CRITERION 2	VISION, MISSION AND PROGRAM EDUCATIONAL OBJECTIVES	60

2.1 Program Curriculum (20)

2.1.1 State the process used to identify extent of compliance of the University curriculum for attaining the Program Outcomes and Program Specific Outcomes as me mention the identified curricular gaps, if any (10)

2.1 Program Curriculum 2.1.1 State the process used to identify extent of compliance of the University curriculum for attaining the Program Outcomes and Program Specific outcomes as mentioned in A The process to identify the extent of compliance is depicted in Figure 2.1.1.a.

The Visvesvaraya Technological University (VTU), to which our college is affiliated, is endeavoring itself to come up with curriculum which is in tune with National Education Policy (NEP-2020). The VTU upgrades its curriculum university get quality education across all affiliated colleges. In view of this, the VTU has streams to cover broad spectrum of courses, ranging from Humanities, Kannada language, Constitution of India, Universal Human Values core courses, ability enhancement courses to professional and open electives to internship, mini-projects, and final year projects. Since the university is appending the curriculum and 2022 scheme are in vogue. Also, the university has mentioned the course outcomes (COs) and Program Outcomes (POs – only for 2022 scheme as indicative).

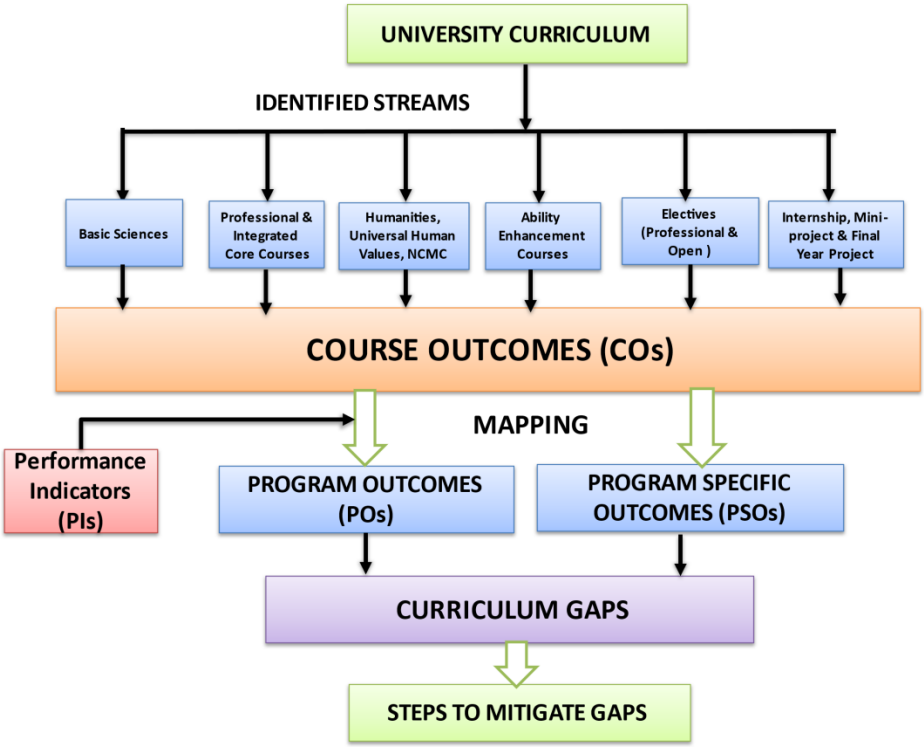

Fig. 2.1.1.a: Process used to identify the extent of compliance.

PROGRAM CURRICULUM

Basic Sciences and Humanities: The stream includes courses like Engineering Mathematics, Engineering Physics, Engineering Chemistry, Constitution of India & professional ethics, and Environmental studies. The which provides basic knowledge on mathematics, physics, chemistry, Indian constitution, professional ethics, and importance of environment.

Basic Engineering Courses: The stream includes courses like Basic electronics, Basic electrical engineering, Programming in C, Programming in Python, Computer aided engineering drawing, Elements of mechanical engineering and Elements of civil engineer disciplines.

Professional Core Courses: The stream include courses like Data Structures and Applications, Object Oriented programming with Java Laboratory, Design and Analysis of Algorithms, Microcontroller and Embedded Systems, Computer Organization and Architecture, Operating Systems, Database Management Systems, Computer Networks, Principles of Artificial Intelligence, Cloud Computing, Data Visualization etc. Mini project, Project work and Technical Seminar, Internship provide opportunity for students to develop understanding of the inter relationship between courses, develop and demonstrate higher order skills, and to apply the gained knowledge.

Humanities, Universal Human Values and Non Credit Mandatory Course (NCMCs): The stream includes courses in general studies to fulfil the basic needs of engineers. These are essential to create awareness on Indian constitution, Professional ethics, Importance of environment, Managerial and Entrepreneurial Technological Innovation Management and Entrepreneurship, Constitution of India, Professional ethics and Cyber Law, Technical English 1&2, Balake Kannada, Samskrutika Kannada, and Environmental studies, Social Connect included in the curriculum. Curriculum also includes non-credit Mandatory Course like Additional Mathematics I and II, Yoga, Nation Service Scheme, Physical Education etc.

Ability Enhancement Courses: Data Analytics using Excel, Mastering office, Mongo Db, Web Programming, Angular Js and Node Js, C# and Dot Net Framework.

Management Courses: The stream includes courses like Software engineering and Project Management in 6th semester, these are essential to create awareness on managerial & entrepreneurial skills.

Elective Courses: The stream includes courses like Business Intelligence, Internet of Things, Robotic Process Automation Design and Development etc. The Electives provide an avenue for specialization in an area of the student's choice.

Internship, Mini-Project and Final Year Project: Students undergo 3-4 weeks of Internship after every academic Year. Students are motivated to do mini-project during their second year. Also curriculum includes mini- project for the pre final year students

that is during 3rd year. final year to provide opportunity for students to develop understanding of the inter relationship between courses, develop & demonstrate higher order skills, and to apply the gained knowledge. Project work has been given due weightage.

Various streams in the program curriculum as per 2018 scheme are shown in table 2.1.1.
A. 2018-2019 Scheme.

Sl. No	Types of Courses Offered	Number of Subjects Mapped	Number of Credits Allocated	Weight Age In Percentage	Marks Allocated	PO	PSO
1	BASIC SCIENCE COURSE **(BSC)**	9	23	14.375	900	1,2,3	1,2,3
2	ENGINEERING SCIENCE COURSE **(ESC)**	8	20	12.5	800	1,2,3,5,7	1,2,3
3	PROFESSIONAL CORE **(PCC)**	11	24	15	1100	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
4	HUMANITY & SOCIAL SCIENCE & MANAGEMENT COURSES **(HSMC)**	8	12	7.5	800	5,6,9,10,11	3
5	PROFESSIONAL ELECTIVE (PEC)	3	95.625	5.625	300	1,2,3	2
6	OPEN ELECTIVE **(OE)**	2	6	3.75	200	1,2,3	2
	ABALITY ENHANCEMENT COURSE **(AEC)**	7	9	5.625	700	1,2,3,5	1,3
	INTEGRATED PROFESSIONAL CORE COURSES **(IPCC)**	6	24	15	600	1,2,3,4,5,9,10,11	1,2,3
	NON CREDIT MANDATORY COURSES **(NCMC)**	5	0	0	500	7,8	3
7	MINI PROJECT **(MP)**	1	2	1.25	100	1,2,3,4,5,6,8,9,10,11,12	1,2,3
8	INTERNSHIP **(INT)**	3	20	12.5	300	1,2,3,4,5,8,9,10,11,12	1,2,3
9	PROJECT	1	10	6.25	200	1,2,3,4,5,6,8,9,10,11,12	1,2,3
10	SEMINAR	1	1	0.625	100	1,2,3,4,5,6,8,9,10,11,12	1,2,3

University Curriculum

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III SEMESTER

Sl. No	Course and Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week: Theory Lecture L	Tutorial T	Practical/ Drawing P	Self-Study S	Examination: Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	BSC 21MAT31	Transform Calculus, Fourier Series and Numerical Techniques	Maths	3	0	0		03	50	50	100	3
2	IPCC 21CS32	Data Structures and Applications	Any CS Board Department	3	0	2		03	50	50	100	4
3	IPCC 21CS33	Analog and Digital Electronics		3	0	2		03	50	50	100	4
4	PCC 21CS34	Computer Organization and Architecture		3	0	0		03	50	50	100	3
5	PCC 21CSL35	Object Oriented Programming with JAVA Laboratory		0	0	2		03	50	50	100	1
6	UHV 21UH36	Social Connect and Responsibility	Any Department	0	0	1		01	50	50	100	1
7	HSMC 21KSK37/47	Samskrutika Kannada	TD and PSB: HSMC	1	0	0		01	50	50	100	1
	HSMC 21KBK37/47	Balake Kannada										
		OR										
	HSMC 21CIP37/47	Constitution of India and Professional Ethics										
8	AEC 21CS38X/21 CSL38X	Ability Enhancement Course - III	TD: Concerned department PSB: Concerned Board	If offered as Theory Course: 1	0	0		01	50	50	100	1
				If offered as lab. course: 0	0	2		02				
								Total	400	400	800	18
9	Scheduled activities for III to VIII semesters: NMDC 21NS83	National Service Scheme (NSS)	NSS	All students have to register for any one of the course namely National Service Scheme, Physical Education (PE)(Sports and Athletics) and Yoga with the concerned coordinator of the course during the first week of III semester. The activities shall be carried out from (for 5 semesters) between III semester to VIII semester. SEE in the above courses shall be conducted during VIII semester examinations and the accumulated CIE marks shall be added to the SEE marks. Successful completion of the registered course is mandatory for the award of the degree. The events shall be appropriately scheduled by the colleges and the same shall be reflected in the colander prepared for the NSS, PE and Yoga activities.								
	NMDC 21PE83	Physical Education (PE) (Sports and Athletics)	PE									
	NMDC 21YO83	Yoga	Yoga									

Course prescribed to lateral entry Diploma holders admitted to III semester B.E./B.Tech programs

1	NCMC 21MATDIP31	Additional Mathematics - I	Maths	02	02	--	--	---	100	---	100	0

Note: BSC: Basic Science Course, **IPCC:** Integrated Professional Core Course, **PCC:** Professional Core Course, **INT** –Internship, **HSMC:** Humanity and Social Science & Management Courses, **AEC**–Ability Enhancement Courses. **UHV:** Universal Human Value Course.
L –Lecture, **T** – Tutorial, P- Practical/ Drawing, **S** – Self Study Component, **CIE:** Continuous Internal Evaluation, **SEE:** Semester End Examination. **TD**-Teaching Department, **PSB**: Paper Setting department

21KSK37/47 Samskrutika Kannada is for students who speak, read and write Kannada and **21KBK37/47** Balake Kannada is for non-Kannada speaking, reading, and writing students.

Integrated Professional Core Course (IPCC): Refers to Professional Theory Core Course Integrated with Practical's of the same course. Credit for IPCC can be 04 and its Teaching–Learning hours (L : T : P) can be considered as (3 : 0 : 2) or (2 : 2 : 2). The theory part of the IPCC shall be evaluated both by CIE and SEE. The practical part shall be evaluated by only CIE (no SEE). However, questions from the practical part of IPCC shall be included in the SEE question paper. For more details, the regulation governing the Degree of Bachelor of Engineering /Technology (BE/B.Tech.) 2021-22 may be referred.

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IV SEMESTER

Sl. No	Course and Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week: Theory Lecture L	Tutorial T	Practical/ Drawing P	Self-Study S	Examination: Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	BSC 21CS41	Mathematical Foundations for Computing	Maths	2	2	0		03	50	50	100	3
2	IPCC 21CS42	Design and Analysis of Algorithms	Any CS Board Department	3	0	2		03	50	50	100	4
3	IPCC 21CS43	Microcontroller and Embedded Systems		3	0	2		03	50	50	100	4
4	PCC 21CS44	Operating Systems		2	2	0		03	50	50	100	3
5	AEC 21BE45	Biology For Engineers	BT, CHE, PHY	2	0	0		02	50	50	100	2
6	PCC 21CSL46	Python Programming Laboratory	Any CS Board Department	0	0	2		03	50	50	100	1
7	HSMC 21KSK37/47	Samskrutika Kannada	HSMC	1	0	0		01	50	50	100	1
	HSMC 21KBK37/47	Balake Kannada										
		OR										
	HSMC 21CIP37/47	Constitution of India & Professional Ethics										
8	AEC 21CS48X/21C SL48X	Ability Enhancement Course- IV	TD and PSB: Concerned department	If offered as theory Course: 1	0	0		01	50	50	100	1
				If offered as lab. course: 0	0	2		02				
9	UHV 21UH49	Universal Human Values	Any Department	1	0	0		01	50	50	100	1
10	INT 21INT49	Inter/Intra Institutional Internship	Evaluation By the appropriate authorities	Completed during the intervening period of II and III semesters by students admitted to first year of BE./B.Tech and during the intervening period of III and IV semesters by Lateral entry students admitted to III semester.				3	100	--	100	2
								Total	550	450	1000	22

Course prescribed to lateral entry Diploma holders admitted to III semester of Engineering programs

1	NCMC 21MATDIP41	Additional Mathematics - II	Maths	02	02	--	--	--	100	--	100	0

Note: BSC: Basic Science Course, IPCC: Integrated Professional Core Course, PCC: Professional Core Course, AEC –Ability Enhancement Courses, HSMC: Humanity and Social Science and Management Courses, UHV- Universal Human Value Courses.
L –Lecture, T – Tutorial, P- Practical/ Drawing, S – Self Study Component, CIE: Continuous Internal Evaluation, SEE: Semester End Examination.

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V SEMESTER

Sl. No	Course and Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
				Theory Lecture	Tutorial	Practical/ Drawing	Self -Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
				L	T	P	S					
1	BSC 21CS51	Automata Theory and compiler Design	Any CS Board Department	3	0	0		03	50	50	100	3
2	IPCC 21CS52	Computer Networks		3	0	2		03	50	50	100	4
3	PCC 21CS53	Database Management Systems		3	0	0		03	50	50	100	3
4	PCC 21AI54	Principles of Artificial Intelligence		3	0	0		03	50	50	100	3
5	PCC 21CSL55	Database Management System Laboratory with Mini Project		0	0	2		03	50	50	100	1
6	AEC 21XX56	Research Methodology & Intellectual Property Rights	TD: Any Department PSB: As identified by university	2	0	0		02	50	50	100	2
7	HSMC 21CIV57	Environmental Studies	TD: Civil/ Environmental /Chemistry/ Biotech. PSB: Civil Engg	1	0	0		1	50	50	100	1
8	AEC 21CS58X/21 CSL58X	Ability Enhancement Course-V	Concerned Board	If offered as Theory courses				01	50	50	100	1
				1	0	0						
				If offered as lab. courses				02				
				0	0	2						
								Total	400	400	800	18

Ability Enhancement Course - IV

21CSL581	Angular Js and Node Js	21CS583	
21CS582	C# and .Net Framework	21CS584	

Note: BSC: Basic Science Course, PCC: Professional Core Course, IPCC: Integrated Professional Core Course, AEC –Ability Enhancement Course INT – Internship, HSMC: Humanity and Social Science & Management Courses.
L –Lecture, T – Tutorial, P- Practical/ Drawing, S – Self Study Component, CIE: Continuous Internal Evaluation, SEE: Semester End Examination.

Integrated Professional Core Course (IPCC): refers to Professional Theory Core Course Integrated with Practical of the same course. Credit for IPCC can be 04 and its Teaching – Learning hours (L : T : P) can be considered as (3 : 0 : 2) or (2 : 2 : 2). Theory part of the IPCC shall be evaluated both by CIE and SEE. The practical part shall be evaluated by CIE only and there shall be no SEE. For more details the regulation governing the Degree of Bachelor of Engineering /Technology (BE/B.Tech.) 2021-22 may be referred.

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VI SEMESTER

Sl. No	Course and Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
				Theory Lecture	Tutorial	Practical/ Drawing	Self -Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
				L	T	P	S					
1	HSMC 21CS61	Software Engineering & Project Management	Any CS Board Department	2	2	0		03	50	50	100	3
2	IPCC 21AD62	Data Science and its Applications		3	0	2		03	50	50	100	4
3	PCC 21AI63	Machine Learning		3	0	0		03	50	50	100	3
4	PEC 21XX64x	Professional Elective Course-I		3	0	0		03	50	50	100	3
5	OEC 21XX65x	Open Elective Course-I	Concerned Department	3	0	0		03	50	50	100	3
6	PCC 21AIL66	Machine Learning Laboratory	Any CS Board Department	0	0	2		03	50	50	100	1
7	MP 21ADMP67	Mini Project		Two contact hours /week for interaction between the faculty and students.				--	100	--	100	2
8	INT 21INT68	Innovation/Entrepreneurship /Societal Internship	Completed during the intervening period of IV and V semesters.					--	100	--	100	3
								Total	500	300	800	22

Professional Elective - I

21AI641	Business Intelligence	21AI643	Natural Language Processing
21CS642	Advanced JAVA Programming	21AD644	Data Security and Privacy

Open Electives – I offered by the Department to other Department students

21CS651	Introduction to Data Structures	21CS653	Introduction to Cyber Security
21CS652	Introduction to Database Management Systems	21CS654	Programming in JAVA

Note: HSMC: Humanity and Social Science & Management Courses, **IPCC:** Integrated Professional Core Course, **PCC:** Professional Core Course, **PEC:** Professional Elective Courses, OEC–Open Elective Course, **MP** –Mini Project, INT –Internship.
L –Lecture, T – Tutorial, P - Practical / Drawing, S – Self Study Component, CIE: Continuous Internal Evaluation, SEE: Semester End Examination.

Integrated Professional Core Course (IPCC): Refers to Professional Theory Core Course Integrated with Practical of the same course. Credit for IPCC can be 04 and its Teaching – Learning hours (L : T : P) can be considered as (3 : 0 : 2) or (2 : 2 : 2). The theory part of the IPCC shall be evaluated both by CIE and SEE. The practical part shall be evaluated by CIE only and there shall be no SEE. For more details, the regulation governing the Degree of Bachelor of Engineering /Technology (BE/B.Tech) 2021-22 may be referred.

Professional Elective Courses (PEC):
A professional elective (PEC) course is intended to enhance the depth and breadth of educational experience in the Engineering and Technology curriculum. Multidisciplinary courses that are added supplement the latest trend and advanced technology in the selected stream of engineering. Each group will provide an option to select one course out of five courses. The minimum students' strength for offering professional electives is 10. However, this conditional shall not be applicable to cases where the admission to the programme is less than 10.

Open Elective Courses:
Students belonging to a particular stream of Engineering and Technology are not entitled for the open electives offered by their parent Department. However, they can opt an elective offered by other Departments, provided they satisfy the prerequisite condition if any. Registration to open electives shall be documented under the guidance of the Program Coordinator/ Advisor/Mentor.
Selection of an open elective shall **not be allowed** if,
- **(i)** The candidate has studied the same course during the previous semesters of the program.
- **(ii)** The syllabus content of open electives is similar to that of the Departmental core courses or professional electives.
- **(iii)** A similar course, under any category, is prescribed in the higher semesters of the program.

In case, any college is desirous of offering a course (not included in the Open Elective List of the University) from streams such as Law, Business (MBA), Medicine, Arts, Commerce, etc., can seek permission, at least one month before the commencement of the semester, from the University by

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Swappable VII and VIII SEMESTER

VII SEMESTER

Sl. No	Course and Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week: Theory Lecture L	Tutorial T	Practical/ Drawing P	Self-Study S	Examination: Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	PCC 21AD71	Data Visualization	Any CS Board Department	3	0	0		3	50	50	100	3
2	PCC 21CS72	Cloud Computing		2	0	0		3	50	50	100	2
3	PEC 21XX73X	Professional elective Course-II		3	0	0		3	50	50	100	3
4	PEC 21XX74X	Professional elective Course-III		3	0	0		3	50	50	100	3
5	OEC 21XX75X	Open elective Course-II	Concerned Department	3	0	0		3	50	50	100	3
6	Project 21ADP76	Project work		Two contact hours /week for interaction between the faculty and students.				3	100	100	200	10
								Total	**350**	**350**	**700**	**24**

VIII SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department	Teaching Hours /Week: Theory Lecture L	Tutorial T	Practical/ Drawing P	Self-Study S	Examination: Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	Seminar 21AD81		Technical Seminar		One contact hour /week for interaction between the faculty and students.				--	100	--	100	01
2	INT 21INT82		Research Internship/ Industry Internship		Two contact hours /week for interaction between the faculty and students.				03 (Batch wise)	100	100	200	15
3	NCMC	21NS83	National Service Scheme (NSS)	NSS	Completed during the intervening period of III semester to VIII semester.				--	50	50	100	0
		21PE83	Physical Education (PE) (Sports and Athletics)	PE									
		21YO83	Yoga	Yoga									
									Total	**250**	**150**	**400**	**16**

Professional Elective - II

21AI731	Social Network Analysis	21CS734	Blockchain Technology
21CS732	Digital Image Processing	21CS735	Internet of Things
21AI733	Fullstack Development		

Professional Elective - III

21AI741	Augmented Reality	21CS744	Robotic Process Automation Design and Development
21CS742	Multiagent Systems	21CS745	NoSQL
21CS743	Deep Learning		

PROGRAM OUTCOMES (POs)

Artificial Intelligence and Data Science Graduates will be able to:

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, research literature, and analyze 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 modeling 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.

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 the 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 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.

CO-PO mapping using PIs:

At the institute level, our endeavor is to map the COs with POs, PSOs, PEOs, Mission and Vision statements of the Institute. The process initiated by our institute to map the COs with the POs adopts the performance indicators (PIs) so as to arrive at an absolute value for each PO. The Performance Indicators (PIs) indicate the concrete actions the students should be able to perform as a result of participation in the program. Once the POs have been identified (provided by NBA),the knowledge and skills necessary for achieving these outcomes should be listed (Page 13)–Examination Reference Manual AICTE).

The PIs are used to quantitatively assess the implementation and outcomes. In our process, every Program Outcome (PO) has two supporting indicators. This process mitigates the subjectivity while mapping the COs with POs. The process for CO-PO mapping using PIs is depicted in Figure 2.1.1.b.

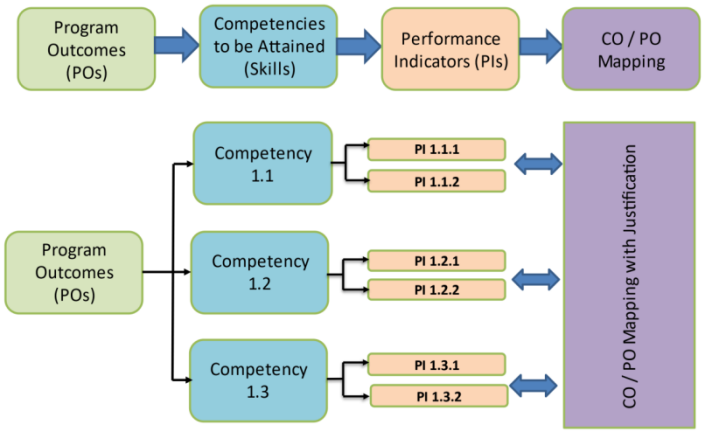


Fig. 2.1.1.k: Performance Indicators for CO-PO mapping.

Sample of Competency (Skills), PIs and justification for CO-PO mapping is depicted in Table 2.1.1.a. Table.2.1.1. a: Sample of Performance Indicators (PIs) for CO-PO mapping.

Table.2.1.1. a: Sample of Performance Indicators (PIs) for CO-PO mapping

PO	C.No	Competenies	PI. No	Performance Indicator	CO1	CO2	CO3	CO4	CO5
PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialisation for the solution of complex engineering problems. specialisation for the solution of complex engineering problems.	1.2	Demonstrate competence in mathematical modelling in mathematical modelling	1.2.1	Apply the knowledge of discrete structures, linear algebra, statistics and numerical techniques to solve problems	Y	Y	Y	Y	Y
			1.2.2	Apply the concepts of probability, statistics and queuing theory in modeling of computer-based system, data and network protocols.	Y	Y	Y	Y	Y
	1.5	Demonstrate competence in basic sciences in basic sciences	1.5.1	Apply laws of natural science to an engineering problem	Y	Y	Y	Y	Y
	1.6	Demonstrate competence in engineering fundamentals in engineering fundamentals	1.6.1	Apply engineering fundamentals	Y	Y	Y	Y	Y
	1.7	Demonstrate competence in specialized engineering knowledge to the program	1.7.1	Apply theory and principles of computer science and engineering to solve an engineering problem	Y	Y	Y	Y	Y
					5	5	5	5	5
PO 2: Problem analysis: Identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of	2.5	Demonstrate an ability to identify and formulate complex engineering problem	2.5.1	Evaluate problem statements and identifies objectives		Y	Y	Y	Y
			2.5.2	Identify processes/modules/algorithms of a computer-based system and parameters to solve a problem		Y	Y	Y	Y
			2.5.3	Identify mathematical algorithmic knowledge that applies to a given problem		Y	Y	Y	Y

mathematics, natural sciences, and engineering sciences.	2.6	Demonstrate an ability to formulate a solution plan and methodology for an engineering problem	2.6.1	Reframe the computer-based system into interconnected subsystems		Y	Y	Y	Y
			2.6.2	Identify functionalities and computing resources.		Y	Y	Y	Y
			2.6.3	Identify existing solution/methods to solve the problem, including forming justified approximations and assumptions		Y	Y	Y	Y
			2.6.4	Compare and contrast alternative solution/methods to select the best methods		Y	Y	Y	Y
			2.6.5	Compare and contrast alternative solution processes to select the best process.		Y	Y	Y	Y
	2.7	Demonstrate an ability to formulate and interpret a model	2.7.1	Able to apply computer engineering principles to formulate modules of a system with required applicability and performance		Y	Y	Y	Y
			2.7.2	Identify design constraints for required performance criteria.		Y	Y	Y	Y
	2.8	Demonstrate an ability to execute a solution process and analyze results	2.8.1	Applies engineering mathematics to implement the solution.		Y	Y	Y	Y
			2.8.2	Analyze and interpret the results using contemporary tools.		Y	Y	Y	Y
			2.8.3	Identify the limitations of the solution and sources/causes.		Y	Y	Y	Y
			2.8.4	Arrive at conclusions with respect to the objectives.		Y	Y	Y	Y
					0	14	14	14	14

					0	6	6	6	6
PSO1. To apply core knowledge of Artificial Intelligence, Machine Learning, Deep Learning, Data Science, Big Data Analytics and Statistical Learning to develop effective solutions for real-world problems.	1.1	Apply core concepts of AI/ML/DL and statistical methods to model and solve complex problems.	1.1.1	Formulate problem statement and select suitable algorithms for classification, regression, or clustering	Y	Y	Y	Y	Y
			1.1.2	Implement and validate models using appropriate datasets and performance metrics	Y	Y	Y	Y	Y
	1.2	Demonstrate integration of data science and big data tools to develop scalable and real-time solutions.	1.2.1	Integrate resource-efficient algorithms and data practices into AI solutions.	Y	Y	Y	Y	Y
			1.2.2	Evaluate scalability and efficiency of solutions across various data volumes	Y	Y	Y	Y	Y
					4	4	4	4	4
PSO2. To demonstrate proficiency in specialized and emerging technologies such as Natural Language Processing, Cloud Computing, Robotic Process Automation, Storage Area Networks and the Internet of	2.1	Apply emerging technologies (e.g., NLP, IoT) to address domain-specific challenges.	2.1.1	Design and implement algorithms to optimize performance and scalability in project development.					

Things to meet the stringent and diverse professional challenges.			2.1.2	Analyze complex problems from diverse domains and identify appropriate computational solutions.						
	2.2	Demonstrate proficiency in cloud and automation technologies for scalable solutions	2.2.1	Deploy and manage cloud-based services using cloud platform.						
			2.2.2	Designs workflows using tools to automate repetitive tasks.						
					0	0	0	0	0	
PSO3. To imbibe managerial skills, social responsibility, ethical and moral values through courses in Management and Entrepreneurship, Software Engineering Principles, Universal Human Values and Ability Enhancement Programs to meet the industry and societal expectations.	3.1	Demonstrate leadership and team management skills in project-based environments.	3.1.1	Take initiative and lead teams during capstone or group projects ensuring timely and quality deliverables.						
			3.1.2	Apply project management principles including scheduling, resource allocation, and risk mitigation.						
	3.2	Exhibit ethical reasoning and social responsibility in technical and managerial decisions.	3.2.1	Identify and address ethical dilemma and data privacy concerns in technology applications.						
			3.2.2	Participate in outreach projects and reflect on their societal impact.						
					0	0	0	0	0	

Sample of CO-PO matrix based on Table 2.1.1.a is depicted in Tabular matrix 2.1.1.b.

The process of calculating the absolute value of PO for each CO is carried out by summing up the values obtained by performing the logical AND on the values of PIs corresponding to every competency.

Table.2.1.1. b: Sample of CO-PO matrix based on Table 2.1.1.a

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1:Identify different data structures and their applications	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0
CO 2. Apply stack and queues in solving problems.	3	2	3	3	3	0	0	0	0	0	0	3	3	0	0
CO 3. Demonstrate applications of linked list.	3	2	3	3	3	0	0	0	0	0	0	3	3	0	0
CO 4. Explore the applications of trees and graphs to model and solve the real-world problem.	3	2	3	3	3	0	0	0	0	0	0	3	3	0	0

CO 5. Make use of Hashing techniques and resolve collisions during mapping of key value pairs.	3	2	3	3	3	0	0	0	0	0	0	3	3	0	0
Average	**3**	**1.6**	**2.4**	**2.4**	**2.4**	**0**	**0**	**0**	**0**	**0**	**0**	**2.4**	**3**	**0**	0

CO-PSOs mapping:

While articulating the PSOs, the following process is adopted:

1. The first PSO specifies the professional and integrated core courses.

2. The second PSO centers around the professional core and open electives, and

3. The third PSO focuses on the general skills and competencies students acquire through the university prescribed courses and through the college-initiated activities.

This process will galvanize an effective eco-system and nurture the quality of teaching-learning system. We, at AITM, have a tryst with quality, and to make the students learning an endearing and a surreal experience.

Program Specific Outcomes:

PSO1: To apply core knowledge of Artificial Intelligence, Machine Learning, Deep Learning, Data Science, Big Data Analytics and Statistical Learning to develop effective solutions for real-world problems.

PSO2: To demonstrate proficiency in specialized and emerging technologies such as Natural Language Processing, Cloud Computing, Robotic Process Automation, Storage Area Networks and the Internet of Things to meet the stringent and diverse professional challenges.

PSO3: To imbibe managerial skills, social responsibility, ethical and moral values through courses in Management and Entrepreneurship, Software Engineering Principles, Universal Human Values and Ability Enhancement Programs to meet the industry and societal expectations.

Process to identify Curriculum Gaps:

The process implemented at the Institute to identify the curriculum gaps is shown in Figure. 2.1.1.c.

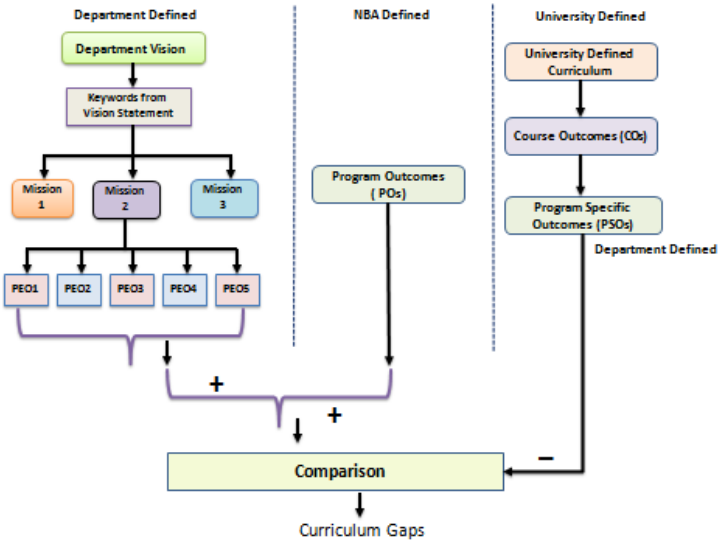


Fig. 2.1.1.c: Process to identify the curriculum gaps.

The NBA has defined 12 POs and we at AITM, has articulated 5 PEOs. It is desirable and prudent that most of the POs and PEOs are achieved by the end of the program. Being an affiliated institution, curriculum of the affiliating university (VTU) is followed, and hence gaps may

exist between the desired outcomes and the achieved outcomes leading to a curriculum gap in a particular course. An example of this is shown in Figure. 2.1.1.d. Along with this are shown the tactics (actions taken) to mitigate the curriculum gaps.

2.2.1 Describe processes followed to improve quality of Teaching & Learning

2.2.1. Describe Processes followed in Angadi Institute of Technology & Management to improve quality of Teaching & Learning

2.2.1. A. Adherence to Academic Calendar

Before the commencement of each semester, University notifies an academic calendar for all the programs, which contains the date of commencement, last working day of the semester, Schedule for Internship and semester end examinations. The AITM follows the calendar issued by the University strictly and plans all its activities including the conduct of Continuous Internal Evaluation (CIE).The institute prepares an institute level calendar, and subsequently every department prepares its calendar. Institute calendar of events includes details like the total Number of working days and holidays, CIE Schedule, dates for the Institute's flagship programs. The department calendar comprises guest lectures, workshops, and industrial visits, other co-curricular and extracurricular activities. The academic activities, CIE, and all activities are conducted in adherence to the calendar of events; except in unexpected circumstances. Also, the final departmental calendar of events is made available to faculty and students through ERP.

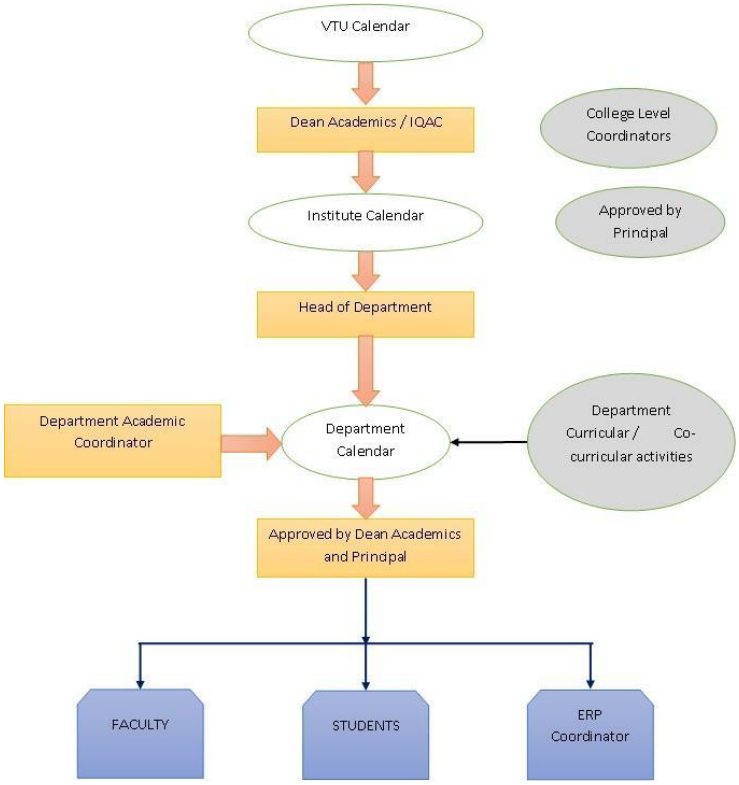
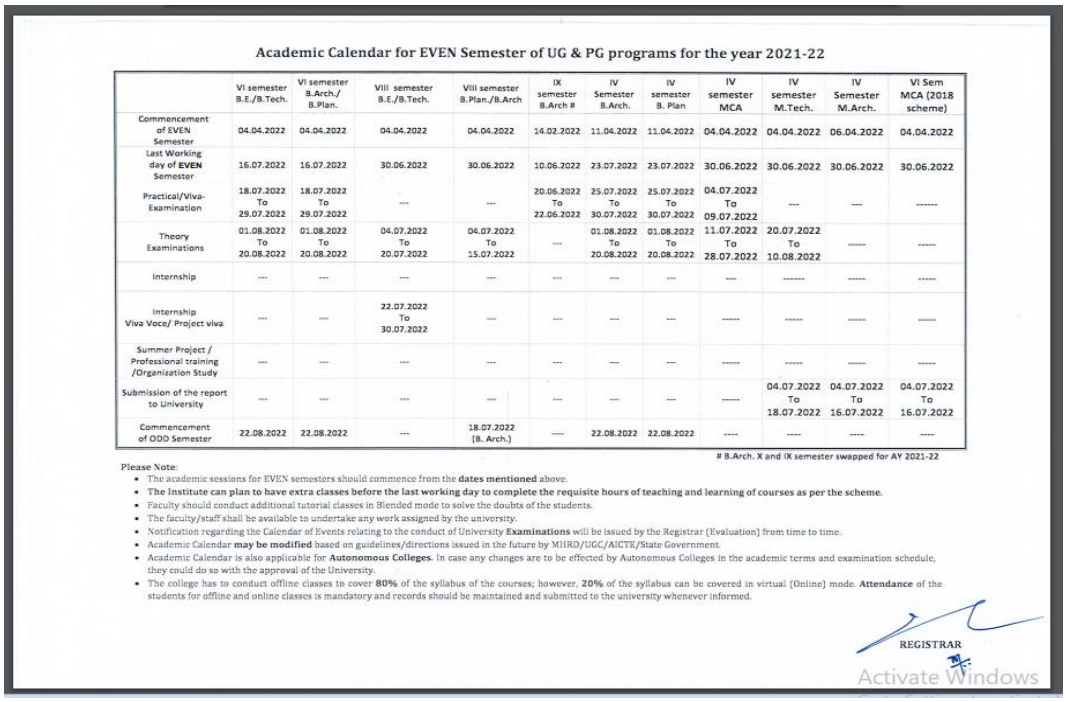


Figure 1: Process for preparing academic calendar.

Adherence to the University Academic Calendar

Sample Copies of University Academic Calendar



Academic Calendar for EVEN Semester of UG & PG programs for the year 2021-22

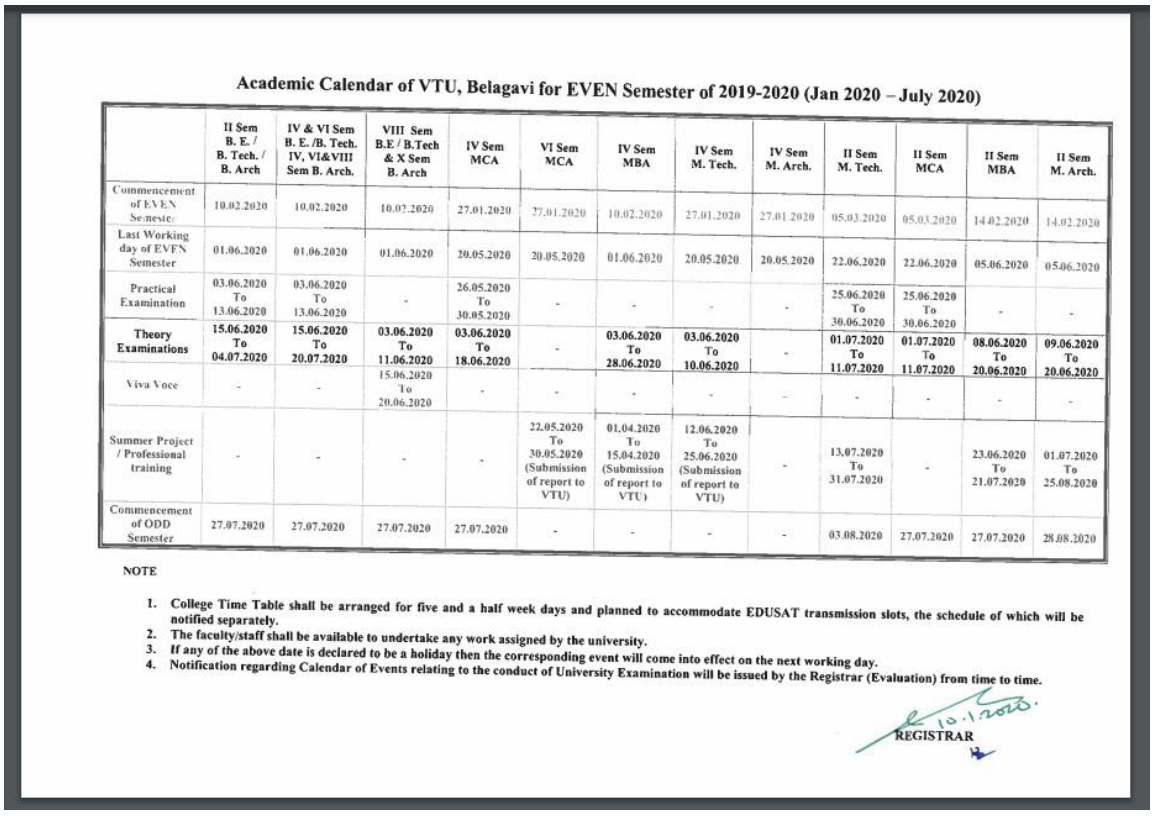
	VI semester B.E./B.Tech.	VI semester B.Arch./ B.Plan.	VIII semester B.E./B.Tech.	VIII semester B.Plan./B.Arch	IX semester B.Arch #	IV Semester B.Arch.	IV semester B. Plan	IV semester MCA	IV semester M.Tech.	IV Semester M.Arch.	VI Sem MCA (2018 scheme)
Commencement of EVEN Semester	04.04.2022	04.04.2022	04.04.2022	04.04.2022	14.02.2022	11.04.2022	11.04.2022	04.04.2022	04.04.2022	06.04.2022	04.04.2022
Last Working day of EVEN Semester	16.07.2022	16.07.2022	30.06.2022	30.06.2022	10.06.2022	23.07.2022	23.07.2022	30.06.2022	30.06.2022	30.06.2022	30.06.2022
Practical/Viva-Examination	18.07.2022 To 29.07.2022	18.07.2022 To 29.07.2022	---	---	20.06.2022 To 22.06.2022	25.07.2022 To 30.07.2022	25.07.2022 To 30.07.2022	04.07.2022 To 09.07.2022	---	---	------
Theory Examinations	01.08.2022 To 20.08.2022	01.08.2022 To 20.08.2022	04.07.2022 To 20.07.2022	04.07.2022 To 15.07.2022	---	01.08.2022 To 20.08.2022	01.08.2022 To 20.08.2022	11.07.2022 To 28.07.2022	20.07.2022 To 10.08.2022	------	------
Internship	---	---	---	---	---	---	---	---	------	------	------
Internship Viva Voce/ Project viva	---	---	22.07.2022 To 30.07.2022	---	---	---	---	-----	-----	-----	-----
Summer Project / Professional training /Organization Study	---	---	---	---	---	---	---	-----	-----	-----	-----
Submission of the report to University	---	---	---	---	---	---	---	-----	04.07.2022 To 18.07.2022	04.07.2022 To 16.07.2022	04.07.2022 To 16.07.2022
Commencement of ODD Semester	22.08.2022	22.08.2022	---	18.07.2022 (B. Arch.)	----	22.08.2022	22.08.2022	----	----	----	----

B.Arch. X and IX semester swapped for AY 2021-22

Please Note:

- The academic sessions for EVEN semesters should commence from the **dates mentioned** above.
- **The Institute can plan to have extra classes before the last working day to complete the requisite hours of teaching and learning of courses as per the scheme.**
- Faculty should conduct additional tutorial classes in Blended mode to solve the doubts of the students.
- The faculty/staff shall be available to undertake any work assigned by the university.
- Notification regarding the Calendar of Events relating to the conduct of University **Examinations** will be issued by the Registrar (Evaluation) from time to time.
- Academic Calendar **may be modified** based on guidelines/directions issued in the future by MHRD/UGC/AICTE/State Government.
- Academic Calendar is also applicable for **Autonomous Colleges**. In case any changes are to be effected by Autonomous Colleges in the academic terms and examination schedule, they could do so with the approval of the University.
- The college has to conduct offline classes to cover **80%** of the syllabus of the courses; however, **20%** of the syllabus can be covered in virtual (Online) mode. **Attendance** of the students for offline and online classes is mandatory and records should be maintained and submitted to the university whenever informed.

REGISTRAR



Academic Calendar of VTU, Belagavi for EVEN Semester of 2019-2020 (Jan 2020 – July 2020)

	II Sem B. E. / B. Tech. / B. Arch	IV & VI Sem B. E. /B. Tech. IV, VI&VIII Sem B. Arch.	VIII Sem B.E / B.Tech & X Sem B. Arch	IV Sem MCA	VI Sem MCA	IV Sem MBA	IV Sem M. Tech.	IV Sem M. Arch.	II Sem M. Tech.	II Sem MCA	II Sem MBA	II Sem M. Arch.
Commencement of EVEN Semester	10.02.2020	10.02.2020	10.02.2020	27.01.2020	27.01.2020	10.02.2020	27.01.2020	27.01.2020	05.03.2020	05.03.2020	14.02.2020	14.02.2020
Last Working day of EVEN Semester	01.06.2020	01.06.2020	01.06.2020	20.05.2020	20.05.2020	01.06.2020	20.05.2020	20.05.2020	22.06.2020	22.06.2020	05.06.2020	05.06.2020
Practical Examination	03.06.2020 To 13.06.2020	03.06.2020 To 13.06.2020	-	26.05.2020 To 30.05.2020	-	-	-	-	25.06.2020 To 30.06.2020	25.06.2020 To 30.06.2020	-	-
Theory Examinations	**15.06.2020 To 04.07.2020**	**15.06.2020 To 20.07.2020**	**03.06.2020 To 11.06.2020**	**03.06.2020 To 18.06.2020**	-	**03.06.2020 To 28.06.2020**	**03.06.2020 To 10.06.2020**	-	**01.07.2020 To 11.07.2020**	**01.07.2020 To 11.07.2020**	**08.06.2020 To 20.06.2020**	**09.06.2020 To 20.06.2020**
Viva Voce	-	-	15.06.2020 To 20.06.2020	-	-	-	-	-	-	-	-	-
Summer Project / Professional training	-	-	-	-	22.05.2020 To 30.05.2020 (Submission of report to VTU)	01.04.2020 To 15.04.2020 (Submission of report to VTU)	12.06.2020 To 25.06.2020 (Submission of report to VTU)	-	13.07.2020 To 31.07.2020	-	23.06.2020 To 21.07.2020	01.07.2020 To 25.08.2020
Commencement of ODD Semester	27.07.2020	27.07.2020	27.07.2020	27.07.2020	-	-	-	-	03.08.2020	27.07.2020	27.07.2020	28.08.2020

NOTE

1. **College Time Table shall be arranged for five and a half week days and planned to accommodate EDUSAT transmission slots, the schedule of which will be notified separately.**
2. **The faculty/staff shall be available to undertake any work assigned by the university.**
3. **If any of the above date is declared to be a holiday then the corresponding event will come into effect on the next working day.**
4. **Notification regarding Calendar of Events relating to the conduct of University Examination will be issued by the Registrar (Evaluation) from time to time.**

10.1.2020.

REGISTRAR

Sample Copy of Institute Academic Calendar

Suresh Angadi Education Foundation's

ANGADI INSTITUTE OF TECHNOLOGY AND MANAGEMENT

Savagaon Road, Belagavi – 590 009

(Approved by AICTE, New Delhi & Affiliated to Visvesvaraya Technological University, Belagavi)

Accredited By NAAC

Institute Calendar of Events -2024-25 Even Semester

Course	Semester	Term Commencement	Last Working Day	VTU Practical Exams.	VTU Theory Exams.
UG	4th , 6th	10/02/2025	31/05/2025	27/05/2025	16/06/2025
	8th	15/02/2025	15/05/2025	02/06/2025	16/05/2025

Week No.	Month	Weekdays MON	TUE	WED	THU	FRI	SAT	SUN	Working Days	List of Events
1	Feb	10	11	12	13	14	15	16	06	▪ Feb. 28th Ingenious Project Exhibition. ▪ Every 2nd and 4th Saturday : Department Activities. ▪ Apr. 16th and 17th : VENCER 2025 ▪ May. 9th Gymkhana Day/ Graduation Day / Placement Day
2		17	18	19	20	21	22	23	06	
3		24	25	26	27	28			05	
3	Mar						1	2	02	
4		3	4	5	6	7	8	9	06	
5		10	11	12	13	14	15	16	06	
6		17	18	19	20	21	22	23	06	
7		24	25	26	27	28	29	30	06	
8		31								
8	Apr		1	2	3	4	5	6	05	List of Holidays
9		7	8	9	10	11	12	13	05	
10		14	15	16	17	18	19	20	04	▪ Feb. 26th : Mahashivratri ▪ Mar. 31st : Khutub-E-Ramzan ▪ Apr. 10th : Mahaveer Jayanthi ▪ Apr. 14th : Ambedkar Jayanthi ▪ Apr. 18th : Good Friday ▪ Apr. 30th : Basava Jayanti ▪ May. 1st : May Day ▪ Jun. 07th : Bakri Id
11		21	22	23	24	25	26	27	06	
12		28	29	30					02	
12	May				1	2	3	4	02	
13		5	6	7	8	9	10	11	06	
14		12	13	14	15	16	17	18	06	
15		19	20	21	22	23	24	25	06	
16		26	27	28	29	30	31	1	05	
17	Jun	2	3	4	5	6	7	8		

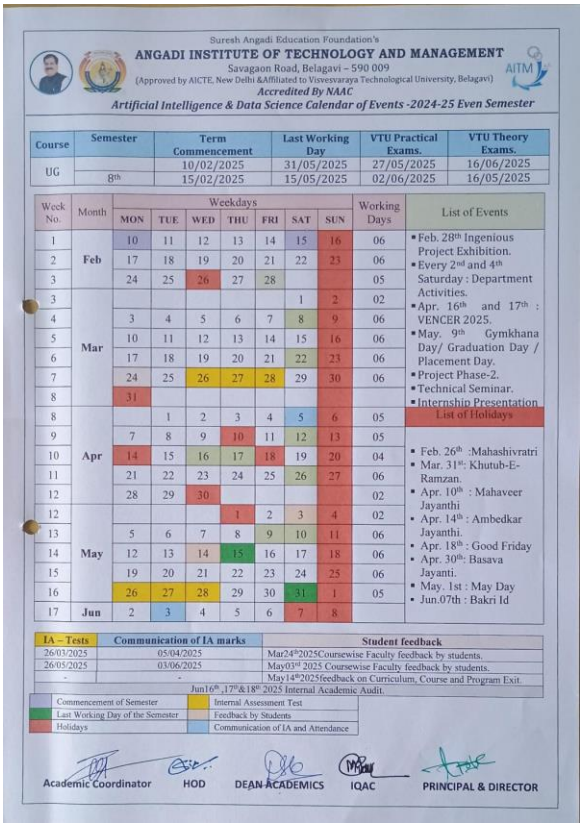
IA – Tests	Communication of IA marks	Student feedback
26/03/2025	05/04/2025	Mar 24th 2025 Course wise Faculty feedback by students.
26/05/2025	03/06/2025	May 03rd 2025 Course wise Faculty feedback by students.
-	-	May 14th 2025 feedback on Curriculum, Course and Program Exit.
Jun 16th , 17th & 18th 2025 Internal Academic Audit.		

Commencement of Semester		Internal Assessment Test	
Last Working Day of the Semester		Feedback by Students	
Holidays		Communication of IA and Attendance	

DEAN ACADEMICS | IQAC | PRINCIPAL & DIRECTOR

IQAC COORDINATOR
ANGADI INSTITUTE OF TECHNOLOGY & MANAGEMENT, BELAGAVI - 59

Sample Copy of Department Academic Calendar



Suresh Angadi Education Foundation's

ANGADI INSTITUTE OF TECHNOLOGY AND MANAGEMENT

Savagaon Road, Belagavi – 590 009

(Approved by AICTE, New Delhi &Affiliated to Visvesvaraya Technological University, Belagavi)

Accredited By NAAC

Artificial Intelligence & Data Science Calendar of Events -2024-25 Even Semester

Course	Semester	Term Commencement	Last Working Day	VTU Practical Exams.	VTU Theory Exams.
UG	8th	10/02/2025	31/05/2025	27/05/2025	16/06/2025
		15/02/2025	15/05/2025	02/06/2025	16/05/2025

Week No.	Month	Weekdays MON	TUE	WED	THU	FRI	SAT	SUN	Working Days	List of Events
1	Feb	10	11	12	13	14	15	16	06	▪ Feb. 28th Ingenious Project Exhibition. ▪ Every 2nd and 4th Saturday : Department Activities. ▪ Apr. 16th and 17th : VENCER 2025. ▪ May. 9th Gymkhana Day/ Graduation Day / Placement Day. ▪ Project Phase-2. ▪ Technical Seminar. ▪ Internship Presentation
2		17	18	19	20	21	22	23	06	
3		24	25	26	27	28			05	
3	Mar						1	2	02	
4		3	4	5	6	7	8	9	06	
5		10	11	12	13	14	15	16	06	
6		17	18	19	20	21	22	23	06	
7		24	25	26	27	28	29	30	06	
8		31								
8	Apr		1	2	3	4	5	6	05	List of Holidays
9		7	8	9	10	11	12	13	05	
10		14	15	16	17	18	19	20	04	▪ Feb. 26th :Mahashivratri ▪ Mar. 31st: Khutub-E-Ramzan. ▪ Apr. 10th : Mahaveer Jayanthi ▪ Apr. 14th : Ambedkar Jayanthi. ▪ Apr. 18th : Good Friday ▪ Apr. 30th: Basava Jayanti. ▪ May. 1st : May Day ▪ Jun.07th : Bakri Id
11		21	22	23	24	25	26	27	06	
12		28	29	30					02	
12	May				1	2	3	4	02	
13		5	6	7	8	9	10	11	06	
14		12	13	14	15	16	17	18	06	
15		19	20	21	22	23	24	25	06	
16		26	27	28	29	30	31	1	05	
17	Jun	2	3	4	5	6	7	8		

IA – Tests	Communication of IA marks	Student feedback
26/03/2025	05/04/2025	Mar24th2025Coursewise Faculty feedback by students.
26/05/2025	03/06/2025	May03rd 2025 Coursewise Faculty feedback by students.
-	-	May14th2025feedback on Curriculum, Course and Program Exit.
Jun16th ,17th&18th 2025 Internal Academic Audit.		

Commencement of Semester		Internal Assessment Test	
Last Working Day of the Semester		Feedback by Students	
Holidays		Communication of IA and Attendance	

Academic Coordinator | HOD | DEAN ACADEMICS | IQAC | PRINCIPAL & DIRECTOR

2.2.1. B. Use of various instructional methods and pedagogical initiatives

An orientation program on the concepts and efficacy of Outcome based education (OBE) is conducted for the entire faculty so that they can implement OBE in their teaching-learning pedagogy. The department faculty initiates various Teaching-Learning pedagogical approaches to create a conducive learning environment for students. These methodologies include:

1. Traditional Black board Teaching (TBT):

The faculty use chalk and board in teaching. Students are encouraged to actively interact during the lecture hour by getting their doubts clarified.

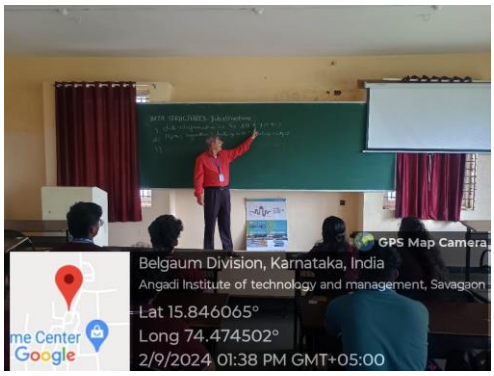


Figure 2.2.1.B.1a: Faculty Engaging Students in actual class.

2. Flipped Classroom:

FLIP stands for:
F: Flexible environment
L: Learning Culture
I: Intentional Content
P: Professional Educator

A flipped classroom is an instructional and ambivalent strategy, and a type of blended learning that reverses the traditional learning environment. It moves activities, including those that may have traditionally been considered homework, into the classroom. With a flipped classroom, students watch online lectures and collaborate in discussions, while actively engaging concepts in the classroom, with guidance of the faculty.

Flipped Classroom teaching:

Strengthens team-based skills.
Encourages engagement and attendance.
Promotes higher level classroom discussion.

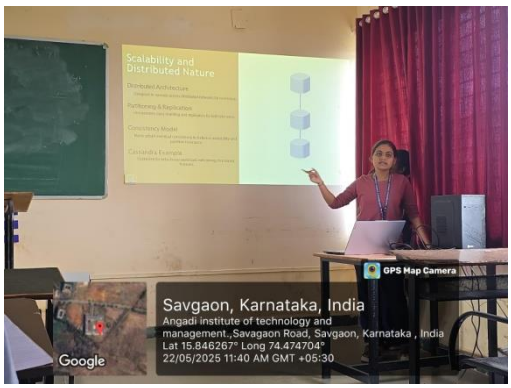


Figure 2.2.1.B.2: Flipped Classroom

3. Project based Learning (PBL):

During the pre-final year and final year, students are encouraged to carry out mini projects and capstone projects under the guidance of faculty. Further, students of first year and second year are encouraged to do mini projects /hobby projects to make them comprehend the theoretical aspects taught in the classrooms. The annual project exhibition is conducted every year to showcase their projects, and to encourage students to have interactions with their juniors, peers and senior students.

Figure 2.2.1.B.4: Project based Learning (PBL)

4. Experiential Learning (EL):

Experiential Learning is an engaged learning process whereby students learn by doing and by reflecting on the experience. Experiential Learning aims at recognizing and encouraging spontaneous opportunities for learning, engagement with challenging situations, experimentation, and discovery of solutions. Some forms of experiential learning include Internships, industrial visits, out-of-classroom community service experiences/projects (AICTE activity) etc.

Figure 2.2.1.B.5: Experiential Learning (EL)

5. Collaborative Learning (CL):

The students are initiated and motivated to learn from group activities such as group discussion, in-house internships, workshops conducted in the department. The students are exposed to learn various topics and hands-on experience under different laboratories, related to program curriculum.

Figure 2.2.1.B.6: Collaborative Learning (CL)

6. Activity based Learning (ABL):

Activity-based learning is rooted in the idea that students are active learners rather than passive recipients of information. If students are provided the opportunity to participate in activities and are provided with an optimum learning environment, then learning becomes more surreal (joyful) and long-lasting. Some forms of activity-based learning followed are debates, extempore activity, pick and speak session, activities conducted under in house clubs etc.

Figure 2.2.1.B.7: Activity based Learning (ABL)

8. ICT supported learning (ICTL):

ICT tools such as power point presentation, lecture notes and various simulation tools are used to teach engineering concepts to the students. This is used to offer interactive learning experience.

Figure 2.2.1.B.8: ICT supported learning (ICTL)

9. Learning Via Online Certifications:

Students are promoted for online certifications courses such as Online **NPTEL SWAYAM** courses, **VTU Honours**, **Minors**, **Skill Enhancement Courses**, etc.

Figure 2.2.1.B.9: Learning Via Online Certifications

Apart from the above listed methods, students are encouraged and supported with learning through NPTEL courses, The MIT Course materials, Linked-In Courses, VTU e-learning Platform, other Internet sources, etc. The students are taken to industrial visits, technical exhibition in relevant domains for an update of modern tools and technologies. The course material, laboratory manual, question bank, power point presentations prepared by the faculty are shared with the students.

2.2.1.C. Methodologies to support weak students and encourage bright students.

Methodology to identify academically weak students and bright students, and the corresponding action taken are depicted in Fig. 2.2.1.C.1.The weak students and bright students are identified based on their overall performance in university exams and internal assessments.

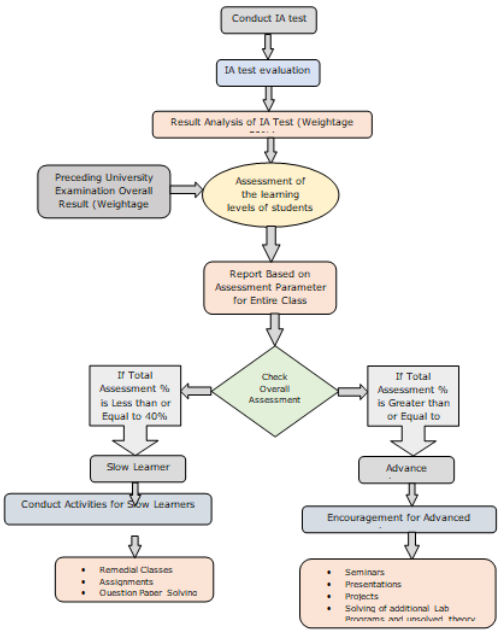


Fig. 2.2.1.C.1: Methodology to identify academically weak students and bright students

Support to Academically weak students

- Remedial/Tutorial classes are conducted for the weak students based on their performance in their first internals.
- Weak students are made to solve extra Assignment questions and previous Question Papers for practice.
- Extra counseling is done to motivate students and guide students for better preparation.
- Mentors facilitate Mentees to understand their personal and professional difficulties.

The activities that are conducted for slow learners are depicted in Figure 2.2.1.C.2

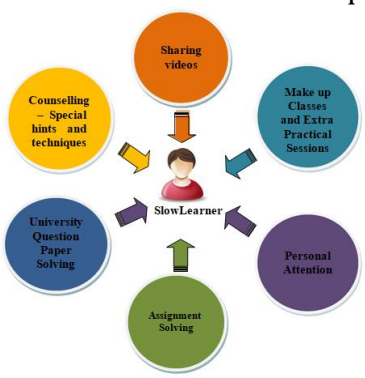


Figure 2.2.1.C.2: Activities Conducted for Slow Learners.

Figure: Extra Class and Question Paper Solving for Slow Learners

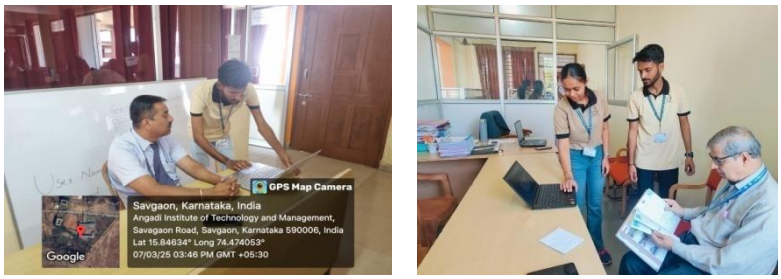


Figure: Extra Counseling for Slow Learners through Mentor Mentee interaction.

Figure: Module Test for Slow Learners

Encouragement to Bright Students

- As per the university syllabus each lab consists of 10-14 experiments.
- Bright students are made to solve additional experiments in the relevant courses for motivation and better understanding of the course. They are encouraged to find the solution of complex problems.
- Bright students are encouraged to give seminars, presentations and build projects for enhancing their creativity.
- Also, students are motivated to register for BE Honors to pursue dual degree and secure ranks in university examination.

The activities that are conducted for advance learners are depicted in Figure 2.2.1.C.3.

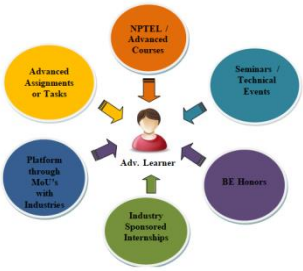


Figure 2.2.1.C.3: Activities Conducted for Advanced Learners.

Figure: Extra Class and Question Paper Solving for Slow Learners

Figure: Extra Counseling for Slow Learners through Mentor Mentee interaction.

Figure: Module Test for Slow Learners

Encouragement to Bright Students

- As per the university syllabus each lab consists of 10-14 experiments.
- Bright students are made to solve additional experiments in the relevant courses for motivation and better understanding of the course. They are encouraged to find the solution of complex problems.
- Bright students are encouraged to give seminars, presentations and build projects for enhancing their creativity.
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The activities that are conducted for advance learners are depicted in Figure 2.2.1.C.3.

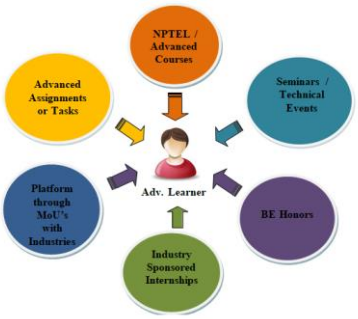
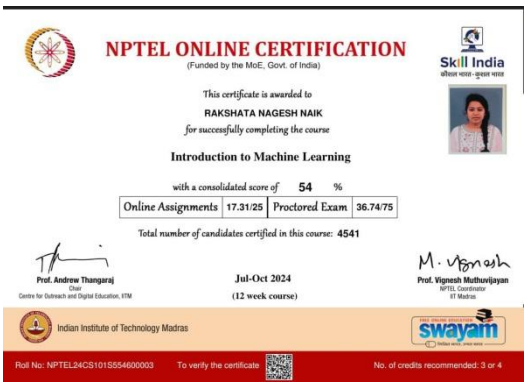


Figure 2.2.1.C.3: Activities Conducted for Advanced Learners.

ADVANCE LEARNER STUDENTS REGISTERD FOR BE HONOURS COURSE

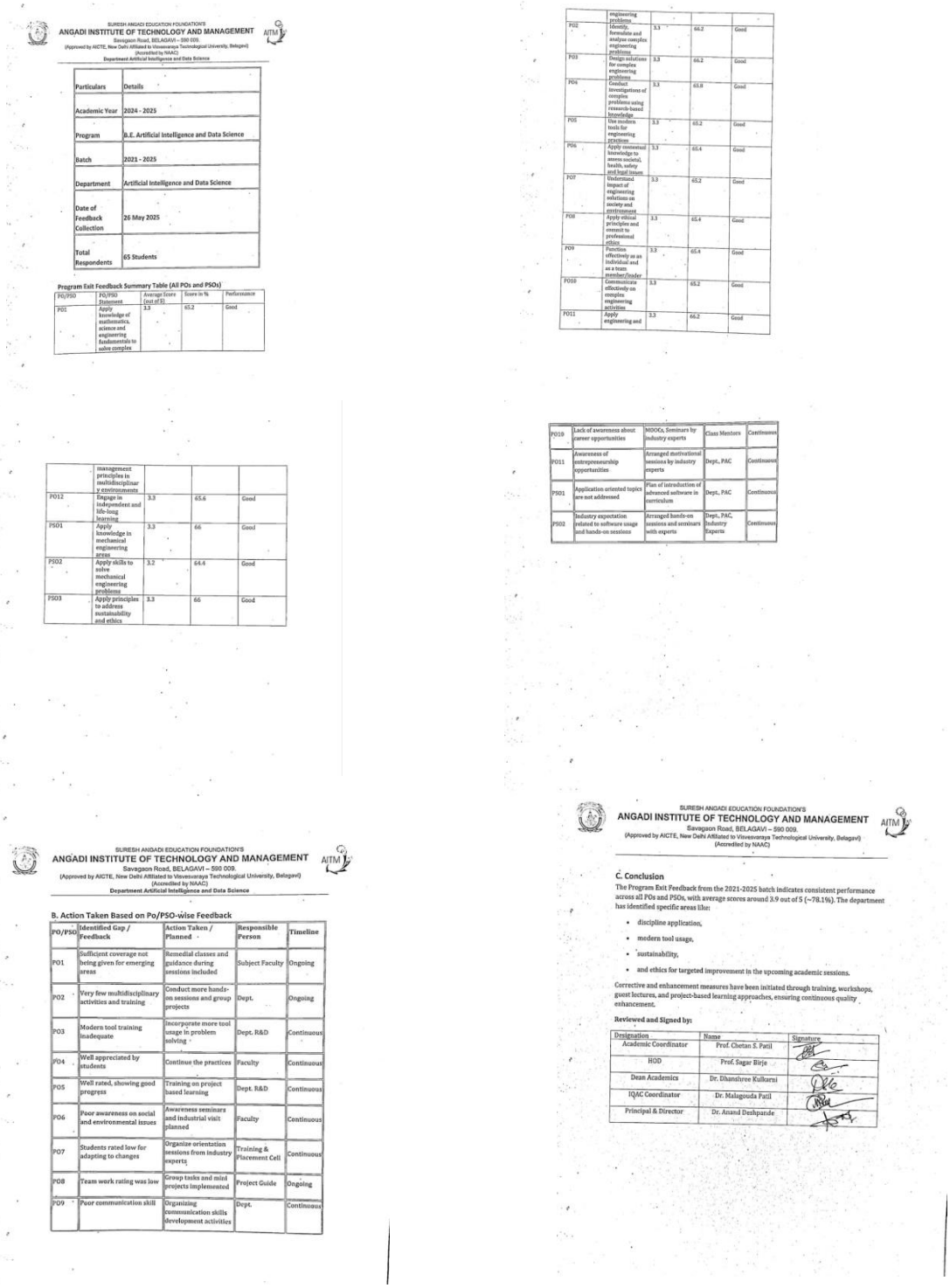
S.no	USN	STUDENT NAME
1	2AG22AD001	A Gayatri
2	2AG22AD008	B M.Anjali
3	2AG22AD019	Laxmi Sonnad
4	2AG22AD034	Ranjitha Ryavannanavar
5	2AG22AD059	Swati Bajantri
6	2AG22AD042	Samiksha Patil
7	2AG22AD018	Laxmi B Gadavi
8	2AG22AD022	Megha Bandi
9	2AG22AD060	Tanzila Mulla

NPTEL COURSE CERTIFICATE


NPTEL ONLINE CERTIFICATION
(Funded by the MoE, Govt. of India)
This certificate is awarded to
RAKSHATA NAGESH NAIK
for successfully completing the course
Introduction to Machine Learning
with a consolidated score of 54 %
Online Assignments 17.31/25 | Proctored Exam 36.74/75
Total number of candidates certified in this course: 4541
Prof. Andrew Thangaraj
Jul-Oct 2024
(12 week course)
Prof. Vignesh Muthuvijayan
Indian Institute of Technology Madras
swayam
Roll No: NPTEL24CS101S554600003 To verify the certificate No. of credits recommended: 3 or 4


Elite
NPTEL Online Certification
(Funded by the MoE, Govt. of India)
This certificate is awarded to
LAXMI SONNAD
for successfully completing the course
Cyber Security and Privacy
with a consolidated score of 60 %
Online Assignments 24.19/25 | Proctored Exam 35.5/75
Total number of candidates certified in this course: 6011
Prof. Devendra Jalihal
Jul-Oct 2023
(12 week course)
Prof. Andrew Thangaraj
Indian Institute of Technology Madras
swayam
Roll No: NPTEL23CS127S532200310 To verify the certificate No. of credits recommended: 3 or 4

TECHNICAL SEMINAR/PRESENTATION by Bright Students



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Savagaon Road, BELAGAVI – 590 009.
(Approved by AICTE, New Delhi Affiliated to Visvesvaraya Technological University, Belagavi)
(Accredited by NAAC)
Department Artificial Intelligence and Data Science

Particulars	Details
Academic Year	2024 - 2025
Program	B.E. Artificial Intelligence and Data Science
Batch	2021 - 2025
Department	Artificial Intelligence and Data Science
Date of Feedback Collection	26 May 2025
Total Respondents	65 Students

Program Exit Feedback Summary Table (All POs and PSOs)

PO/PSO	PO/PSO Statement	Average Score (out of 5)	Score in %	Performance
PO1	Apply knowledge of mathematics, science and engineering fundamentals to solve complex engineering problems	3.3	65.2	Good
PO2	Identify, formulate and analyze complex engineering problems	3.3	66.2	Good
PO3	Design solutions for complex engineering problems	3.3	66.2	Good
PO4	Conduct investigations of complex problems using research-based knowledge	3.3	65.8	Good
PO5	Use modern tools for engineering activities	3.3	65.2	Good
PO6	Apply contextual knowledge to assess societal, health, safety and legal issues	3.3	65.4	Good
PO7	Understand impact of engineering solutions on society and environment	3.3	65.2	Good
PO8	Apply ethical principles and commit to professional ethics	3.3	65.4	Good
PO9	Function effectively as an individual and as a team member/leader	3.3	65.4	Good
PO10	Communicate effectively on complex engineering activities	3.3	65.2	Good
PO11	Apply engineering and management principles in multidisciplinary environments	3.3	66.2	Good
PO12	Engage in independent and life-long learning	3.3	65.6	Good
PSO1	Apply knowledge in mechanical engineering areas	3.3	66	Good
PSO2	Apply skills to solve mechanical engineering problems	3.2	64.4	Good
PSO3	Apply principles to address sustainability and ethics	3.3	66	Good

PO10	Lack of awareness about career opportunities	MOOCs, Seminars by industry experts	Class Mentors	Continuous
PO11	Awareness of entrepreneurship opportunities	Arranged motivational sessions by industry experts	Dept., PAC	Continuous
PSO1	Application oriented topics are not addressed	Plan of introduction of advanced software in curriculum	Dept., PAC	Continuous
PSO2	Industry expectation related to software usage and hands-on sessions	Arranged hands-on sessions and seminars with experts	Dept., PAC, Industry Experts	Continuous

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B. Action Taken Based on Po/PSO-wise Feedback

PO/PSO	Identified Gap / Feedback	Action Taken / Planned	Responsible Person	Timeline
PO1	Sufficient coverage not being given for emerging areas	Remedial classes and guidance during sessions included	Subject Faculty	Ongoing
PO2	Very few multidisciplinary activities and training	Conduct more hands-on sessions and group projects	Dept.	Ongoing
PO3	Modern tool training inadequate	Incorporate more tool usage in problem solving	Dept. R&D	Continuous
PO4	Well appreciated by students	Continue the practices	Faculty	Continuous
PO5	Well rated, showing good progress	Training on project based learning	Dept. R&D	Continuous
PO6	Poor awareness on social and environmental issues	Awareness seminars and industrial visit planned	Faculty	Continuous
PO7	Students rated low for adapting to changes	Organize orientation sessions from industry experts	Training & Placement Cell	Continuous
PO8	Team work rating was low	Group tasks and mini projects implemeated	Project Guide	Ongoing
PO9	Poor communication skill	Organizing communication skills development activities	Dept.	Continuous

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C. Conclusion

The Program Exit Feedback from the 2021-2025 batch indicates consistent performance across all POs and PSOs, with average scores around 3.9 out of 5 (~78.1%). The department has identified specific areas like:

- discipline application,
- modern tool usage,
- sustainability,
- and ethics for targeted improvement in the upcoming academic sessions.

Corrective and enhancement measures have been initiated through training, workshops, guest lectures, and project-based learning approaches, ensuring continuous quality enhancement.

Reviewed and Signed by:

Designation	Name	Signature
Academic Coordinator	Prof. Chetan S. Patil	
HOD	Prof. Sagar Birje	
Dean Academics	Dr. Dhanshree Kulkarni	
IQAC Coordinator	Dr. Malagouda Patil	
Principal & Director	Dr. Anand Deshpande	

Figure 2.2.1.G.6: Sample of Program exit feedback Analysis and Action Taken Report Academic year 2024-25

2.2.2 Quality of internal semester Question papers, Assignments and Evaluation.

2.2.2.A. Process for IA semester question paper setting and evaluation and effective process implementation.

- ✓ The faculty teaching a particular course shall prepare an Internal Assessment (IA) question paper one week prior to the test scheduled in ERP.
- ✓ Individual faculty shall prepare an IA question paper in accordance with the Course Outcomes (COs) and cognitive levels (Revised Blooms Taxonomy).
- ✓ The departmental level IQAC shall verify the quality of question papers prepared by the respective faculty in ERP portal. If any corrections or modifications in Question Papers (QPs), the department IQAC shall inform the respective faculty for modifications.
- ✓ After modifications, if any, QPs are verified by the Institute IQAC for the final approval.
- ✓ After review, The Institute IQAC shall forward the QPs to the respective Department IQAC (HOD) for necessary action.
- ✓ The concerned faculty shall submit the printed copies of the QP to the department IA coordinator one day prior to the IA test schedule.
- ✓ The department IA coordinator shall ensure the smooth conduct of IA tests.
- ✓ The IA books (blue books) are evaluated by concerned faculty in accordance with the scheme of evaluation and solutions (model answers).
- ✓ After the completion of all IA tests, as per the guidelines of VTU, the average of marks of all IA tests is computed.
- ✓ As per the university guidelines, along with IA tests, the students are asked to write assignments spread over the semester and are assessed for a maximum mark of 10.
- ✓ The Continuous Internal Evaluation (CIE) Marks of each student are finalized by summating the average IA marks and assignment marks, and the final marks are entered in the VTU portal.

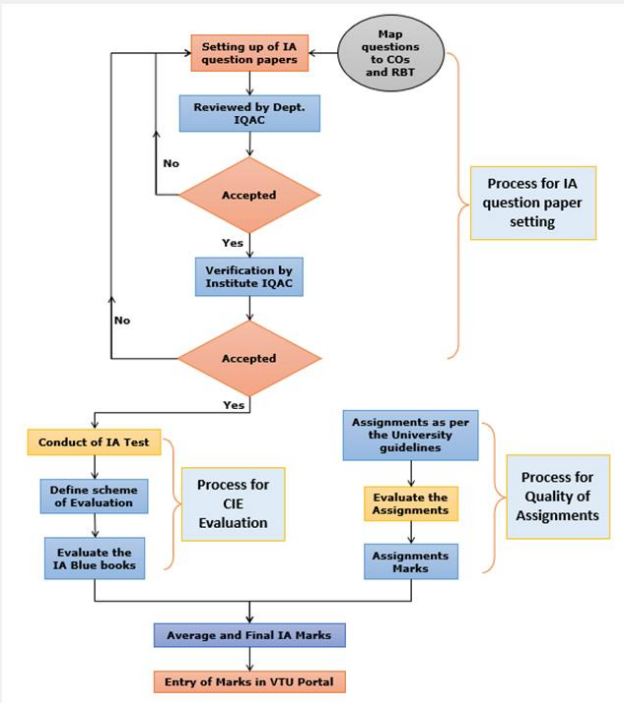


Figure 2.2.2.A.1: Process for setting semester IA question paper.

The compliance to the process described above is shown below in the form of a sample question paper, scrutinized by the department IQAC and the Institute IQAC, model answers (scheme of evaluation) and the finalized IA marks considering the assignment marks.

Sample IA question paper (subject – Information Theory and Coding), after scrutiny by Scrutinizing Committee, IQAC.

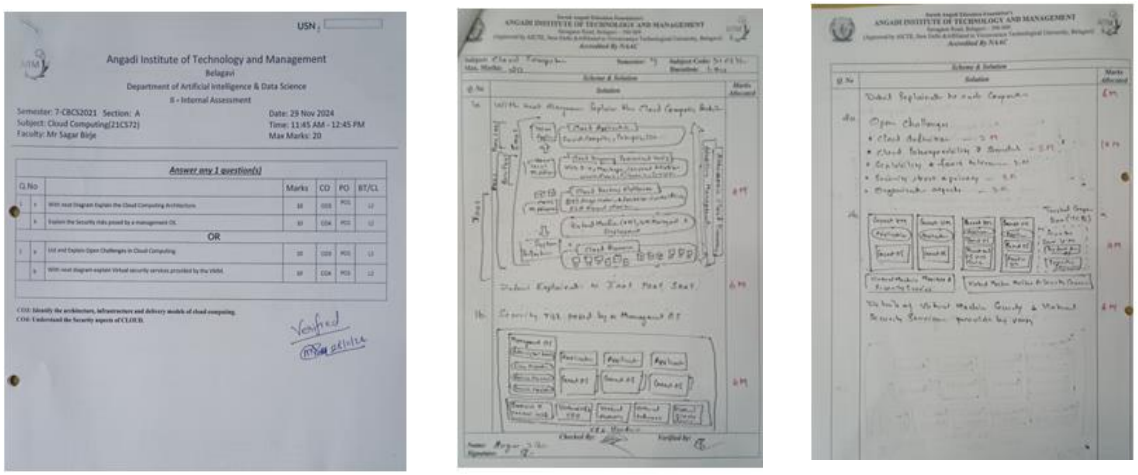


Figure: Sample IA Question Paper and Scheme of Evaluation.

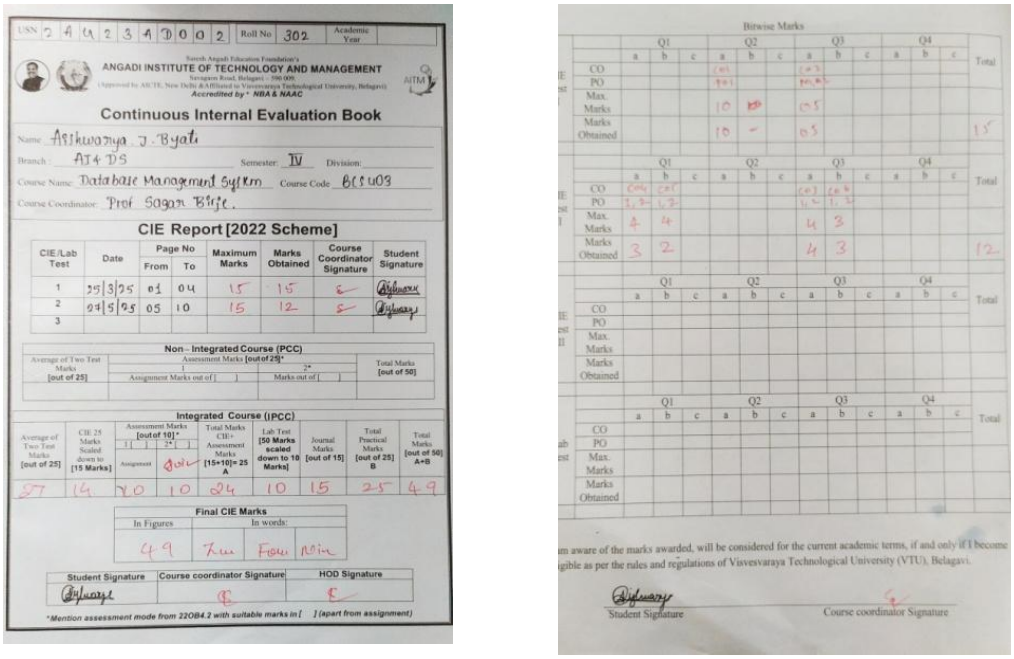


Figure: Sample IA Book Front Sheet and Bit Level Entry.

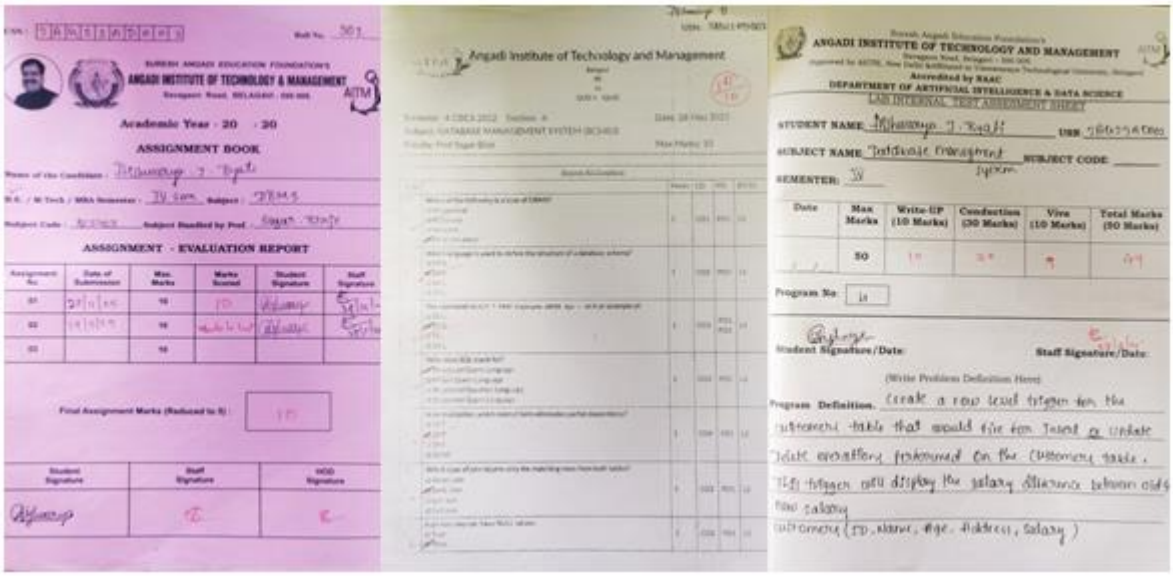


Figure: Sample Assignment Book, Quiz and Lab Internal Sheet.

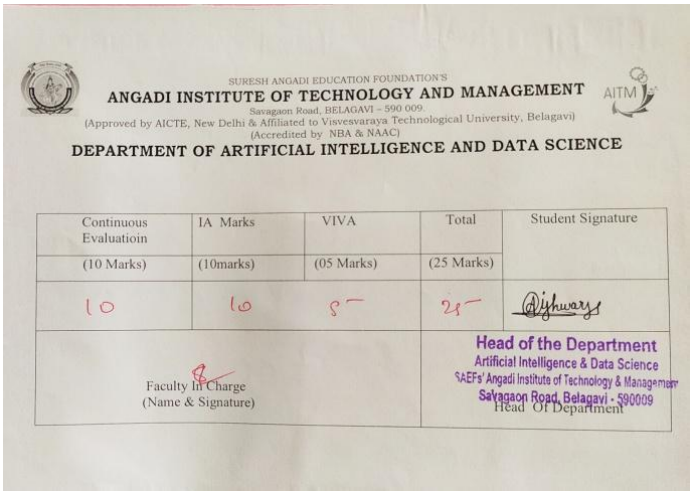


Figure: Final Lab Evaluation Sheet

Angadi Institute of Technology and Management
Belagavi
Artificial Intelligence And Data Science
III - Internal Assessment

Semester: 7-CBCS 2021 Section: A
Subject: CLOUD COMPUTING (21CS72)
Faculty: Prof Sagar Birje

Date: 16 Dec 2024
Time: 11:45 AM - 12:45 PM
Max Marks: 20

Answer any 1 question(s)

Q.No			Marks	CO	PO	BT/CL
1	a	Define Amazon Web Services (AWS). Explain six major categories of EC2 instances.	10	CO5	PO1	L2
	b	With neat diagram explain Healthcare: ECG analysis in the cloud.	10	CO5	PO1	L2
		OR				
2	a	Explain the Productivity applications i) Dropbox and iCloud ii) Google docs	10	CO5	PO1	L2
	b	Explain the Media applications i) Animoto ii) Maya rendering with Aneka	10	CO5	PO1	L2

CO5 : Define platforms for development of cloud applications

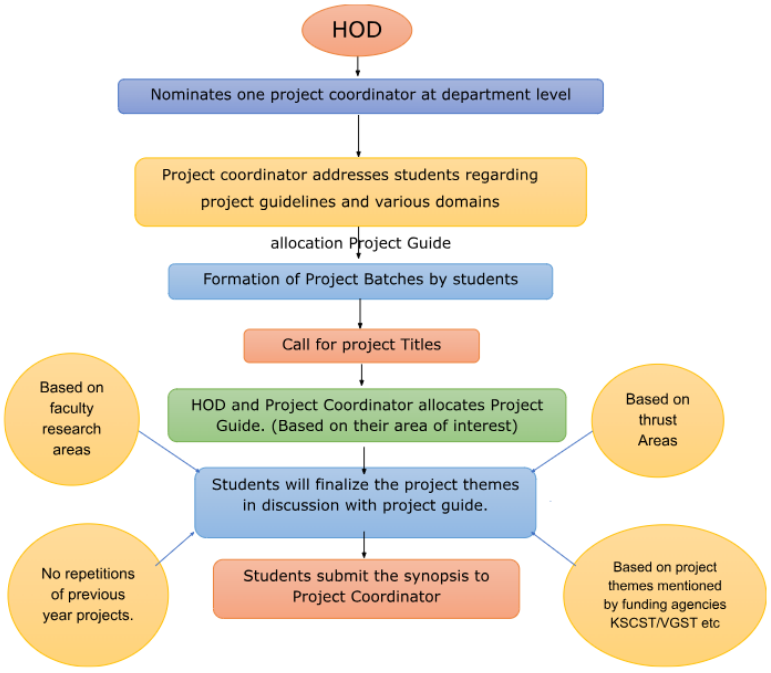
2.2.3 Quality of student projects

Quality of Student Projects

Quality of the project is measured in terms of consideration to factors including, but not limited to, environment, safety, ethics, cost, type (application, product, research, review etc.) and standards. Processes related to project identification, allotment, continuous

monitoring, evaluation including demonstration of working prototypes and enhancing the relevance of projects. Mention Implementation details including details of POs and PSOs addressed through the projects with justification.

The project coordinators appointed by the Head of the department are responsible for planning, scheduling and execution of all the activities related to the student project work.



Identification of projects and allocation methodology.

Students are informed to form their batches and register with the project coordinators.

Each project batch can have minimum two to maximum four students. On registration they will receive a project batch identification number which is used as reference throughout the academic year.

Faculty need to propose the projects in their domain. The same will be displayed in the notice board. The students based on their area of interest and competency can select the projects proposed by the faculty or their own ideas.

The students approach the faculty and discuss their ideas. Then they are informed to submit the detailed synopsis and present it before the panel. If any suggestions/modifications, need to be incorporated.

HoD along with project coordinators will allocate the guides based on their domain and expertise.

Finalized project synopsis duly signed by their concerned guide, HOD, Principal is submitted to coordinators.

Initiatives taken

Further the students are encouraged to publish their work in conferences/journals.

Also encouraged to apply for funds under various external funding schemes such as

KSCST, VTU, etc.

Process for monitoring and evaluation

The students should meet their respective guide once a week and update their progress.

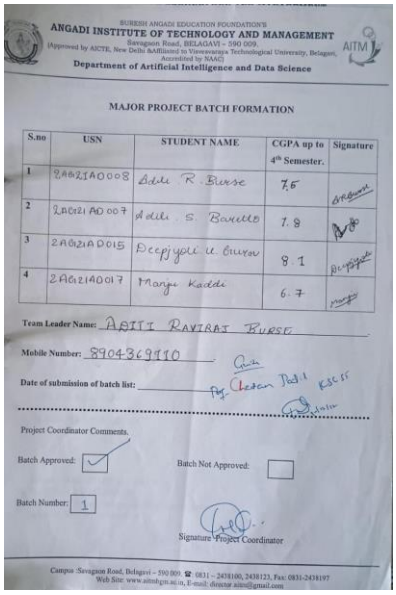
Using the rubrics mentioned in below tables, the project guides along with coordinators

will evaluate the project work.

Rubrics for internal evaluation of Final year projects.

Project Groups

Students groups are framed according to the coordinator guidelines. Each group should contain minimum of 2 members and maximum of 4 members.



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AITM

Department of Artificial Intelligence and Data Science

MAJOR PROJECT BATCH FORMATION

S.no	USN	STUDENT NAME	CGPA up to 4th Semester.	Signature
1	2AG21AD008	Aditi R Burse	7.6	
2	2AG21AD007	Aditi S Bavitti	7.8	
3	2AG21AD015	Deepjyoti U Burse	8.1	
4	2AG21AD017	Manju Kadde	6.7	

Team Leader Name: ADITI RAVIRAJ BURSE

Mobile Number: 8904369990

Date of submission of batch list:

Project Coordinator Comments.

Batch Approved: ✓ Batch Not Approved:

Batch Number: 1

Signature Project Coordinator

Campus :Savagaon Road, Belagavi – 590 009. ☎ : 0831 – 2438100, 2438123, Fax: 0831-2438197

Web Site: www.aitmbgm.ac.in, E-mail: dvcmgr.aitm@gmail.com

Figure: Students Project Group Formation Format

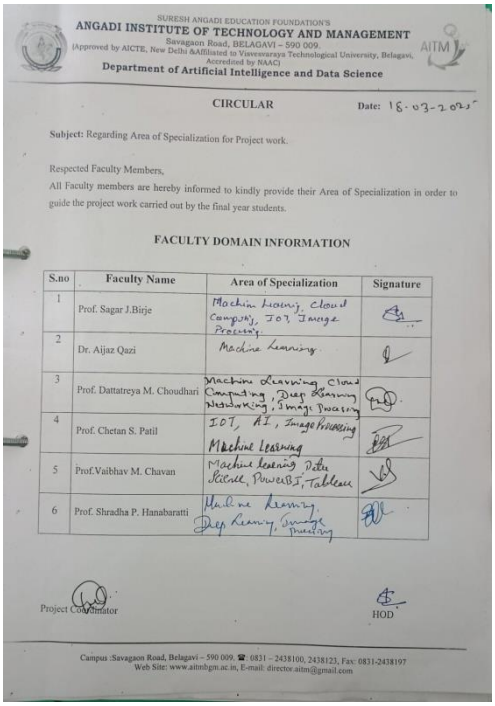
Guide allocation process

Students are asked to submit the project domains and project titles within the timeline given by project coordinator and HOD.

Faculties are asked to give areas of interest by the project coordinator.

Project guides will be allocated only after the area of project matches the guide's area of interest.

If students are not able to give proper problem definition for project then guides can give problem definition for projects.



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Department of Artificial Intelligence and Data Science

CIRCULAR Date: 16-03-2023

Subject: Regarding Area of Specialization for Project work.

Respected Faculty Members,
All Faculty members are hereby informed to kindly provide their Area of Specialization in order to guide the project work carried out by the final year students.

FACULTY DOMAIN INFORMATION

S.no	Faculty Name	Area of Specialization	Signature
1	Prof. Sagar J.Birje	Machine learning, cloud computing, IOT, Image Processing.	
2	Dr. Aijaz Qazi	Machine Learning	
3	Prof. Dattatreya M. Choudhari	Machine Learning, Cloud Computing, Deep Learning Networking, Image Processing	
4	Prof. Chetan S. Patil	IOT, AI, Image Processing Machine Learning	
5	Prof.Vaibhav M. Chavan	Machine learning Data Science, PowerBI, Tableau	
6	Prof. Shradha P. Hanabaratti	Machine Learning, Deep Learning, Image Processing	

Project Coordinator HOD

Campus :Savagaon Road, Belagavi – 590 009. ☎: 0831 – 2438100, 2438123, Fax: 0831-2438197
Web Site: www.aitmbgm.ac.in, E-mail: director.aitm@gmail.com

Figure: Faculty Domain Information

Rubrics for first phase evaluation of Final year projects

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE								
Phase - I (CIE - Individual Assessment)								
AY 2023-24								
Batch No.		**Student Name**	**USN**	**Project Title**				
	Student 1:							
	Student 2:							
	Student 3:							
	Student 4:							
Guide Name:								
SL. NO.	Attributes	Description	Grade	Maximum Marks	Student 1	Student 2	Student 3	Student 4
1	Literature Survey	Sufficient literature survey of journal papers for problem identification and defining objectives.	High (8-10)	10				

		Sufficient literature survey of journal papers for problem identification, But less coverage on defining objectives.	Medium (5-7)					
		Insufficient literature survey of journal papers for problem identification and defining objectives.	Low (0-4)					
2	Problem Identification	Detailed and extensive explanation of the purpose and need of the work.	High (8-10)	10				
		Average explanation of the purpose and need of the work.	Medium (5-7)					
		Moderate explanation of the purpose and need of the work.	Low (0-4)					
3	Objectives	Well defined objectives which satisfy problem definition.	High (8-10)	10				
		Average justification of objectives proposed.	Medium (5-7)					
		Objectives are not well defined.	Low (0-4)					
4	Methodology	Detailed explanation of methodology to achieve defined objectives.	High (8-10)	10				
		Average explanation of methodology to achieve defined objectives.	Medium (5-7)					
		Poor explanation of methodology to achieve defined objectives.	Low (0-4)					
5	Report	Project Report is according to the specified format.	High (8-10)	10				
		Project Report is according to the specified format, but not well formatted.	Medium (5-7)					
		Project report is not according to the specified format.	Low (0-4)					
6	Presentation skills	Contents of presentation are appropriate and well delivered with communication skills.	High (11-15)	15				
		Contents of presentation are appropriate and but not well delivered with communication skills.	Medium (6-10)					
		Contents of presentation are not appropriate and not well delivered with no communication skills.	Low (0-5)					
7	Presentation format	Content of presentation are appropriate according to format.	High (4-5)	5				
		Contents of presentation are moderate.	Medium (3)					
		Contents of presentation are not appropriate.	Low (0-2)					
8	Regularity	Report to guide regularly and consistent in work.	High (4-5)	5				
		Report to guide but lacks consistency.	Medium (3)					
		Irregular in attendance and inconsistent in work.	Low (0-2)					
9	Question and Answer session	Answers all questions correctly with explanation.	High (14-20)	20				
		Answers all questions correctly but lack of explanation.	Medium (7-13)					
		Answers some question correctly.	Low (0-6)					
10	Confidence and Self-motivation	Approaches the project with self-motivation and follows till the completion.	High (4-5)	5				
		Approaches the project with self-motivation and not follows till the completion.	Medium (3)					
		Lacks confidence and self-motivation.	Low (0-2)					
Total Marks								

Project Coordinator **Project Guide** **Review Committee** **HOD**

Rubrics for Second phase evaluation of Final year projects.

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YEAR: 2023-24				
Final Project Phase - CIE Marks				
Batch No.		**Student Name**	**USN**	**Guide Name**
	Student 1:			
	Student 2:			
	Student 3:			
	Student 4:			
Project Title:				

Sl. No.	Attributes	Description	Grade	Max. Marks	Student 1	Student 2	Student 3	Student 4
1	Report	Project Report is according to the specified format	High (8-10)	50				
		Project Report is according to the specified format, but not well formatted	Medium (5-7)					
		Project report is not according to the specified format	Low (0-4)					
2	Presentaion skills	Content of presentation are appropriate and well delivered with communication skills	High (11-15)	15				
		Content of presentation are appropriate and but not well delivered with communication skills	Medium (6-10)					
		Content of presentation are not appropriate and not well delivered with no communication skills	Low (0-5)					
3	Presentation format	Content of presentation are appropriate according to format	High (4-5)	5				
		Content of presentation are moderate	Medium (3)					

		Content of presentation are not appropriate	Low (0-2)					
4	Regularity	Report the guide regularly and consistent in work	High (4-5)	5				
		Report the guide but lacks consistency	Medium (3)					
		Irregular in attendance and inconsistent in work	Low (0-2)					
5	Viva voce	Answers all viva question properly with explanation	High (14-20)	20				
		Answers all viva question properly but lack of explanation	Medium (7-13)					
		Answers some viva question properly some not	Low (0-6)					
6	Confidence and Self-motivation	Approaches the project with self-motivation and follows till the completion	High (4-5)	5				
		Approaches the project with self-motivation and not follows till the completion	Medium (3)					
		Lacks confidence and self-motivation	Low (0-2)					
		Total Marks Obtained (out of 100)						