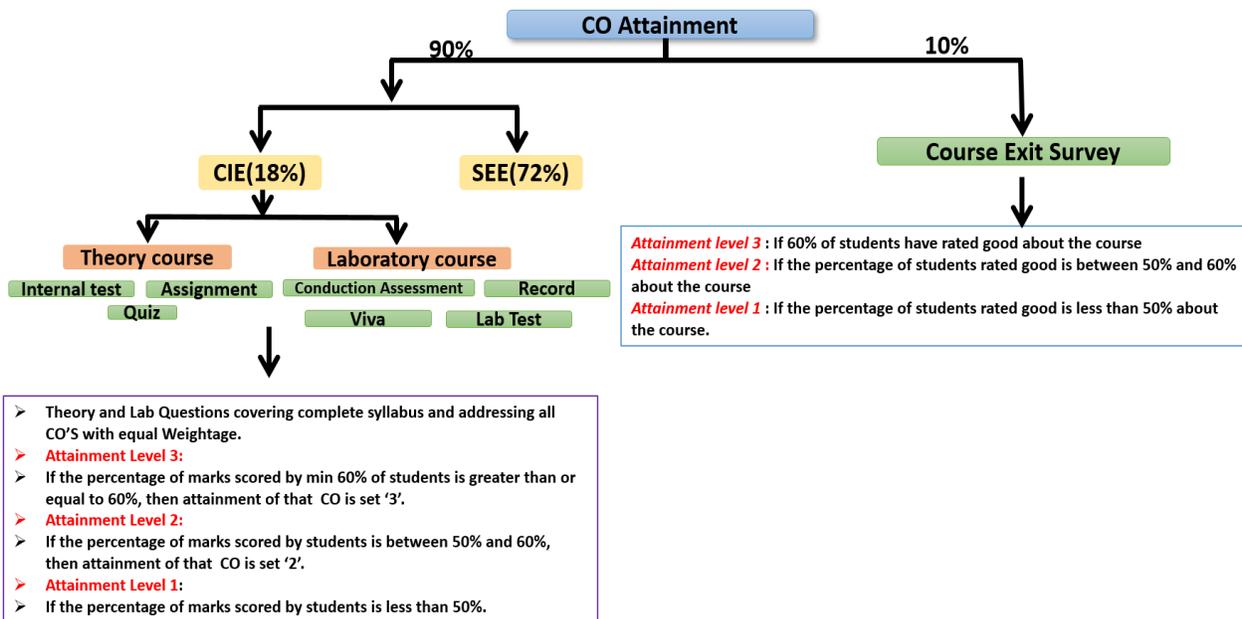


The syllabus/curriculum prescribed by Visvesvaraya Technological University (VTU), Belagavi is followed by SIR MVIT. VTU curriculum is framed and reviewed by the 4 years by the board of studies and other members like chairman, senior faculties and industrial experts. Following is the process used to identify extent of compliance of university curriculum for attaining the POs and PSOs. Identify Course Outcomes for each subject Map each Course Outcome with POs and PSO Based on All CO-POs/PSOs mapping, Map subject with POs and PSOs Categorize entire Curriculum into Core Courses, Electives, laboratories, Humanities and Social Sciences, Basic Engineering sciences, Seminars, internships, Projects Mapping each category with Pos.

Attainment of Programme outcomes and course outcomes are calculated

using two methods-

- Direct method of Evaluation.
- Indirect method of Evaluation



Based on students' performance in the University Examination

➤ Attainment level 3

If the percentage of students scoring above class average is $\geq 60\%$ then attainment of all COs is set to '3'

➤ Attainment level 2

If the percentage of students scoring more than the class average is greater than or equal to 50% but less than or equal to 59%, then attainment of all COs is set to '2'

➤ Attainment level 1

If the percentage of students scoring more than the class average is less than or equal to 50%, then attainment of all COs is set to '1'

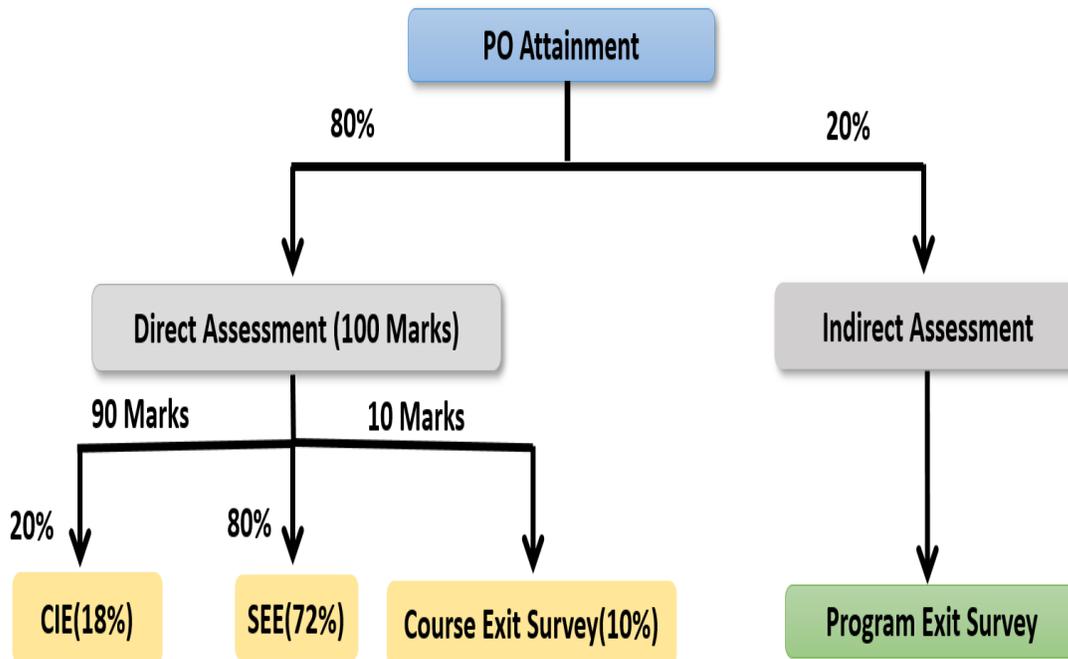
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➤ Attainment level 1

If the percentage of students scoring more than the class average is less than or equal to 50% , then attainment of all COs is set to '1'

$$\text{PO Attainment} = \text{Average}(\{\text{CO Attainment} * \text{Map Level}\} / \text{No. of Levels}) * 80\% + 20\% \text{ of Program Exit Survey}$$

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Choice Based Credit System (CBCS): The CBCS provides choice for students to select from the prescribed courses (core, elective and Foundation Courses) as shown in Table 1.1

Types of courses

Semesters	Course Coverage
I –II	HS, BS and ES; Common for all Branches; Mandatory Courses
III-IV	PS – Core
V-VII	PS- Core & Electives
VIII	PS- Core & Electives, Seminar, Internship, Project work

Table 1.1 : Sequencing Plan for the B.E. Degree Curriculum

HS - Humanities and Environmental Sciences, BS - Basic Sciences, ES - Engineering Sciences,
 PS - Professional Subjects

Generally Curriculum maintains the balance in the composition of basic science, humanities, professional courses and their distribution in core and elective subjects. The curriculum distribution for various groups is shown in Table below

Compliance of university curriculum for attaining POs & PSOs

Sl. No	Types of Courses	Number of Courses as per VTU	Courses offered	POs
1	HS & MNC - Humanities and Environmental	4	4	PO7,PO8
2	BS - Basic Sciences	8	8	PO1,PO2,PO3,PO4,PO5
3	ES - Engineering Sciences	8	8	PO1,PO2,PO3,PO4
4	PS - Professional Subjects	35	35	PO1,PO2,PO3,PO4,PO5,PO6
5	PS- Electives	29	14	PO1,PO2,PO3,PO4,PO5,PO6
6	Seminars, Internships, Project works	4	4	PO1 – PO12
Total		88	73	

Table: Contribution of Curriculum to the program for 2015Scheme

The Visvesvaraya Technological University implements the curriculum to be followed in the program, which is stipulated for a period of 8 semesters or 4 years duration.

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Compliance of university curriculum for attaining POs & PSOs (2017 Scheme)

Sl. No	Types of Courses	Number of Courses as per VTU	Courses offered	POs
1	HS & MNC - Humanities and Environmental	4	4	PO7,PO8
2	BS - Basic Sciences	8	8	PO1,PO2,PO3,PO4,PO5
3	ES - Engineering Sciences	8	8	PO1,PO2,PO3,PO4
4	PS - Professional Subjects	35	35	PO1,PO2,PO3,PO4,PO5,PO6
5	PS- Electives	29	14	PO1,PO2,PO3,PO4,PO5,PO6
6	Seminars, Internships, Project works	4	4	PO1 – PO12
Total		88	73	

Table: Contribution of Curriculum to the program for 2017Scheme

Compliance of university curriculum for attaining POs & PSOs (2018 Scheme)

Sl. No	Types of Courses	Number of Courses as per VTU	Courses offered	POs
1	HS & MNC - Humanities and Environmental	5	5	PO7,PO8
2	BS - Basic Sciences	8	8	PO1,PO2,PO3,PO4,PO5
3	ES - Engineering Sciences	8	8	PO1,PO2,PO3,PO4
4	PS - Professional Subjects	32	32	PO1,PO2,PO3,PO4,PO5,PO6
5	PS- Electives	26	2	PO1,PO2,PO3,PO4,PO5,PO6
6	Seminars, Internships, Project works	4	4	PO1 – PO12
Total		83	59	

Table : Contribution of Curriculum to the program for 2018Scheme

GAP Identification Process

The PO's defined by NBA are broadly classified as Technical and Non-technical group. Most of the courses comfortably address the technical PO's, while the non-technical PO's need careful attention. Program Outcomes that are not addressed by the curriculum provided by the university, the Department makes additional efforts to impart the same by covering aspects through different activities by doing proper gap identification.

Process: When there is a new scheme and syllabus prescribed by the University, Department Academic Committee (DAC) and Program Assessment Committee (PAC) comprising of the Head of the Department, senior faculty members, alumni and experts from the industry will review the syllabus for gap identification.

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- Identify Course Outcomes for each course. This is done by the module coordinators and course coordinators.
- Map each Course Outcome to the corresponding POs and PSOs.
- Taking all courses' CO-PO mapping, gaps in Program Outcomes are identified.
- The feedback from Industry and Alumni are also taken into account.

Inputs are taken from PAC which includes Faculty Members, Students, Industry Personnel and Alumni along with DAC which includes HoD & Senior Faculty Members. VTU prescribed syllabus is analyzed by the PAC/DAC for finding the gaps if any. Figure 2.1 shows the process to identify the extent of compliance of the curriculum for attaining the Program Outcomes and Program Specific Outcomes.

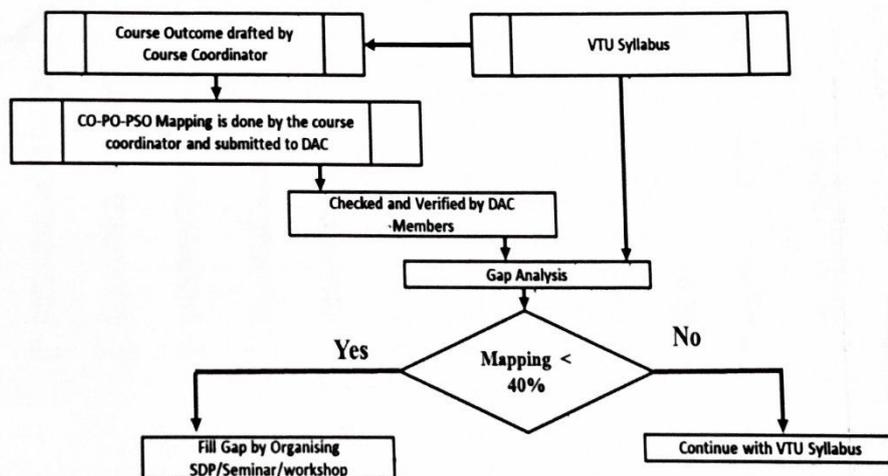


Fig: Flow diagram showing the process to identify extent of compliance of University Curriculum for attaining POs and PSOs

List the curricular gaps for the attainment of defined POs & PSOs

For 2017 scheme, below table provides information about percentage of compliance of university Curriculum to attain Program Outcomes and Program Specific Outcomes and also identifies curriculum gap of Program Outcomes. The number of subjects considered for identification of gaps in the curriculum by considering Basic Sciences, Engineering Sciences. Professional subjects Seminars, Internships and Project works to total 54 subjects.

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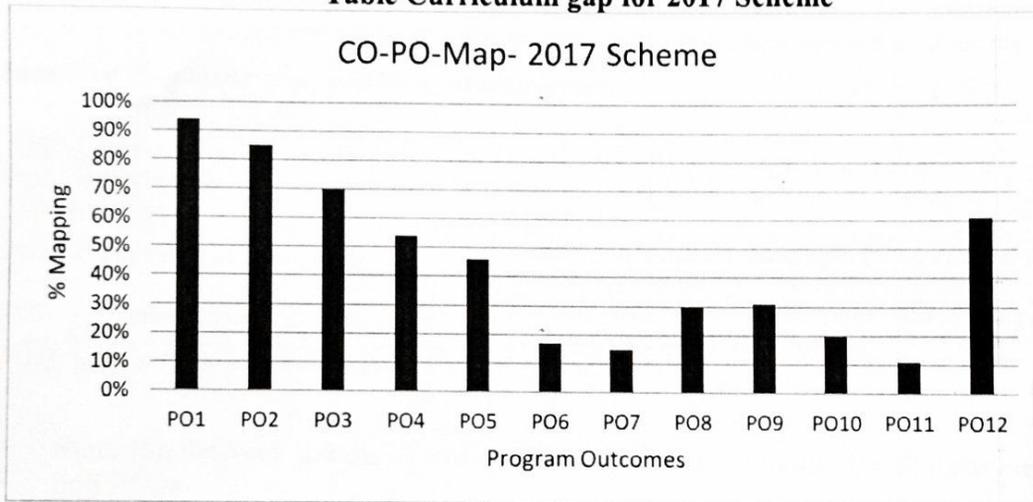
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CO-PO MAP – 2017 Scheme												
Details	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Number of Subjects Mapped	51	46	38	29	25	9	8	16	17	11	6	33
Percentage Mapping	94%	85%	70%	54%	46%	17%	15%	30%	31%	20%	11%	61%

Table Curriculum gap for 2017 Scheme



First row of Table indicates the number of subjects mapping to corresponding PO's. The second row of Table shows the ratio (in percentage) of the sum of all the mappings of a PO's to the total number of courses offered by the program. This ratio is obtained by constructing an articulation matrix of all the courses mapping to the PO's. It is observed that substantial courses map to certain PO's, but few are moderately mapped. A benchmark value of less than or equal to 40% of Mapping is considered for identifying the gaps. In 2017 scheme, the VTU curriculum does not satisfy PO6, PO7, PO8, PO9, PO10, and PO11 which are listed below.

PO6: 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.

PO7: Environmental 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.

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- PO8:Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9:Individual and TeamWork:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings
- PO10: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.
- PO11: Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and in multidisciplinary environments.

Identified Curricular gaps and its Appropriateness

PO	Action Taken to fill the gaps
PO6 - The engineer and society	Quiz on Covid Awareness/Webinar on nutrition
PO7 - Environment and sustainability	Quiz on Covid Awareness/Yoga Awareness
PO8 - Ethics	Mini Project
PO9 - Individual and team work	Mini Project, Students encouraged for Internships, Encourage students register for NPTEL/MOOC's Courses
PO10 - Communication	Students Activity Clubs, Workshops/conference Organized, Guest lectures Organized (SDP + Seminar)
PO11 - Project management and finance	Mini Project

State the delivery details of the content beyond the syllabus for the attainment of POs and PSOs

(Provide details of the additional course / learning material content / laboratory experiments/projects etc., arising from the gaps identified in 2.1.1 in a tabular form in the format given below)

A Steps taken to get identified gaps included in the curriculum

Faculty members are asked to write letter to the university regarding the identified gaps in the courses. The letters are addressed to the Chairman, Board of Studies (BOS) of the program and sent to the university through the Principal. The University conducts regular meeting of BOS members to discuss the problems raised by affiliated colleges. Whenever a new scheme is introduced, a meeting of the senior faculty members across university will be organized by BOS for discussing the draft syllabus. The university tries to address the issues and brings out the final curriculum

Delivery details of content beyond Syllabus

The details of content beyond syllabus are as follows:

Mini Projects: Mini Projects are done in Machine Learning.

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Guest lectures / Workshops / conference: Guest Lectures / workshops / Conference are organized to make students aware of current trends in the industry.

Internships: Students are asked to do internships to understand IT environment.

Department Club Activities: There is student club GLUG MVIT which help the students to actively participate in technical events at National and International Level.

NGO: ABHIKALPANA is registered NGO under department of computer science and engineering organizes events to address societal, health, safety and cultural issues in the rural area.

Pre-placement Training: Keeping in view that there is gap in academic learning & company expectations, the 7 phased soft skill training program has been formulated by Training & Placement officer to bridge this gap. The program is directed towards total personality development of engineering & management students based on the feedback received from hundreds of companies with regard to their expectations from students in addition to their academic learning. This training module is updated as per the needs/demand of the corporate world. This training is imparted to pre-final year students in their 6th semester without disturbing the normal class schedule. The training is followed by series of mock exercises. The purpose of this training is not only to prepare students for on campus/ off campus interviews by making them industry ready, but to make them a true professional engineer.

T & P cell conducts 7 Phase Training for pre-final year students for the development of:

- Total personality development
- Verbal & Non-Verbal communication.
- Emotional intelligence & interpersonal skills.
- Positive attitude
- Skills for value additions
- Behavioural attitude in group interactive sessions
- Group discussion

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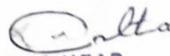
Mapping of content beyond syllabus with the POs & PSOs

Action Taken to fill the gaps	2020-2021	2019-2020	2018-2019	Relevance to POs
Mini Project Carried by Students	28 Mini Projects	130 Mini Projects	72 Mini Projects	PO9, PO10, PO12
Guest lectures Organized (SDP + Seminar)	5	24	7	PO5
Workshops/conference Organized	1	2	1	PO5,PO8
Students encouraged for Internships	144	140	10	PO5,PO9,PO10
Students Activity Clubs	-	1	1	PO6, PO7,PO9,PO10
NGO Activity	ABHIKALPANA NGO Activities			PO6,PO8,PO9
Pre-placement Training	7 Phase Training was given for development of <ul style="list-style-type: none"> • Total personality development • Verbal & Non-Verbal communication. • Emotional intelligence & interpersonal skills. • Positive attitude • Skills for value additions • Behavioural attitude in group interactive sessions • Group discussion 			PO3, PO9, PO10, PO11,PO12

CAY (2020- 2021)

GAP: Design/development of solution

No.	Action Taken	Date	Resource person	No. of the participants	Relevance to POs
1	"Importance of Software Engineering"	4 th November 2020	Dr. Sheela Kathavate Associate Professor, Dept. of ISE, BMSIT & M	100	PO6, PO7, PO8,PO10
2	"Innovative method for designing a DFA and its Application towards life to make it beautiful"	5 th November 2020	Dr. Shantha Kumar B Patil , Professor, Dept. of CSE, Nagarjuna College of Engineering and Technology	110	
3	Tutorial Course on C & C++ , Drupal, Python , PHP & MySQL, SCI LAB	14 th November 2020 to 27 th November 2020	VTU FOSS Group in Association with IIT Bombay Spoken Tutorial Training Program	350	
4	"Application of Mathematics in Image Processing"	23 rd November 2020	Dr. Asha C S PG Dept. Mathematics, MES	97	


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No.	Action Taken	Date	Resource person	No. of the participants	Relevance to POs
		to 25 th November 2020	College Bangalore Dr. Supriya V G Prof, ECE Dept. Sir MVIT Mr. Phanindar Ravi		
5	“ Database Programming using Hive and Mongo DB”	27 th November 2020	Mr. Manjunath H C Senior Solutions Engineer PEGA Systems, Bengaluru	102	PO6, PO7, PO8, PO10
6	“Understanding Word Embeddings”	28 th November 2020	Mr. Pramod Vadiraja Senior Product Engineer Sprinklr	105	
7	“Web Scraping with Python”	24 th December 2020	Mr. Nithin Kumar T Senior Business Intelligence Analyst , Dell Technologies, Dublin , Ireland	250	
8	“Machine Learning”	6 th June 2021	Manish Kumar Singh Head sales at ATS Infotech Pvt. Ltd.,	160	
9	“Cyber Security & Its Applications”	10 th June 2021	Mr. Suren Kulkarni Chief Revenue Officer , Ridgeback Network defense Inc.	110	
10	“Process Scheduling Challenges in Multi – Core Systems	16 th July 2021	Dr. Sheela Kathavate Associate Professor, Dept. of ISE, BMSIT&M	100	

GAP: Technical and Management Skills

No.	Action Taken	Date	Resource person	No. of the participants	Relevance to POs
11	“Business Pitch 101”	23 rd October 2020	Mr. Sushen Kumar Software Engineer, Chefling Inc	120	PO6, PO7, PO8, PO10
12	“Glimpses into the world of security”	24 th October 2020	Prof. M Madhavi Dept. of CSE, Anurag University	127	
13	“Entrepreneurship & Innovation as Career Opportunity”	14 th December 2020	Dr. Madhura Chatrapathy Entrepreneurship Expert, Social Enterprise Exponent	151	
16	“Applications of Discrete Mathematical Structures	18 th December 2020	Mr. Mohan Kumar T G Asst. Prof. , Dept. of ISE, NMIT , Bengaluru	140	
17	“Reclaiming Health By Eating Better”	28 th December 2020	Ms. Srilakshmi Sathyanarayana Holistic Nutritionist and	85	

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No.	Action Taken	Date	Resource person	No. of the participants	Relevance to POs
			Certified Health Coach (USA), Whole & Healthful		
18	How to plan for start – ups, addressing legal and ethical issues	06 th February 2021	Mr. Gautam Khurana Co – Founder & CTO Sense Loaf Technologies Mr. Prakhar Agrawal Co- Founder & CEO, Sense Loaf Technologies	164	
19	“Health & Nutrition During Pandemic”	15 th May 2021	Ms. Ramya Mahesh Nutritionist	150	

CAY (2019- 2020)

GAP: Design/development of solutions

No.	Action Taken	Date	Resource person	No. of the participants	Relevance to POs
1	“Python and its Applications – An Industry Perspective”	14 th June 2020	Mr. Shivaprasad H M	227	
2	“Machine Learning and its Applications – An Industry Perspective”	13 th June 2020	Mr. Manoj Raju	278	
3	“Data Science and it’s Applications”	13 th June 2020	Mr. Rohit SarDeshpande	275	
4	“Glug Dev Days” Webinar (s) / Workshops	30 th May 2020 to 14 th June 2020	Mr. Ravi Kiran R Site reliability Engineer at LINKEDIN, Mr. Abhijeet Singh Software Developer at Danske Bank, Mr. Ujwal Kumar Founder of Chillitray Technologies, Mr. Ravi Jain Co- Founder of Chillitray Technologies, Mr. Vipual Gaurav student representative for MLH,	225	PO9, PO10
5	“Engineers as an Entrepreneur”	29 th May 2020	Ms. Mansi Chadha, Co-Founder at Clean Hives	175	
6	iOS App Development using Swift	11 th March 2020	Ms. Prashanthi Mr. Rudra	123	
7	Microsoft Minihack: AI Gaming	06 th October 2019	Stephen Graham Abhijeet Singh Ujwal Kumar Harsh Gahlot Aditya Raman	120	

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No.	Action Taken	Date	Resource person	No. of the participants	Relevance to POs
			Prabal Gupta		
8	Google AI Explore ML	11 th -12 th October 2019	Ravi Jain Abhijeet Singh Avikant Sanyam Ritesh Vipul Gaurav	400	
9	Hackathon "NASA Space Apps Challenge"	24 th - 25 th September 2019	Katapally Saikiran Local lead of SpaceApps Hyderabad, Founder and CEO of SUMVN	50 Teams	
10	Mozilla Bangalore Hacktoberfest	06 th October 2019	Srishti Nema Akshay Dinesh Masoomi Saxena AswinGopinathan Jyotsna Gupta	120	
11	Hosting with Amazon Web Services	16 th November 2019	Abhijit Singh Rathore Software Engineer, ZS	100	

GAP: Technical and Management Skills

No.	Action Taken	Date	Resource person	No. of the participants	Relevance to POs
12	Campus to corporate	10 th August 2019	Ms. Asha Kumar HR, Senior Analyst , Accenture	100 students	
13	National level Online Quiz for Students on " Covid - 19: Technological and Digital Transformation"	5 th June 2020	Dr. Suma Swamy	1094	
14	"Yoga Awareness for Women"	06 th June 2020 to 20 th June 2020	Yoga Guru Smt. Yogitha Prakash	15	
15	" I am Remarkable"	30 th May 2020	Ms. Preethi Guruswamy, Founder of Lean In Women in India	53	PO6, PO7, POS, PO10
16	"Writing Effective Research Papers"	30 th May 2020	Dr. Shreyas Suresh Rao, Associate Professor, Dept. of CSE, SCEM	189	
17	"Conduct Leading with Mindset", "Leading with diversity" & "The decision making process "Managerial Skills" by IBM	28 th February 2020	Mrs. Poornima Iyengar IBM University Relations Manager. Mr. Rajesh Mehta Senior facilitator from IBM Mumbai	60	
18	"WiseKreator's workshop"	15 th February	Mr. Vivek Bafana	58	

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No.	Action Taken	Date	Resource person	No. of the participants	Relevance to POs
		2020	Ms. Ethisha Ms. Anvesha The co-founders of WiseKreator		
19	Women Entrepreneurship and leadership	16 th November 2019	Ms. Bhavana Vijay Kumar Entrepreneur	15	
20	MS Certification Program	6 th September 2019	Mr. Kaifi Zaka, ATS Infotech Pvt. Ltd.	70	
21	"TOASTMASTERS MOCK MEETING"	10 th October 2019	Toastmasters and Distinguished Toastmasters	50	
22	DBMS & Higher Studies	4 th September 2019	Mr. G Prakash Chakravarthy Citibank	150	
23	Ethics In Digital Business	26 th September 2019	Mr. Swastik NandaKumar , Offbeat Lifestyle Ramya Kirtana, Offbeat Lifestyle Gautham k C , Offbeat Lifestyle	112	
24	conersational AI , The new UI	15 th June 2020	Ms. Lakshya Sivarama Krishnan, Program Manager, Women Techmakers	220	
25	"Who should I become"	20 th June 2020	Ms. KanuPriya Entrepreneur, Freelancer	110	
26	Health Management Through Ayurveda During COVID -19 Pandemic	16 th July 2020	Dr. Dileep Kumar H G BAMS, MD(AYU)	150	

CAYm1 (2018- 2019)

GAP: Design/development of solutions

No.	Action Taken	Date	Resource person	No. of the participants	Relevance to POs
1	SDP on HackTitans	22 nd February 02 nd March 2019	Mr. Santhosh Desai, Mr. Ganesh Kumar, Mr. Suraj mittal	110	PO9, PO10

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GAP: Technical and Managements Skills

No.	Action Taken	Date	Resource person	No. of the participants	Relevance to POs
2	SDP on Global Diversity CFP Day	02 nd March 2019	Mr.Srujana Botcha Mr. Subhashish Panigrahi Mr.Harsh Gahlot Mr.Sunchit Lakhanpal Mr.Ujwal Kumar Mr.Aditya Raman	100	PO6, PO7,PO8,P O10
3	SDP on Bridging the gap	3 rd May 2019	Mr. Sameer Shrivastava Tesco	35	PO9,PO10,P O11
4	Seminar on Carrier Guidance	10 th May 2019	Ms. Lakshmi Rajesh, Microsoft USA.	71	

GAP: Modern Tool Usage

No.	Action Taken	Date	Resource person	No. of the participants	Relevance to POs
5	SDP on Introduction to C++ STL	23 rd April 2019	Mr. Kanishk Sexana, DSC lead. Mr. Akshay Kumar ,Mr. Ashwin Gopinathan, Mr Aditya Raman	120	PO9,PO10

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Attainment of Course Outcomes

Describe the assessment processes used to gather the data upon which the evaluation of Course Outcome is based

<p>Assessment of Course Outcome is based on the data gathered through:</p> <ol style="list-style-type: none"> 1. Internal questions - every question is mapped with CO and the Bloom's taxonomy level. Average of the marks students score in that particular CO is then evaluated and recorded. 2. Exam questions - attainment target is fixed, based on the final marks attained target is calculated equally for all Co 3. Laboratory Experiment - every question is mapped to one of the CO. Students are then evaluated on weekly basis. Average of their assessment is then recorded. 4. Project evaluation - a set of CO are framed and the students are evaluated with respect to their project exhibit during their exam. 5. Technical Seminar - a set of CO are framed and the students are evaluated with respect to their seminar demonstration 6. Course End Survey - Feedback from the students are collected at the end of the semester for the course

PO Direct Assessment Methods		
Sl no	Direct Assessment Method	Description
1.	Internal Assessment Test	It is one of the metric to continuously assess the attainment of course outcomes, student's learning domains and thus improve the teaching-learning process. The final Assessment is based on best two test marks in theory which will be usually conducted at the end of 6 and 12 weeks of each semester. An additional test as improvement test conducted to those students who deserve to improve their internal assessment marks. Average of the better marks obtained from any two tests shall be the Internal Assessment Marks for the relevant subject.
2.	Lab Assessment Test	Lab Assessment is a metric to mainly assess student's practical knowledge with their designing capabilities. In the case of Practical, the IA marks shall be based on the continuous assessment and one internal test.
3.	Theory Semester Examination	Semester theory examinations are the metrics to assess whether all the course outcomes are attained w.r.t course objectives framed by the University. Practical semester examination focuses on conduction of experiments and viva-voce.
4.	Practical Semester Examination	

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PO Direct Assessment Methods		
Sl no	Direct Assessment Method	Description
5.	Seminar	The IA marks in the case of projects and seminars in the final year shall be based on the evaluation at the end of 8th semester by a committee consisting of the Head of the concerned Department and two senior faculty members of the Department, one of whom shall be the project / seminar guide.
6.	Project	
7.	Project Work Viva-voce	Viva-voce examination in project work shall be conducted batch-wise.

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PO Indirect Assessment Methods		
Sl no	Indirect Assessment Method	Description
1.	Program Exit Survey	Collect information from the students to assess the learning outcomes of the programme.

Program Outcome Assessment methodology, tools and frequency of use for direct and indirect method is described in the table below:

Sl No	Assessment Method	Assessment frequency	Assessment
			Tool
1	Internal Assessment Test	At the end of 6 th and 12 th weeks of each semester.	Student's performance in internal assessment booklets.
2	Lab Assessment Test	At the end of the semester	Student's performance in conducting experiments.
3	Theory Semester Examination	At the end of the semester	Student's performance in university exams.
4	Practical Semester Examination	At the end of the semester	Student's performance in conducting experiments during university exams.
5	Project Phase 1 & Seminar	During the 7 th semester	Rubrics
6	Project	During the 8 th semester	Rubrics
7	Project Work Viva-voce	At the end of the 8 th semester	Student's performance in university exams
8	Programme End Survey	At the end of the 8 th semester	Student survey

ASSESSMENT PROCEDURE FOR EVALUATION OF POs and PSOs

This assessment is carried out at the end of the course (end of semester):

- I First compute the CO attainments using the following procedure
- II Based on CO attainment and CO-PO-PSO mapping PO attainment is computed as

$$PO \text{ attainment} = \frac{CO \text{ attainment} * \text{Mapping strength of each PO with corresponding CO}}{\text{Maximum mapping strength}}$$

as illustrated below.

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CO ATTAINMENT

The assessment is carried out at the end of each semester by the course coordinators as follows.

- The Assessment Consist of two parts:
 - 1) Direct Assessment – Through internal test, university exam, project and seminar
 - 2) Indirect Assessment – Through course end survey

DIRECT ASSESSMENT

Direct assessment is Calculated based on students' performance in the three internal tests. Attainment levels are computed based on the percentage of students scoring above a set target (The marks target is chosen as 60% of maximum marks) for each course.

Targets and Level for 100 Marks		
Target %	Marks	Level
60% and Above	60 and above	3
Between 50% to 59%	Between 50 to 59	2
Below 50%	Below 50	1

- a. Attainment level 3
 - a. If 60% of students scoring \geq set target
- b. Attainment level 2
 - a. If the percentage of students scoring more than the set target is greater than or equal to 50% but less than or equal to 59%
- c. Attainment level 1
 - a. If the percentage of students scoring more than the set target is less than or equal to 50%

This process is repeated for all three tests and the average is taken to obtain the average test attainment.

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Sample calculation:

First Test Marks

Sl.No.	USN	Students Name	Q1			Q2			Q3			Q4		
			C211.1	C211.1	C211.1	C211.1	C211.1	C211.1	C211.2	C211.3	C211.3	C211.2	C211.3	C211.3
			A	B	C	A	B	C	A	B	C	A	B	C
			3.0	6.0	6.0	6.0	3.0	6.0	3.0	6.0	6.0	6.0	6.0	3.0
1	USN1	AAA	3.0	6.0	6.0							5.0	5.0	3.0
2	USN2	BBB				3.0	6.0	6.0				5.0	3.0	3.0
3	USN3	CCC	3.0	4.0	6.0				3.0	3.0	6.0			
4	USN4	DDD				3.0	6.0	6.0	3.0	5.0	6.0			
5	USN5	EEE	3.0	6.0	6.0				3.0	1.0	4.0			
6	USN6	FFF				3.0	5.0	6.0					3.0	6.0
7	USN7	GGG	3.0	6.0	6.0							6.0	1.0	3.0

ANALYSIS OF IA MARKS

Sl.No.	USN	Students Name	Analysis								
			C211.1			C211.2			C211.3		
			Tot	% Marks	Target	Tot	% Marks	Target	Tot	% Marks	Target
			100	60%	100	60%	100	60%			
1	USN1	AAA	15.0	100%	Y	5.0	83%	Y	8.0	89%	Y
2	USN2	BBB	15.0	100%	Y	5.0	83%	Y	6.0	67%	Y
3	USN3	CCC	13.0	87%	Y	3.0	100%	Y	9.0	75%	Y
4	USN4	DDD	15.0	100%	Y	3.0	100%	Y	11.0	92%	Y
5	USN5	EEE	15.0	100%	Y	3.0	100%	Y	5.0	42%	N
6	USN6	FFF	14.0	93%	Y	NA	NA	NA	9.0	100%	Y
7	USN7	GGG	15.0	100%	Y	6.0	100%	Y	4.0	44%	N

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Analysis

$$\frac{\text{No. of students Scoring Below 50\%} * 1}{\text{No. of students appeared in the test}} + \frac{\text{No. of students Scoring Between 50\% to 59\%} * 2}{\text{No. of students appeared in the test}} + \frac{\text{No. of students Scoring 60\% and above} * 3}{\text{No. of students appeared in the test}}$$

Test CO Attainment					
Level of Attainment		Attainment Level 1	Attainment Level 2	Attainment Level 3	Weighted Average
Attainment in %		Less Than 50%	Between 50% to 59%	Greater than or equal to 60%	
C211.1	Students Attempted	7	7	7	100.00
	No of Student Scored	0	0	7	
	Weightage	1	2	3	
	Attainment	0.00	0.00	3.00	
C211.2	Students Attempted	6	6	6	100.00
	No of Student Scored	0	0	6	
	Weightage	0	2	3	
	Attainment	0.00	0.00	3	
C211.3	Students Attempted	7	7	7	80.95
	No of Student Scored	2	0	5	
	Weightage	1	2	3	
	Attainment	0.29	0.00	2.14	

$$C211.1 = \frac{0}{7} * 1 + \frac{0}{7} * 2 + \frac{7}{7} * 3 = \frac{(0.00+0.00+3.00)}{3} * 100 = 100\%$$

$$C211.2 = \frac{0}{6} * 1 + \frac{0}{6} * 2 + \frac{6}{6} * 3 = \frac{(0.00+0.00+3.00)}{3} * 100 = 100\%$$

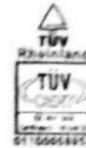
$$C211.3 = \frac{2}{7} * 1 + \frac{0}{7} * 2 + \frac{5}{7} * 3 = \frac{(0.28+0.00+2.14)}{3} * 100 = 80.95\%$$

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The consolidation of all the test coattainment is tabulated

Final Analysis				
Co'S	T1	T2	T3	Average
C211.1	100.00	79.28	0.00	89.64
C211.2	100.00	88.89	0.00	94.44
C211.3	80.95	89.86	98.52	89.78

Based on university exam marks

University exam target is set as average marks scored by the students.

- a. Attainment level 3
 - o If the percentage of students scoring above class average is $\geq 60\%$ then **attainment of all COs is set to '3'**
- b. Attainment level 2
 - o If the percentage of students scoring more than the class average is greater than or equal to equal to 50% but less than or equal to 59%, **then attainment of all COs is set to '2'**
- c. Attainment level 1
 - o If the percentage of students scoring more than the class average is less than or equal to 50%, then **attainment of all COs is set to '1'**

Statistical Data										
Max. Marks	80	Attainment of Co's in Test		Marks Obtained by students			Examination Target	Marks to Obtain	Level	Average Exam Target
		Co's	Avg-T	Range	No. of Students	Minimum				
		C211.1	89.64	01 -- 16	0	0	60%	48	3	47.28
		C211.2	94.44	17 -- 32	0		55%	44	2	
		C211.3	89.78	33 -- 48	3	Maximum	50%	40	1	2
				49 -- 64	4					

Subject Name: XYZ

Semester : 4

Faculty Name : ASDF

Sl.No.	USN	Students Name	Exam Marks	Above Target %
1	USN1	AAA	35	N
2	USN2	BBB	45	N
3	USN3	CCC	50	Y
4	USN4	DDD	43	N
5	USN5	EEE	60	Y
6	USN6	FFF	40	N
7	USN6	GGG	58	Y

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CO attainment through direct assessment =

$$0.18 * (\text{average of CO attainment through test 1, test2, test3}) \\ + 0.72 * \text{attainment through university exam} \\ + 0.1 * \text{Course End Survey}$$

Co Attainment is calculated based on the following weightage

Weightage	
Test %	18%
University %	72%
Course End Survey %	10%

The Test attainment, University Attainment and Course End survey values is used to calculate the level of attainment for each course outcome. Since the Test Attainment is calculated based on the performance of each student in the test and the average percentage of all the test is computed and the final level is computed. Similarly, the university Attainment is calculated by taking the class average, and if the class average is greater than 60% then the level of attainment is 3, if it is between 59% to 60% the attainment is 2 and if it is less than 50% then Attainment level is 1. As university does not provide the split of marks scored by the students to the affiliated colleges, all the CO's are assigned with same level of attainment. Following is the table showing the computation of level based on the target levels. The last column Attainment is computed as per the **Weightage** shown in the above table.

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Indirect attainment (Course end survey)

Here attainment is computed based on the student's feedback collected at the end of each course.

COURSE END SURVEY					
Co's	3	2	1	Attainment Computation	Attainment
	(80-100%)	(60-79%)	(40-59%)		
	90%	70%	50%		
C211.1	7	0	0	$\frac{7 \cdot 0.9 + 0 \cdot 0.7 + 0 \cdot 0.5}{7}$	90
C211.2	6	1	0	$\frac{6 \cdot 0.9 + 1 \cdot 0.7 + 0 \cdot 0.5}{7}$	87
C211.3	5	2	0	$\frac{5 \cdot 0.9 + 2 \cdot 0.7 + 0 \cdot 0.5}{7}$	84

final CO attainment is calculated as follows:

CO	T1	T2	T3	Average	Test Level	UE	UE Level	CO Att = 0.18*(Test Level)+0.72*(UE Level)	End Survey	End Survey Level	Final CO Att = CO Att * 0.1 + Survey	CO Att
C211.1	100.00	79.28	0.00	89.64	3	47.28	2	1.98	90	3	2.28	76.00%
C211.2	85.71	88.89	0.00	94.44	3	47.28	2	1.98	87	3	2.28	76.00%
C211.3	80.95	89.86	98.52	89.78	3	47.28	2	1.98	84	3	2.28	76.00%

Attainment Sheet:

Staff Name	ASDF	Subject Code	xxx	Subject Name	ABC																																																																				
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">Targets and Level</th> </tr> <tr> <th>Target</th> <th>Value</th> <th>Level</th> <th></th> </tr> </thead> <tbody> <tr> <td>60 %</td> <td>60% and Above</td> <td>48</td> <td>3</td> </tr> <tr> <td>55 %</td> <td>Between 50% to 59%</td> <td>44</td> <td>2</td> </tr> <tr> <td>50 %</td> <td>Below 50%</td> <td>40</td> <td>1</td> </tr> </tbody> </table>		Targets and Level				Target	Value	Level		60 %	60% and Above	48	3	55 %	Between 50% to 59%	44	2	50 %	Below 50%	40	1	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3">Test Attainment Level</th> <th colspan="2">University Attained</th> <th colspan="2">Survey</th> <th rowspan="2">Attainment</th> </tr> <tr> <th>Co's</th> <th>% Attained</th> <th>Level</th> <th>% Attained</th> <th>Level</th> <th>% Attained</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>C211.1</td> <td>89.64</td> <td>3</td> <td>47.28</td> <td>2</td> <td>90</td> <td>3</td> <td>2.28</td> </tr> <tr> <td>C211.2</td> <td>94.44</td> <td>3</td> <td>47.28</td> <td>2</td> <td>87.84</td> <td>3</td> <td>2.28</td> </tr> <tr> <td>C211.3</td> <td>89.78</td> <td>3</td> <td>47.28</td> <td>2</td> <td>85.41</td> <td>3</td> <td>2.28</td> </tr> </tbody> </table>			Test Attainment Level			University Attained		Survey		Attainment	Co's	% Attained	Level	% Attained	Level	% Attained	Level	C211.1	89.64	3	47.28	2	90	3	2.28	C211.2	94.44	3	47.28	2	87.84	3	2.28	C211.3	89.78	3	47.28	2	85.41	3	2.28	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Weightage</th> </tr> </thead> <tbody> <tr> <td>Test %</td> <td>18%</td> </tr> <tr> <td>University %</td> <td>72%</td> </tr> <tr> <td>Survey %</td> <td>10%</td> </tr> </tbody> </table>		Weightage		Test %	18%	University %	72%	Survey %	10%
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University %	72%																																																																								
Survey %	10%																																																																								
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Semester</td> <td>4</td> </tr> <tr> <td>Academic Year</td> <td>Yyyy-zz</td> </tr> <tr> <td>Class Strength</td> <td>7</td> </tr> <tr> <td>Maximum Marks</td> <td>80</td> </tr> </table>		Semester	4	Academic Year	Yyyy-zz	Class Strength	7	Maximum Marks	80																																																																
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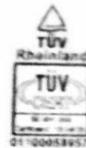
CONTRIBUTION TO PROGRAMME OUTCOMES (PO's) AND PROGRAM SPECIFIC OUTCOMES (PSO's) for Intake Year xxxx for Academic Year yyyy-zz																		
CO's		Program Outcomes												Program Specific Outcome				
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	
C211.1	Mapping							2						3		2		
	Attainment 2.28							1.52						2.28		1.52		
C211.2	Mapping	2	3												2			
	Attainment 2.28	1.52	2.28												1.52			
C211.3	Mapping	2													1.52			
	Attainment 2.28	1.52												2	1.52			
C211		1.52	2.28					1.52						1.52	1.9	1.52	1.52	

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PO attainment for a specific Course outcome is calculated based on the map level and maximum level for example in case of C211.3 V/s PO1 the map level is 2 and Co attainment is 2.28 then the attainment of PO1 with regard to C211.3 is calculated as $[2.28*(2/3) = 1.52]$. the same calculation is for all the cells mapped.

Final CO attainment = $0.9*(CO \text{ attainment through IA \& UE}) + 0.1*attainment \text{ through survey}$

$$\% CO \text{ attainment} = \frac{\text{Final CO attainment}}{\text{Maximum possible attainment}} \times 100$$

3.2.1. Record the attainment of Course Outcomes of all courses with respect to set attainment levels (40)

Course Outcome Analysis - 17 Scheme (2017 Intake Batch)												
Sl No	Subject Code	Course Code	Course outcome's CIE					Course outcome's SEE				
			CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5
Third Semester												
17	17MAT31	C201	45.32	45.32	45.32	45.32	45.32	45.19	45.19	45.19	45.19	45.19
18	17CS32	C202	96.97	90.36	97.53	95.30		33.36	33.36	33.36	33.36	
19	17CS33	C203	90.42	76.26	87.82	89.23		28.73	28.73	28.73	28.73	
20	17CS34	C204	97.42	92.37	97.33	87.5		30.80	30.80	30.80	30.80	
21	17CS35	C205	93.91	90.7	96.15			31.1	31.1	31.1		
22	17CS36	C206	76.67	95.95	75.21	96.78	91.45	28.67	28.67	28.67	28.67	28.67
23	17CSL37	C207	73.59	73.59	73.59			49.10	49.10	49.10		
24	17CSL38	C208	79.59	79.59	79.59	79.59	79.59	73.89	73.89	73.89	73.89	73.89
Fourth Semester												
25	17MAT41	C209	74.19	74.19	74.19	74.19	74.19	47.43	47.43	47.43	47.43	47.43
26	17CS42	C210	94.68	92.70	96.62			30.72	30.72	30.72		
27	17CS43	C211	91.26	91.10	89.58	97.70		30.82	30.82	30.82	30.82	
28	17CS44	C212	100.00	88.74	83.74	87.97		30.49	30.49	30.49	30.49	
29	17CS45	C213	97.77	98.53	98.39	97.56	98.26	27.48	27.48	27.48	27.48	27.48
30	17CS46	C214	98.10	96.94	94.37	100.00	93.10	33.54	33.54	33.54	33.54	33.54
31	17CSL47	C215	73.43	73.43	73.43	73.43		65.43	65.43	65.43	65.43	
32	17CSL48	C216	76.99	76.99	76.99	76.99		60.85	60.85	60.85	60.85	
Fifth Semester												
33	17CS51	C301	99.08	98.55	99.11			36.63	36.63	36.63		
34	17CS52	C302	82.22	92.30	95.47	97.33	96.00	33.96	33.96	33.96	33.96	33.96
35	17CS53	C303	84.93	81.87	87.81	91.32		26.41	26.41	26.41	26.41	
36	17CS54	C304	85.00	83.88	88.38	84.99	88.90	27.45	27.45	27.45	27.45	27.45
37	17CSL57	C314	75.13	75.13	75.13			46.14	46.14	46.14		
38	17CSL58	C315	76.85	76.85	76.85			52.37	52.37	52.37		
Sixth Semester												
39	17CS61	C316	99.77	99.31	99.65			30.56	30.56	30.56		
40	17CS62	C317	94.43	94.43	94.43			45.02	45.02	45.02		
41	17CS63	C318	99.67	99.05	98.24			47.03	47.03	47.03		
42	17CS64	C319	95.16	100.00	99.77	98.15		47.26	47.26	47.26	47.26	


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Course Outcome Analysis - 17 Scheme (2017 Intake Batch)												
Course outcome's CIE								Course outcome's SEE				
Sl No	Subject Code	Course Code	CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5
43	17CSL67	C330	62.50	62.50				47.71	47.71			
44	17CSL68	C331	72.51	75.00				47.72	47.72			
Seventh Semester												
45	17CS71	C401	75.00	75.00	75.00	75.00	75.00	30.62	30.62	30.62	30.62	30.62
46	17CS72	C402	100.00	99.07	99.07			27.58	27.58	27.58		
47	17CS73	C403	100.00	100.00	100.00			31.12	31.12	31.12		
48	17CSL76	C412	85.00	85.00	85.00			72.63	72.63	72.63		
49	17CSL77	C413	66.10	66.10	66.10			88.10	88.10	88.10		
Eight Semester												
50	17CS81	C414	80.20	80.20	80.20	80.20	80.20	65.84	65.84	65.84	65.84	65.84
51	17CS82	C415	76.67	95.95	75.21	96.78	91.45	28.67	28.67	28.67	28.67	28.67
52	17CS84	C420	100.00	100.00	100.00							
53	17CSP85	C421	90.00	90.00	90.00	90.00	90.00	97.25	97.25	97.25	97.25	97.25

3.3. Attainment of Program Outcomes and Program Specific Outcomes (50)

3.3.1. Describe assessment tools and processes used for measuring the attainment of each of the Program Outcomes and Program Specific Outcomes (10)

PO Assessment Tools

Assessment tools are categorized into Direct and Indirect methods to assess the programme educational objectives, program outcomes and course outcomes.

Direct method addresses the students' knowledge and skills from their performance in the internal tests, university examination, projects, seminars and assignments.

Indirect method such as surveys which reflect on student's learning. Indirect method also clearly depicts the level of learning of a student.

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Method of measuring PO attainment	Parameters	Basis of determining whether course outcome has been achieved	Weightage in % for each parameter	Basis for determining whether program outcome has been achieved	Frequency of the process
Direct method	CIE	At least 60% of the students appearing for each of the tests should have obtained a minimum mark of 60% with respect to each of the course objectives stated	18%	Based upon the overall attainment of individual CO's the contribution of the PO's to which they map is calculated. If this contribution exceeds >- 60% then the PO is said to be achieved	Thrice a Semester Three Internal Tests/ course whose individual questions map to the Cos stated.
	SEE	At least 60% of the students appearing for the exam should have obtained a minimum mark of 60%	72%	The % of students whose average marks in the University exam are >= 60% is computed & this is the % contribution to the POs via the exam. If this contribution exceeds >=60% then the PO is said to be achieved	Once at the End of the semester
Indirect Method	Course – exit survey by students	Level of 3,2,1 where 3=(80-100%), 2=(60-79%) 1=40-59%	10%	—	Once at the End of Semester

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3.3.2 Provide results of evaluation of each PO and PSO

Attainment of 2017 Batch																	
Results of evaluation of each PO & PSO of 2017 Batch																	
Sl No	Subject Code	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3	PSO 4
1	17MAT11 (C101)	1.32	1.98										1.16				
2	17PHY12 (C102)	2.86	2.85	2.82									1.94				
3	17CIV13 (C104)	3	2.75														
4	17EME14 (C106)	2	1					1					1.75				
5	17ELE15 (C108)	1.62	1.62	1.62			1.62										
6	17WSL16 (C110)	1.88	1.41										0.94				
7	17PHYL17 (C112)	1.8	1.8	1.8	1.8								0.9				
8	17CPH18 (C115)	2.7					1.8		2.7								
9	17MAT21 (C116)	1.32	1.98										1.16				
10	17CHE22 (C103)	3	3										2				
11	17PCD23 (C105)	1.98	0.76	2.03		1.52								2.13	1.77		
12	17CED24 (C107)	1.88	0.94			1.65							0.94	1.88	0.94		
13	17ELN25 (C109)	3	1.8	2.4													
14	17CPL26 (C111)	3	2.33	3	2								3				
15	17CHL27 (C113)	2.7	2.7							1.8	1.8						
16	17CIV28 (C114)	2.8					1.87	1.87	1.4			0.93	0.93				
17	17MAT31 (C201)	1.34	2.01										1.17				
18	17CS32 (C202)	1.27	2.28	2.28	2.28	1.52		0.76					0.76	2.03	2.28		0.76
19	17CS33 (C203)	1.56	1.56	1.56	1.04	1.04								2.5	2.33		
20	17CS34 (C204)	2.25	2.50	2.67	2.33								1.0	3.0	3.0		
21	17CS35 (C205)	2.28	2.28	2.28										3	3		
22	17CS36 (C206)	3	3	3	2	2								2.5	3		
23	17CSL37 (C207)	1.25	2	3		3				3				1	3	2	
24	17CSL38 (C208)	2	2.33	2.33	1	2			2	2	2	2		2.5	2.5		
25	17MAT4	1.7	2.6										1.58				

(Signature)

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Attainment of 2017 Batch																	
Results of evaluation of each PO & PSO of 2017 Batch																	
SI No	Subject Code	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 0	PO 1	PO 2	PSO 1	PSO 2	PSO 3	PSO 4
	1 (C209)	6	4														
26	17CS42 (C210)	1.7 7	1.5 2	1.5 2	1.5 2	1.5 2			1.5 2			1.52		1	3	3	3
27	17CS43 (C211)	2.2 8	2.2 8	1.7 7	1.5 2	1.5 2	1.5 2						1.33	2.28	1.90	1.52	0.76
28	17CS44 (C212)	2.0 9	2.2 8	2.2 8		1.5 2	0.76		0.7 6					2.33	3		1
29	17CS45 (C213)	1.3	1.5 6	1.5 6	1.3	1.5 6			1.5 6	1.5 6	1.56		0.52	0.87	0.87		
30	17CS46 (C214)	2.0 9	1.7 1	2.0 9	1.9	2.2 8							1.01	1.76	2.64		2.64
31	17CSL47 (C215)	1.7 5	1.7 5	2.7 5	3					3			3	3	3		
32	17CSL48 (C216)	3		3	3					3		1	3	2.5	2		
33	17CS51 (C301)	2	1	2	3		2	1.5	3				2			2.28	1.52
34	17CS52 (C302)	1.9 2	1.2 8	0.8	1.9 2								1.28	1.27	1.52	1.52	
35	17CS53 (C303)	1.9	2.2 8	2.2 8		2.2 8			1.5 2	1.5 2	1.52		1.52	0.78	1.56	1.04	1.04
36	17CS54 (C304)	1.9	2.2 8	2.2 8		2.2 8								1.33	2.09		
37	17CSL57 (C314)	2	2.6 7	2.5	1.6 7	2				3			3	1	3		
38	17CSL58 (C315)	2.5	3	3	3	3			3	3	3		3	3	3		
39	1CS61 (C316)	2.2 8	1.2 7	2.2 8	1.5 2		1.27	1.1 4	2.2 8				1.14	2.2	1.76		2.64
40	17CS62 (C317)	1.9	2.2 8	1.7 1	2.2 8	2.2 8				1.5 2	1.52	2.28		1.9	1.9		
41	17CS63 (C318)	1.7 7		1.9	0.7 6	2.2 8								1.71	1.28		
42	17CS64 (C319)	2.2 5	2.2 5	2.5	2.5									2.25	3		
43	17CSL68 (C331)	3	2	3		3			1.5	2				3	2.5		
44	17CSL67 (C330)	3	3	2	2	2								3	2		
45	17CS71 (C401)	1.6 7		2.0 3		2.2 8								1.52	2.28		1.52
46	17CS72 (C402)	1.2 1	1.5 6	1.5 6	1.0 4								1. 3	2.35	2.64		1.76
47	17CS73 (C403)	1.3 9	1.3		1.5 6						0.52				1.37		
48	17CSL76 (C412)	2.2 5	1	3	2	3			1	2	1		1	1.5	2.5	3	3
49	17CSL77 (C413)			2.3 3		2.6 7	2							3	3		
50	17CS81	2	2.2	2	1.5	1.7	1.3	1	2	1			1.2	2	1.6		

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	(C414)																
51	17CS82 (C415)	3	3	3	2	2								2.50	3		
52	17CSP85 (C421)	2	1.67	3	2.5	3	2	2	3	3	3	2	3	3	2.5	1.25	1.75
53	17CS84 (C420)	1	1		1	1	1	1	3	3	2.5	3	3	3	3	3	3
54	17CSS86 (C421)		3		2					1.5	3		2.33		2.5	2	1.33
Total 54 Courses		2.09	2.01	2.28	1.9	2.07	1.56	1.28	2.02	2.24	1.91	1.87	1.67	2.13	2.33	2.12	1.84

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PO attainment level

Details	Program Outcome Attainment of 2017 Batch												Program Specific Outcome Attainment of 2017 Batch			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
Target Level	2.4	2.4	2.7	2.2	2.3	1.8	1.5	2.3	2.4	2.41	2	1.9	2.3	2.59	2.36	2.12
Direct Attainment	2.09	2.01	2.28	1.9	2.07	1.56	1.28	2.02	2.24	1.91	1.87	1.67	2.13	2.33	2.12	1.84
Indirect Attainment	2.24	2.22	2.05	2.22	2.25	2.23	2.3	2.39	2.39	2.47	2.34	2.46	2.46	2.51	2.46	2.51
PO Attainment	2.12	2.05	2.23	1.96	2.11	1.69	1.48	2.09	2.27	2.02	1.96	1.83	2.20	2.37	2.19	1.97


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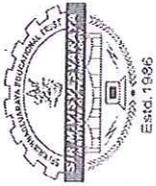
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NAAC: CRITERIA-2

2.6.2: CO-PO ATTAINMENT



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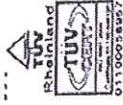
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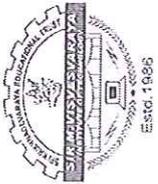


2017 - 2021 BATCH PO ATTAINMENT

Subjects	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3	PSO 4
17MAT11-C101	1.28	1.92										1.12				
17CHE12-C102	3	3										2				
17PCD13-C103	2.22	2.22	1.48	2.22												
17CED14-C104	1.84	0.92			1.61											
17ELN15-C105	2.22	1.33	1.78													
17CPL16-C106	3	2.33	3	2					1.8	1.8						
17CHL17-C107	2.7	2.7														
17MAT21-C109	1.28	1.92										1.12				
17PHY22-C110	1.25	1.22	1.08									0.72				
17CIV23-C111	2.22	2.04														
17EME24-C112	2	1					1									
17ELE25-C113	2.12	2.1	2.14			2.1										
17WSL26-C114	2	1.5										1				
17PHYL27-C115	1.8	1.8	1.8	1.8								0.9				
17MAT31-C201	1.4	2.1										1.23				
17BT32-C202	2.46	2.13	0.82										2.46	0.82		
17BT33-C203	2.46	1.37	0.82				1.64						2.46	0.82	1.64	
17BT34-C204	3.00	1.33	1.00				2.00						3.00	1.00	1.50	

H. S. Nagesh
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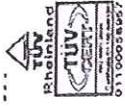
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17BT35-C205	2.19	1.91	1.64										2.46	1.23	2.46	
17BT36-C206	2.19	0.82	2.19		2.19								2.46	2.46		
17BTL37-C207	3	3											3	1	1	
17BTL38-C208	3	2.33		2.5		1.33							3	1		
17BT41-C209	2.00	1.50		3.00	1.00								2.46	1.67	1	
17BT42-C210	2.46	1.91	1.37	1.64									2.46	0.82		
17BT43-C211	2.46												2.46			
17BT44-C212	2.46	2.46	0.82										2.46	1.64		
17BT45-C213	2.39	0.80			1.59								2.39		1.59	
17BT46-C214	3			2		3							3	1		
17BTL47-C215	2.33	1.50		2.00									2.33	1.00		
17BTL48-C216	3		2	3								2	3.00	2.50	2.00	
17BT51-C301	3	3	2.33	1.5									3.00	2.00		
17BT52-C302	3.00	1.00	1.00			1.00							3	1	1	
17BT53-C303	3	2	2		2	2.75							3	2.67	3	
17BT54-C304	2.46	1.64			1.64								2.46	0.82	0.82	
17BTL57-C312	1.67	1		2.33									1.67	1.00		





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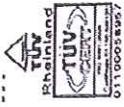
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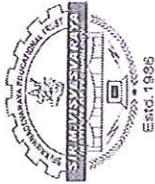
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17BTL58-C313	2.75	2.5			3									3	2	
17BT61-C314								2.50							2.00	3.00
17BT62-C315	3	3	2	1									3	2	1	
17BT63-C316	2.9	2.42	0.97			0.97							1.61	1.29	1.29	
17BT64-C317	2	3	3		3								3	1.5	1	
17BTL67-C325	2.67	2.67	2.33	1	1								2.67	2	1	
17BTL68-C326	3	2	2.25	2									3	2	2	
17BT71-C401	3	3	2.33	3	2		2						3	2.5	3	
17BT72-C402	3	1			1								3	1	1	
17BT73-C403	2.9	0.97	0.97				0.97						1.93	1.93	2.26	
17BTL76-C412	2	2	1	1									2	3		
17BTL77-C413	3	2.5	2	2.33									2.67	2.33	1.67	
17BTP78-C414	0.76	2.28		2.28	1.52	2.28	2.28	2.28	2.28	2.28		2.28	1.9	1.52	1.52	0.76
17BT81-C415	3	1	1			3		2					2.33	2.00	2.00	3.00
17BT82-C416	3	1				2							3	1	1	1
17BT84-C420		2		2		2		3		3	3	2		2	2.5	3
17BT85-C421	0.60	1.20		1.20	1.20	1.80	1.80	1.80	1.80	1.80		1.50	1.50	1.20	1.20	0.90



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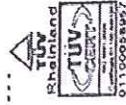
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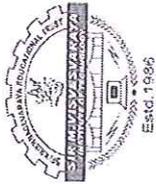
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Subjects	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3	PSO 4
17BT86-C422	1.01	1.52		1.52		0.76	0.76	0.76		2.28		1.52	1.33	1.33	1.14	0.76
Avg Attainment	2.36	1.87	1.67	1.95	1.75	1.97	1.48	2.06	1.96	2.23	2.75	1.45	2.53	1.60	1.61	1.77





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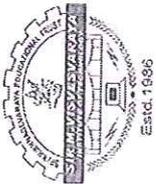
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2017 - 2021 BATCH PO TARGET

Subjects	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3	PSO 4
17MAT11-C101	2	3										1.75				
17CHE12-C102	3	3										2				
17PCD13-C103	3	3	2	3												
17CED14-C104	2	1			1.75											
17ELN15-C105	3	1.8	2.4													
17CPL16-C106	3	2.33	3	2												
17CHL17-C107	3	3							2	2						
17MAT21-C109	2	3										1.75				
17PHY22-C110	3	3	3									2				
17CIV23-C111	3	2.75														
17EME24-C112	2	1					1									
17ELE25-C113	3	3	3			3										
17WSL26-C114	2	1.5											1			
17PHYL27-C115	2	2	2	2								1				
17MAT31-C201	2	3														
17BT32-C202	3	2.6	1									1.75				
17BT33-C203	3	1.67	1				2							1		
17BT34-C204	3	1.33	1				2							1	2	
17BT35-C205	2.67	2.33		2										1.5	1.5	
17BT36-C206	2.67	1	2.67		2.67									3	3	
17BTL37-C207	3	3												3	1	1
17BTL38-C208	3	2.33		2.5			1.33							3	1	

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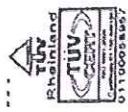


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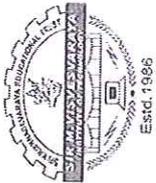
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Subjects	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3	PSO 4
17BT41-C209	2	1.5		3	1									1.67		1
17BT42-C210	3	2.33	1.67	1									3	1		
17BT43-C211	3												3			
17BT44-C212	3	3	1										3	2		
17BT45-C213	3	1			2								3		2	
17BT46-C214	3			2		3							3	1		
17BTL47-C215	2.33	1.5		2									2.33	1		
17BTL48-C216	3		2	3								2	3	2.5	2	
17BTS1-C301	3	3	2.33	1.5									3	2		
17BTS2-C302	3	1	1			1	1						3	2		
17BTS3-C303	3	2	2		2	2.75							3	2.67	3	
17BTS4-C304	3	2			2								3	1	1	
17BTL57-C312	1.67	1		2.33									1.67	1		
17BTL58-C313	2.75	2.5			3									3	2	
17BT161-C314								2.5							2	3
17BT62-C315	3	3	2	1									3	2	1	
17BT63-C316	3	2.5	1			1							1.67	1.33	1.33	
17BT64-C317	2	3	3		3								3	1.5	1	
17BTL67-C325	2.5	2.5	2	1	1								2.67	2	1	
17BTL68-C326	3	2	2.5	2									3	2	2	
17BT71-C401	3	3	2.33	3	2		2						3	2.5	3	
17BT72-C402	3	1			1								3	1	1	
17BT73-C403	3	1	1				1						2	2	2.33	
17BTL76-C412	2	2	1	1									2	3		



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Subjects	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3	PSO 4
17BTL77-C413	3	2.5	2	2.33									2.67	2.33	1.67	
17BTP78-C414	1	3		3	2	3	3	3	3	3		3	2.5	2	2	1
17BT81-C415	3	1	1			3		2					2.33	2	2	3
17BT82-C416	3	1				2							3	1	1	1
17BT84-C420		2		2		2		3		3	3	2		2	2.5	3
17BT85-C421	1	2		2	2	3	3	3	3	3		2.5	2.5	2	2	1.5
17BT86-C422	1.33	2		2		1	1	1		3		2	1.75	1.75	1.5	1
Avg Target	2.62	2.1	1.88	2.08	1.96	2.25	1.73	2.42	2.67	2.8	2.75	1.9	2.74	1.73	1.74	1.93

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CIVIL ENGINEERING DEPARTMENT

Establish the correlation between the Courses and the Program Outcomes and Program Specific Outcomes (PSO) (20)

(Program Outcomes as mentioned below and Program Specific Outcomes as defined by the Program).

Table 1 shows the list of Program Outcomes (POs)

Table 1: Program Outcomes (POs)

PO's	Program Outcomes (POs)
PO1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	Problem analysis: Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	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.
PO4	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.
PO5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO6	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.


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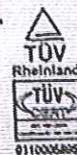
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PO7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	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.
PO11	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.
PO12	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.

Table 2 shows the list of Program Specific Outcomes (PSO's)

Table 2: Program Specific Outcomes (PSO's)

PSO's	Program Specific Outcomes (PSO's)
PSO1	Identify the broad context of civil engineering problems, including describing the problem Conditions, identifying possible contributing factors and generating alternative solution strategies.
PSO2	Undertake laboratory, field and other data collection efforts using commonly used

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CIVIL ENGINEERING DEPARTMENT

	measurement techniques to support the study and solution of Civil Engineering problems.
PSO3	Employ mathematics, science and computing techniques in a systematic, comprehensive and rigorous manner to support the study and solution of civil engineering problems.
PSO4	Exhibit good teamwork skills and serve as effective member of multi-disciplinary project teams.

Course Outcomes (COs) (SAR should include course outcomes of one course from each semester of study, however, should be prepared for all courses and made available as evidence, if asked) (05)

Table 3 shows course example outcomes of the course taken from each semester of academic year from 2018 – 2019 onwards

Table 3: Course Outcomes of the course from each semester

Semester: III	
Year of study: 2019 – 2020	
Course Code: C203	
Course Name: Fluid Mechanics	
After successful completion of the course, the student will be able to:	
C203.1	Apply the knowledge of engineering fundamental to Understand the knowledge of fundamental properties of fluids and fluid continuum
C203.2	Apply the knowledge of mathematics and science to analyze the problems on hydrostatics including practical applications
C203.3	Apply principles of mathematics to represent kinematic concepts related to fluid flow
C203.4	Apply fundamental laws of fluid mechanics and the Bernoulli's principle for

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	practical applications
C203.5	Analyse and design the discharge of water flowing through pipes and over notches and weirs
Semester: IV	
Year of study: 2019 – 2020	
Course Code: C211	
Course Name: Analysis of Determinate Structures	
On the completion of this course students are expected to attain the following outcomes;	
C211.1	Identify different forms of structural systems.
C211.2	Construct ILD and analyse the beams and trusses subjected to moving loads
C211.3	Applying knowledge of science and mathematics to understand the energy principles and energy theorems and its applications to determine the deflections of trusses and beams.
C211.4	Determine the stress resultants in arches and cables
Semester: V	
Year of study: 2020 – 2021	
Course Code: C303	
Course Name: Design of RC Structural Elements	
On the completion of this course students are expected to attain the following outcomes;	
C303.1	Apply the design philosophy and principles in design.
C303.2	Solve engineering problems of RC elements subjected to flexure, shear and torsion.
C303.3	Demonstrate the procedural knowledge in designs of RC structural elements such as slabs, columns and footings.
Semester: VI	
Year of study: 2020 – 2021	
Course Code: C312	
Course Name: Hydrology and Irrigation Engineering	

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After studying this course, students will be able to:	
C312.1	Applying the concept of hydrology, hydrological cycle, quantify the runoff and concept of unit hydrograph.
C312.2	Learn the methods of irrigation, irrigation procedure, application of water and water requirement for various crops.
C312.3	Learn to design the canal. Its alignment and reservoir capacity.
Semester: VII	
Year of study: 2021 – 2022	
Course Code: C401	
Course Name: Quantity Surveying & Contracts Management	
After studying this course, students will be able to:	
C401.1	Taking out quantities and work out the cost and preparation of abstract for the estimated cost for various civil engineering works.
C401.2	Prepare detailed and abstract estimates for various road works, structural works and water supply and sanitary works.
C401.3	Prepare the specifications and analyze the rates for various items of work.
C401.4	Assess contract and tender documents for various construction works
C401.5	Prepare valuation reports of buildings.
Semester: VIII	
Year of study: 2021 – 2022	
Course Code: C419	
Course Name: Design of Pre-stressed Concrete	
After studying this course, students will be able to:	
C419.1	Relate the requirement of PSC members for present scenario by applying engineering fundamentals.
C419.2	Analyse the stresses encountered in PSC element during transfer and at working.
C419.3	Design of PSC beam after studying losses and for different requirements.

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CIVIL ENGINEERING DEPARTMENT

Course	COs	POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	C303.3	3	2	2									
	C303	3	2	2									
Semester: VI Year of study: 2020-2021 Course Code: C312 Course Name: Hydrology & Irrigation Engineering	C312.1	2	1										
	C312.2	2	1										
	C312.3	2	1	1									
	C312	2	1	1									
Semester: VII Year of study: 2020-2021 Course Code: C401 Course Name: quantity Surveying & Contracts Management	C401.1	3	3										
	C401.2	3	3										
	C401.3	3					2						
	C401.4	3											
	C401.5	3											
	C401	3	3				2						
Semester: VIII Year of study: 2020-2021 Course Code: C419 Course Name: Design of PSC	C419.1	2											
	C419.2		2										
	C419.3			2									
	C419.4		2										

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Course	COs	POs											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C419	2	2	2										

Table 4b: CO-PSO matrix – 2018 Batch

Course	COs	PSOs			
		PSO1	PSO2	PSO3	PSO4
Semester: III Year of study: 2019-2020 Course Code: C203 Course Name: Fluid Mechanics	C203.1	2		1	
	C203.2	1		2	
	C203.3	2			
	C203.4			2	
	C203.5		2	2	
	C203	1.67	2	1.75	
Semester: IV Year of study: 2019-2020 Course Code: C211 Course Name: Analysis of Determinate Structures	C211.1	3		2	
	C211.2	3		2	
	C211.3	3		2	
	C211.4	3		2	
	C211	3		2	
Semester: V Year of study: 2020-2021 Course Code: C303 Course Name: design of RC Structural Elements	C303.1	2		3	
	C303.2	2		3	
	C303.3	2		3	
	C303	2		3	
Semester: VI Year of study: 2020-2021 Course Code: C312 Course Name: Hydrology & Irrigation Engineering	C312.1	2		1	
	C312.2	2		1	
	C312.3	2		1	
	C312	2		1	
O I C O U R S	C401.1	2		3	

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Sl No	Subject Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
10	18ELE23 (C111)	3	3	3			3						
11	18CIV24 (C112)	1.8	1										
12	18EGDL25 (C113)	2	1			1.75							1
13	18PHYL26 (C114)	2	2							2			
14	18ELEL27 (C115)	3	2.67	2.5						3	3		
15	18MAT31 (C201)	2	3										
16	18CV32 (C202)	3	2										
17	18CV33 (C203)	2	2	1									
18	18CV34 (C204)	2.67	2.5										
19	18CV35 (C205)	3	2										
20	18CV36 (C206)	2	1										
21	18CVL37 (C207)	3	2.33			2							
22	18CVL38 (C208)	2	2										
23	18MAT41 (C210)	2	3										
24	18CV42 (C211)	3	3										
25	18CV43 (C212)	1.33	1.5	3									
26	18CV44 (C213)	3	2	3									
27	18CV45 (C214)	3	2.33			2							
28	18CV46 (C215)	3		2.5									
29	18CVL47 (C216)	2		1									
30	18CVL48 (C217)	1	2	1									

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SI No	Subject Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
52	18CVS84 (C426)	3	3	3	2		2	2	3	3	3		
53	18CVI85 (C427)	3	3	3	3	3				2	2	2	2
Total		134	114	52.2	18.3	20.8	15	8	9	21.5	16.5	13	5
No. of Courses Mapped		52	50	23	8	9	6	3	3	8	6	5	3
Total No. of Courses		53	53	53	53	53	53	53	53	53	53	53	53
Weighted Mapping Value		2.57	2.27	2.27	2.29	2.31	2.5	2.67	3	2.69	2.75	2.6	1.67

Table 6 shows CO - PSO matrix for all the courses including first year course

Table 6: Course – PSO Matrix – 2018 Batch

SI No	Subject Code	PSO1	PSO2	PSO3	PSO4
1	18MAT11 (C101)				
2	18CHE12 (C102)				
3	18CPS13 (C103)				
4	18ELN14 (C104)				
5	18ME15 (C105)				
6	18CHEL16 (C106)				
7	18CPL17 (C107)				
8	18MAT21 (C109)				
9	18PHY22 (C110)				
10	18ELE23 (C111)				
11	18CIV24 (C112)	2		1	
12	18EGDL25 (C113)				

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SI No	Subject Code	PSO1	PSO2	PSO3	PSO4
13	18PHYL26 (C114)				
14	18ELEL27 (C115)				
15	18MAT31 (C201)				
16	18CV32 (C202)	3		2	
17	18CV33 (C203)	1.67	2	1.75	
18	18CV34 (C204)	3		2	
19	18CV35 (C205)	1.75	1	2	
20	18CV36 (C206)	2		1	
21	18CVL37 (C207)		3	2	
22	18CVL38 (C208)		2		
23	18MAT41 (C210)				
24	18CV42 (C211)	3		2	
25	18CV43 (C212)	1.5	1.5	1.5	
26	18CV44 (C213)	3		3	
27	18CV45 (C214)	2.67	1	2	
28	18CV46 (C215)	2.5	1	2.33	
29	18CVL47 (C216)		1	1	
30	18CVL48 (C217)		2		
31	18CV51 (C301)	2		1	
32	18CV52 (C302)	2		2	
33	18CV53 (C303)	2		3	

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Sl No	Subject Code	PSO1	PSO2	PSO3	PSO4
34	18CV54 (C304)	2		2	
35	18CV55 (C305)	2	2	2.6	
36	18CV56 (C306)	3	3	3	
37	18CVL57 (C307)	2	2	2	
38	18CVL58 (C308)	2.5	2	1.5	
39	18CV61 (C310)	2		3	
40	18CV62 (C311)	2		2	
41	18CV63 (C312)	2		1	
42	18CVL66 (C324)		3	3	
43	18CVL67 (C325)		2	2	2
44	18CVP68 (C326)	2	2	2	3
45	18CV71 (C401)	2		2.8	
46	18CV72 (C402)	2		2	
47	18CVL76 (C416)		3	3	
48	18CVL77 (C417)	2		2	
49	18CVP78 (C418)	3	3	3	3
50	18CV81 (C419)	2		2	
51	18CVP83 (C425)	3	3	3	3
52	18CVS84 (C426)	3			
53	18CVI85 (C427)	2.75	2.75	2.75	
Total		71.34	42.25	74.23	11

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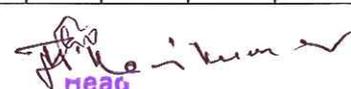
CIVIL ENGINEERING DEPARTMENT

SI No	Subject Code	PSO1	PSO2	PSO3	PSO4
	No. of Courses Mapped	31	20	35	4
	Total No. of Courses	53	53	53	53
	Weighted Mapping Value	2.30	2.11	2.12	2.75

Table 7 shows CO - PO matrix for all the courses including first year course

Table 7: Course – PO Matrix – 2017 Batch

SI No	Subject Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	17MAT11 (C101)	2	3										
2	17CHE12 (C102)	3	3										2
3	17PCD13 (C103)	2.67	2.4	3	2							1.5	1
4	17CED14 (C104)	3	3			3				1	2		1
5	17ELN15 (C105)	3	1.8	2.4									
6	17CPL16 (C106)	3	2.25	3	3								
7	17CHEL17 (C107)	3	3							2.5	2.5		
8	17MAT21 (C109)	2	3										1.75
9	17PHY22 (C110)	3	3	3									2
10	17CIV23 (C111)	2	2										
11	17EME24 (C112)	2	1					1					1.75
12	17ELE25 (C113)	3	3	3			3						
13	17WSL26 (C114)	2	2										
14	17PHYL27 (C115)	2	2	2	2								1
15	17MAT31 (C201)	2	3										


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Sl No	Subject Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
37	17CV61 (C315)	2	2										
38	17CV62 (C316)	3	2.33	3									
39	17CV63 (C317)	3	3	3								3	
40	17CV64 (C318)	3		2.5									
41	17CVL67 (C327)	3				2							
42	17CVL68 (C328)	3	2.8	2								2	
43	17CV71 (C401)	2		3									
44	17CV72 (C402)	2	3	3									
45	17CV73 (C403)	2	1.5	1.5									
46	17CVL76 (C412)	2.75	2.75		3					3			
47	17CVL77 (C413)	2				2							
48	17CVP78 (C414)	3	3	3	3	3	3	3	3	3	3	3	
49	17CV81 (C415)	3	2				2						
50	17CV82 (C416)	2	2	2									
51	17CV84 (C421)	3	3	3	3	3				2	2	2	2
52	17CVP85 (C422)	3	3	3	3	3	3	3	3	3	3	3	
53	17CVS86 (C423)	3	3	3	2		2	2	3	3	3		
Total		131	112	59.4	23	20	13	9	9	17.5	15.5	14.5	12.5
No. of Courses Mapped		52	48	24	9	8	5	4	3	7	6	6	8
Total No. of Courses		53											
Weighted Mapping Value		2.51	2.33	2.48	2.56	2.50	2.60	2.25	3.00	2.50	2.58	2.42	1.56

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Table 8 shows CO - PSO matrix for all the courses including first year course

Table 8: Course – PSO Matrix – 2017 Batch

SI No	Subject Code	PSO1	PSO2	PSO3	PSO4
1	17MAT11 (C101)				
2	17CHE12 (C102)				
3	17PCD13 (C103)				
4	17CED14 (C104)				
5	17ELN15 (C105)				
6	17CPL16 (C106)				
7	17CHEL17 (C107)				
8	17MAT21 (C109)				
9	17PHY22 (C110)				
10	17CIV23 (C111)	2		2	
11	17EME24 (C112)				
12	17ELE25 (C113)				
13	17WSL26 (C114)				
14	17PHYL27 (C115)				
15	17MAT31 (C201)				
16	17CV32 (C202)	2		2	
17	17CV33 (C203)	2		2	
18	17CV34 (C204)	2		2	

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SI No	Subject Code	PSO1	PSO2	PSO3	PSO4
40	17CV64 (C318)	2.5	1	2.33	
41	17CVL67 (C327)	2	2	1	
42	17CVL68 (C328)	2	2	2	3
43	17CV71 (C401)		2	3	
44	17CV72 (C402)	2		2	
45	17CV73 (C403)	2		1	
46	17CVL76 (C412)		2	2	2
47	17CVL77 (C413)	2	2	1	
48	17CVP78 (C414)	3	1.5	1.83	2.16
49	17CV81 (C415)	2		2.8	
50	17CV82 (C416)	2		2	
51	17CV84 (C421)	2.75	2.75	2.75	
52	17CVP85 (C422)	3	3	3	3
53	17CVS86 (C423)	3			
Total		71.75	32.75	71.2	10.16
No. of Courses Mapped		32	16	34	4
Total No. of Courses		53	53	53	53
Weighted Mapping Value		2.24	2.05	2.09	2.54

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**DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING****CO-PO Attainment 2018 Intake Batch**

SL.NO	Subject Code	Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	18PCD13/23	C113	2.8		2.8									
2	18MAT31	C231	2.8	2.8	2.8									
3	18CS32	C232	2.28		2.28									
4	18CS33	C233	2.5	2	2									
5	18CS34	C234	2.28	1.52										
6	18CS35	C235	2.67		2									
7	18CS36	C236	2.4	1.7										
8	18CSL37	C237	2.2	2.2	2.2		2.2							
9	18CSL38	C238	3	1	2.5									
10	18MAT41	C241	2.8	2.8	2.8									
11	18CS42	C242	3		3		3			3	2	2.33	2.33	2
12	18CS43	C243	3	1.87	1.87									
13	18CS44	C244	1.56	1.3										
14	18CS45	C245	2.8	1.8		1.8								
15	18CS46	C246	1.8											
16	18CSL47	C247	2.5	1	2	2								
17	18CSL48	C248	2.8	2.8	2.8		2.8							

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**DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING****CO-PO Attainment 2018 Intake Batch**

SL.NO	Subject Code	Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
35	18CS73x	C471	1.56	1.04										
36	18CS74x	C472	2	3	2.33									
37	18CSL76	C473	1.74	0.69	1.39									
38	18CSP77	C4744	2.8											
39	18CS81	C4753	2.08	2.18										
40	18CS82x	C476	3	3	1	1								
41	18CSP83	C477	3	3	3	2	2				1	1	1	1
42	18CSS84	C478	2.64	2.64	2.64	2.64	2.64	1.76	2.64	2.2	2.64	2.64	2.64	1.76
43	18CSI85	C481	3	2	2	1	2	1	1	1	1	1	1	1

BRANCH ENGINEERING 'B' III Sem (ODD) AY:- 2019-20

Staff Name MALASHRI S

Subject Code

18MAT31

Subject Name CALCULUS, FOURIER SERIES & NUMERICAL

Targets and Level			
Target	Value	Level	
60%	60% and Above	60.0	3
55%	Between 50% to 59%	55.0	2
50%	Below 50%	50.0	1

Test Attainment Level			University Attained		Survey		Attainment
Co's	% Attained	Level	% Attained	Level	% Attained	Level	
C201.1	87.07	3	32.00	1	68.08	3	1.86
C201.2	64.86	3	32.00	1	77.31	3	2.96
C201.3	93.33	3	32.00	1	67.69	3	2.96
C201.4	94.63	3	32.00	1	73.08	3	1.86
C201.5	86.74	3	32.00	1	72.69	3	2.96

Weightage	
Test %	18%
University %	72%
Survey %	10%

Semester	III
Academic Year	2019-20
Class Strength	54
Maximum Marks	100

CONTRIBUTION TO PROGRAMME OUTCOMES (PO's) AND PROGRAM SPECIFIC OUTCOMES (PSO's) for Intake Year 20V1 for Academic Year 2018-19

CO's	Program Outcomes												Program Specific Outcome			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
C201.1	Mapping	1	2													
	Attainment	1.86	0.62	1.24												
C201.2	Mapping	2	1													
	Attainment	2.96	1.97	0.99												
C201.3	Mapping	3	1													
	Attainment	2.96	2.96	0.99												
C201.4	Mapping	1	2													
	Attainment	1.86	0.62	1.24												
C201.5	Mapping	3	3													
	Attainment	2.96	2.96	2.96												
C101		1.83	1.48													

[MALASHRI S] Head of the Department
Dept of Mathematics
Sir M Visvesvaraya Institute of Technology

Dr. S. K. Uma
Professor and Head
Department of Mathematics
Sir M Visvesvaraya Institute of Technology
Bengaluru-562157

III semester TE

Staff Name **UMA S**

Subject Code **18MAT31**

Subject Name

Transforms, Calculus, Fourier Series and Numerical Techniques

Targets and Level			
Target		Value	Level
60%	60% and Above	60.0	3
55%	Between 50% to 59%	55.0	2
50%	Below 50%	50.0	1

Test Attainm	Universti		Survey		Attainm ent		
	Co's	% Attained	Level	% Attained		Level	
C301.1	58.50	2	91.00	3	67.78	3	2.82
C301.2	52.59	2	91.00	3	77.04	3	2.82
C301.3	61.70	3	91.00	3	67.41	3	3.00
C301.4	73.26	3	91.00	3	72.96	3	3.00
C301.5	67.01	3	91.00	3	72.59	3	3.00

Weightage	
Test %	18%
University %	72%
Survey %	10%

Semester		3 TE
Academic Year		2019-20
Class Strength		48
Maximum Marks		100

CONTRIBUTION TO PROGRAMME OUTCOMES (PO's) AND PROGRAM SPECIFIC OUTCOMES (PSO's) for Intake Year 2018 for Academic Year 2019-20																	
CO's	Program Outcomes												Program Specific Outcome				
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
C301.1	Mapping	2	3														
	Attainment	2.82	1.88	2.82													
C301.2	Mapping	2	3														
	Attainment	2.82	1.88	2.82													
C301.3	Mapping	2	3														
	Attainment	3.00	2.00	3.00													
C301.4	Mapping	2	3														
	Attainment	3.00	2.00	3.00													
C301.5	Mapping	2	3														
	Attainment	3.00	2.00	3.00													
C301		1.95	2.93														

Sway

Head of the Department,
Dept. of Mathematics,
Sir M.V.V. Bangalore University

Dr. S. K. Uma
Professor and Head
Department of Mathematics
Sir M Visvesvaraya Institute of Technology
Bengaluru-562157

Branch 'Mech A' III Sem (ODD) (Y-2019-20)

Staff Name **CHETANA M B**

Subject Code **18MAT31 (A)**

Subject Name **CALCULUS, FOURIER SERIES AND NUMERIC**

Targets and Level			
Target		Value	Level
50%	50% and Above	30.0	3
45%	Between 40% to 49%	27.0	2
40%	Below 40%	24.0	1

Test Attainment Level			University Attained		Survey		Attainment
Co's	% Attained	Level	% Attained	Level	% Attained	Level	
C231.1	79.25	3	29.08	2	70.00	3	2.28
C231.2	80.79	3	29.08	2	90.00	3	2.28
C231.3	96.00	3	29.08	2	90.00	3	2.28
C231.4	90.97	3	29.08	2	70.00	3	2.28
C231.5	82.71	3	29.08	2	50.00	1	2.08

Weightage	
Test %	18%
University %	72%
Survey %	10%

Semester	3
Academic Year	2019-20
Class Strength	51
Maximum Marks	60

CONTRIBUTION TO PROGRAMME OUTCOMES (PO's) AND PROGRAM SPECIFIC OUTCOMES (PSO's) for Intake Year 2018 for Academic Year 2019-20

CO's	Program Outcomes												Program Specific Outcome				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	
	Mapping	Attainment	Value	Level	Value	Level	Value	Level									
C231.1	Mapping	2	3														
	Attainment	2.28	1.52	2.28													
C231.2	Mapping	2	3														
	Attainment	2.28	1.52	2.28													
C231.3	Mapping	2	3														
	Attainment	2.28	1.52	2.28													
C231.4	Mapping	2	3														
	Attainment	2.28	1.52	2.28													
C231.5	Mapping	2	3														
	Attainment	2.08	1.39	2.08													
C231			1.49	2.24													

Handwritten signature

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 Head of the Department,
 Dept. of Mathematics,
 Sir MVIT, Bangalore-562157.

Handwritten signature
Dr. S. K. Uma
 Professor and Head
 Department of Mathematics
 Sir M Visvesvaraya Institute of Technology
 Bengaluru-562157

BRANCH: EE 'E' III Sem (ODD) AY- 19-20
18 Batch

Staff Name CHETANA M B

Targets and Level			
Target		Value	Level
60%	60% and Above	60.0	3
55%	Between 50% to 59%	55.0	2
50%	Below 50%	50.0	1

Subject Code 18MAT31 (B)

Subject Name CALCULUS, FOURIER SERIES AND NUMERIC.

Test Attainment Level			University Attained		Survey		Attainm ent
Co's	% Attained	Level	% Attained	Level	% Attained	Level	
C231.1	85.87	3	64.85	3	90.00	3	3.00
C231.2	83.38	3	64.85	3	70.00	3	3.00
C231.3	87.60	3	64.85	3	70.00	3	3.00
C231.4	92.71	3	64.85	3	90.00	3	3.00
C231.5	86.64	3	64.85	3	50.00	1	2.80

Weightage	
Test %	18%
University %	72%
Survey %	10%

Semester	3
Academic Year	2019-20
Class Strength	48
Maximum Marks	100

CONTRIBUTION TO PROGRAMME OUTCOMES (PO's) AND PROGRAM SPECIFIC OUTCOMES (PSO's) for Intake Year 2018 for Academic Year 2019-20

CO's		Program Outcomes												Program Specific Outcome			
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
C231.1	Mapping	2	3														
	Attainment	3.00	2.00	3.00													
C231.2	Mapping	2	3														
	Attainment	3.00	2.00	3.00													
C231.3	Mapping	2	3														
	Attainment	3.00	2.00	3.00													
C231.4	Mapping	2	3														
	Attainment	3.00	2.00	3.00													
C231.5	Mapping	2	3														
	Attainment	2.80	1.87	2.80													
C231		1.97	2.96														

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Head of the Department,
Dept. of Mathematics,
Sir MVIT, Bangalore-562157.

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Dr. S. K. Uma
Professor and Head
Department of Mathematics
Sir M Visvesvaraya Institute of Technology
Bangalore-562157

Staff Name CTY

I-SEPA-EG A Sec. Subject Code

18MAT11 (A)

Subject Name

Calculus & Linear Algebra

Targets and Level			
Target	Value	Level	
60%	60% and Above	36.0	3
55%	Between 50% to 59%	33.0	2
50%	Below 50%	30.0	1

Co's	Test Attainment Level		University Attained		Survey		Attainment
	% Attained	Level	% Attained	Level	% Attained	Level	
C101.1	94.99	3	42.50	3	88.10	3	3.00
C101.2	78.84	3	42.50	3	89.05	3	3.00
C101.3	86.56	3	42.50	3	88.73	3	3.00
C101.4	87.67	3	42.50	3	88.41	3	3.00
C101.5	95.05	3	42.50	3	89.05	3	3.00

Weightage	
Test %	18%
University %	72%
Survey %	10%

Semester	1
Academic Year	2019-20
Class Strength	63
Maximum Marks	60

CONTRIBUTION TO PROGRAMME OUTCOMES (PO's) AND PROGRAM SPECIFIC OUTCOMES (PSO's) for Intake Year 2010 for Academic Year 2019-20

CO's	Program Outcomes												Program Specific Outcome			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
C101.1	Mapping	2	3										2	3	3	
	Attainment 3.00	2.00	3.00										2.00	3.00	3.00	
C101.2	Mapping	2	3										1	3	3	
	Attainment 3.00	2.00	3.00										1.00	3.00	3.00	
C101.3	Mapping	2	3										2	3	3	
	Attainment 3.00	2.00	3.00										2.00	3.00	3.00	
C101.4	Mapping	2	3										2	3	3	
	Attainment 3.00	2.00	3.00										2.00	3.00	3.00	
C101.5	Mapping	2	3										2	3	3	
	Attainment 3.00	2.00	3.00										2.00	3.00	3.00	
C101		2.00	3.00										1.80	3.00	3.00	

Head of the Department
Dept. of Mathematics,
BIT, Bangalore-562157.

Signature

Dr. S. K. Uma
Professor and Head
Department of Mathematics
Sir M Visvesvaraya Institute of Techno
Bangalore-560022

Chayee.T.Y.
g.h.T.Y.

SEM 'H' SECTION

Staff Name **ARAVIND P N**

Subject Code **18MAT11 (H)**

Subject Name **CALCULUS AND LINEAR ALGEBRA**

Targets and Level			
Target	Value	Level	
60%	60% and Above	60.0	3
55%	Between 50% to 59%	55.0	2
50%	Below 50%	50.0	1

Test Attainment Level			University Attained		Survey		Attainment
Co's	% Attained	Level	% Attained	Level	% Attained	Level	
C101.1	77.00	3	97.00	3	70.00	3	3.00
C101.2	76.00	3	97.00	3	50.00	1	2.80
C101.3	55.00	2	97.00	3	90.00	3	2.82
C101.4	66.00	3	97.00	3	90.00	3	3.00
C101.5	88.00	3	97.00	3	70.00	3	3.00

Weightage	
Test %	18%
University %	72%
Survey %	10%

Semester	1 H
Academic Year	2019-20
Class Strength	31
Maximum Marks	100

CONTRIBUTION TO PROGRAMME OUTCOMES (PO's) AND PROGRAM SPECIFIC OUTCOMES (PSO's) for Intake Year 2019 for Academic Year 2019-20																	
CO's		Program Outcomes												Program Specific Outcome			
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
C101.1	Mapping	2	3														
	Attainment	3.00	2.00	3.00													
C101.2	Mapping	2	3														
	Attainment	2.80	1.87	2.80													
C101.3	Mapping	2	3														
	Attainment	2.82	1.88	2.82													
C101.4	Mapping	2	3														
	Attainment	3.00	2.00	3.00													
C101.5	Mapping	2	3														
	Attainment	3.00	2.00	3.00													
C101		1.95	2.92														

Aravind P N
(ARAVIND P N)

[Signature]
Head of the Department,
Dept. of Mathematics,
Sir M V Visvesvaraya Institute of Technology,
Bengaluru-562157.

[Signature]
Dr. S. K. Uma
Professor and Head
Department of Mathematics
Sir M Visvesvaraya Institute of Technology
Bengaluru-562157

Staff Name Vani Harave

Subject Code

20MCA11 (A)

Subject Name

Data Structures with Algorithms

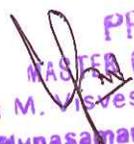
Targets and Level			
Target	Value	Level	
40%	40% and Above	24.0	3
35%	Between 30% to 39%	21.0	2
30%	Below 30%	18.0	1

Semester	1
Academic Year	2020-21
Class Strength	58
Maximum Marks	60

Co's	Test Attainment Level		University Attained		Survey		Attainment
	% Attained	Level	% Attained	Level	% Attained	Level	
C101.1	86.67	3	27.81	3	82.76	3	3.00
C101.2	90.08	3	27.81	3	82.41	3	3.00
C101.3	95.32	3	27.81	3	81.72	3	3.00
C101.4	92.14	3	27.81	3	79.66	3	3.00
C101.5	98.25	3	27.81	3	77.93	3	3.00

Weightage	
Test %	18%
University %	72%
Survey %	10%

CONTRIBUTION TO PROGRAMME OUTCOMES (PO's) AND PROGRAM SPECIFIC OUTCOMES (PSO's) for Intake Year 2020 for Academic Year 2020-21																	
CO's		Program Outcomes												Program Specific Outcome			
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
C101.1	Mapping	3												2	1		
	Attainment	3.00	3.00											2.00	1.00		
C101.2	Mapping			3										1	2		
	Attainment	3.00		3.00										1.00	2.00		
C101.3	Mapping		2											1	1		
	Attainment	3.00	2.00											1.00	1.00		
C101.4	Mapping			3				2				1			1		
	Attainment	3.00		3.00				2.00				1.00			1.00		
C101.5	Mapping			3		2						1			1		
	Attainment	3.00		3.00		2.00						1.00			1.00		
C101		3.00	2.00	3.00		2.00		2.00				1.00		1.33	1.20		


PROF & HEAD
 MASTER OF COMPUTER APPLICATIONS
 M. Visvesvaraya Institute of Technology
 Munasamranahalli, Bangalore-562 157

NAAC-2.6

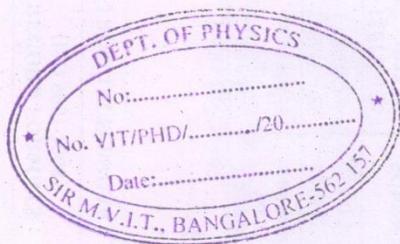
Course: Engineering Physics

Course Code: 18PHY 12/22

Course Outcomes

Upon Completion of this course the students will be able to

1. Remember the various types of oscillations and understand their implications in various domains and also interpret the role of shock waves and its applications.
2. Recognize the importance of elastic properties of materials and apply them in engineering applications.
3. Realize the interrelation between time varying electric and magnetic fields, concept of transvers nature of EM waves and their role in optical fiber communication with the basic understanding of ray optics and types of optical fibers.
4. Compute Eigen values, Eigen functions of atomic and subatomic particles using time independent 1-D Schrodinger's wave equation.
5. Apprehend theoretical background of laser, construction and working of different types of laser and its applications in different fields
6. Understand the electrical and thermal properties of materials like conductors, semiconductors and dielectrics using the theoretical models



Adarsh
HEAD
Department of Physics
Sir M. Visvesvaraya Institute of Technology
Bangalore - 562 157.

Staff Name: Hanthran, N

Subject Code: 100PH21A

Subject Name:

Signature: N. Hanthran

Target	Value	Level
60% / 60% and Above	36.0	3
55% / Between 50% to 59%	33.0	2
50% / Below 50%	30.0	1

Semester	1
Academic Year	2019-20
Class Strength	63
Maximum Marks	60

Test Attainment	Co's	Avg %	Level	% Achieved						
	C102.1	91.40	3	43.94	3		1	100	2.80	
	C102.2	98.37	3	43.94	3		1	100	2.80	
	C102.3	99.17	3	43.94	3		1	100	2.80	
	C102.4	93.17	3	43.94	3		1	100	2.80	
	C102.5	98.39	3	43.94	3		1	100	2.80	
	C102.6	94.45	3	43.94	3		1	100	2.80	

Weightage	Test %	University %	Survey %
	18%	72%	10%

CO's	Program Outcomes (POs) AND PROGRAM SPECIFIC OUTCOMES (PSOs) for Intake Year 2010 for Academic Year 2019-20							
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
C102.1	Mapping	2	2					
C102.2	Attainment	2.80	1.87					
C102.3	Mapping	2	2					
C102.4	Attainment	2.80	1.87					
C102.5	Mapping	2	2					
C102.6	Attainment	2.80	1.87					

Department of Physics
 Sir M. Viswesvaraya Institute of Technology

HEAD

N. Hanthran

I see, Eq A-5
 AY: 2019-20