8.4 Attainment of Course outcomes of First year courses

8.4.1 Describe the Assessment Processes used to gather the data upon which the evaluation of Course Outcomes (CO) of First year is done.

THEORY AND PRACTICAL COURSES

There will be four Internal Assessments (CLA I - III), each carrying weightage of 10, 15 & 15 marks, and one online test/Seminar/assignment/Quiz (CLA IV) carrying weightage of 10 marks. The distribution of marks for various components for the Internal Assessment is shown below in the table:

S.	Components for Internal Assessment	Syllabus Coverage for the	Duration	Marks
No.		test/exam	of the test	(Max.)
			in minutes	
01	CLA I	Learning 1.5 Units (I & II)	90	10
		+ Lab (3 Experiments)		
02	CLA II	Learning next 1.5 Units (II	90	15
		& III) + Lab (Next 3		
		Experiments)		
03	CLA III	Learning Units IV & V +	90	15
		Lab (Next 4 Experiments)		
04	Online Test/ Assignment/	All 5 units +	-	10
	Seminar/Quiz/Observation/Record/Viva	Observation/Record/Viva		
Total				50

Theory and Practical Courses Assessment Pattern-Regulation 2020R

8.4.2 Record the attainment of Course Outcomes (CO) of all First Year Courses

The Assessment Process are Carried out based on the Procedure described in Criteria 3. The table below shows the attainment of Course Outcomes through Direct and Indirect Assessment for 2022-2023 Batch.

		CO	Direct	Indirect	Total
Course Code	Course Name	COs	Value	Value	
U20LEHJ01	Technical English	CO1	87	86	87
		CO2	88	85	87
		CO3	86	89	88
		CO4	88	90	89
		CO5	87	92	90
		CO6	83	91	87
U20MABT01	Calculus and Linear	CO1	88	90	88
	Algebra	CO2	85	93	87
		CO3	85	90	86
		CO4	88	90	88
		CO5	88	90	88
		CO6			
U20PYBJ01	Electromagnetic Theory,	CO1	89	91	90
	Wave Optics and Ouantum Physics	CO2	86	94	90
		CO3	86	91	89
		CO4	89	90	90
		CO5	89	92	91
		CO6			
U20CYBJ01	Engineering chemistry	CO1	95	91	93
		CO2	91	94	93
		CO3	95	91	93

B.Tech – Electronics and Communication Engineering

		CO4	95	89	92
		CO5	92	91	92
		CO6	92	82	87
U20CYHT01	Social and Environmental	CO1	92	89	91
Engineering	Engineering	CO2	93	92	93
		CO3	93	89	91
		CO4	92	89	91
		C05	91	88	90
		CO6	92	82	87

8.4.2 Record the attainment of Course Outcomes (CO) of all First Year Courses

The Assessment Process are Carried out based on the Procedure described in Criteria 3.

The table below shows the attainment of Course Outcomes through Direct and Indirect Assessment for 2021-2022 Batch.

Course Code	Course Name	COs	Direct Value	Indirect Value	Total
U20LEHJ01	Technical English	CO1	77	85	81
		CO2	78	84	81
		CO3	77	85	81
		CO4	78	86	82
		CO5	75	85	80
		CO6	76	75	76
U20MABT01	Calculus and Linear	C01	86	88	87
	Algebra	CO2	81	90	86
		CO3	82	88	85
		CO4	85	87	86

		CO5	83	89	86
		CO6			
U20PYBJ01	Electromagnetic Theory,	CO1	88	90	88
	Wave Optics and	CO2	85	93	87
	Quantum 1 nysits	CO3	85	90	86
		CO4	88	90	88
		CO5	88	90	88
		CO6			
U20CYBJ01	Engineering chemistry	CO1	94	90	93
		CO2	90	93	90
		CO3	94	90	93
		CO4	94	88	93
		CO5	91	90	91
		CO6	91	81	89
U20CYHT01	Social and Environmental	CO1	94	91	93
	Engineering	CO2	93	94	94
		CO3	92	91	92
		CO4	93	89	91
		CO5	93	91	92
		CO6	92	84	88

8.4.2 Record the attainment of Course Outcomes (CO) of all First Year Courses

The Assessment Process are Carried out based on the Procedure described in Criteria 3.

The table below shows the attainment of Course Outcomes through Direct and Indirect Assessment for 2020-2021 Batch.

Course Code	Course Name	COs	Direct	Indirect	Total	
Course Coue	Course Maine	COS	Value	Value		
U20LEHJ01	Technical English	CO1	78	88	80	
		CO2	75	89	78	
		CO3	85	85	85	
		CO4	80	86	81	
		CO5	85	84	85	
		CO6	86	86	86	
U20MABT01	Calculus and Linear	CO1	75	86	81	
	Algebra	CO2	72	85	79	
		CO3	81	82	82	
		CO4	78	81	80	
		CO5	81	82	82	
		CO6				
U20PYBJ01	Electromagnetic Theory,	CO1	78	88	80	
	Wave Optics and	CO2	75	89	78	
	Quantum 1 nysics	CO3	85	85	85	
		CO4	80	86	81	
		CO5	85	84	85	
		CO6				
U20CYBJ01	Engineering chemistry	CO1	88	90	88	
		CO2	88	93	89	
		CO3	94	90	93	
		CO4	94	88	93	
		CO5	95	90	94	
		CO6	91	81	89	

U20CYHT01	Social and Environmental	CO1	93	90	92
	Engineering	CO2	94	93	94
		CO3	94	90	93
		CO4	92	88	91
		CO5	92	90	91
		CO6	93	81	91

8.5 Attainment of Program Outcomes of all first year courses

The Following table shows the PO attainment

PO Attainment for the batch (2022-2023)

PO Attainment for the batch (2022-2023)

COURSE CODE	COURSE NAME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
U20LEHJ01	Technical English	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	88.00	88.00	0.00	88.00
U20MABT01	Calculus and Linear Algebra	86.08	86.08	88.00	0.00	87.00	0.00	0.00	0.00	0.00	0.00	0.00	86.08
U20PYBJ01	Electromagnetic Theory, Wave Optics and Quantum Physics	84.60	84.67	85	85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
U20CYBJ01	Engineering Chemistry	92.67	92.30	90.7	92.5	93.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
U20CYHT01	Social and Environmental Engineering	91.7	91.30	92.00	90.7	93.00	0.00	0.00	0.00	0.00	88.50	0.00	92.00

8.5.2 Action taken based on the results of evaluation of relevant POs

(The attainment levels by direct (student performance) are to be presented through Program level Course-PO matrix as indicated)

PO Attainment Levels and Actions for improvement – CAY only – Mention for relevant POs

POs	Target Level	Attainment Level	Observations							
PO1: The ability	to apply know	ledge of mathema	tics, science, and engineering fundamentals.							
			Target achieved							
PO1	88	88								
Action Taken:										
• Condu	cted Induction	program to familia	arize them to the new environment and to rectify some							
critical lacunas.										
• Conducted extra classes for physics and mathematics, so that they are able to keep up with										
what is being taught in the classrooms										
PO2: The ability	to identify, fo	rmulate, and solve	engineering problems							
			Target achieved							
PO2	88	88								
Action Taken:	·									
• The str	udents were fo	und lagging in pr	oblem solving part. To overcome this, bridge courses							
were c	onducted.									
Additio	onal coaching o	classes were condu	cted beyond the regular planned classes.							
• Condu	cted workshop	handled by indust	ry experts.							
Conducted resea	arch / innovatio	n awareness progr	am among students and faculty members.							
PO 3: The abili	ty to design a	system, componer	nt, or process to meet the desired needs within realistic							
constraints suc	ch as econor	nic, environmen	tal, social, political, ethical, health and safety,							
manufacturabilit	ty, and sustaina	bility								
			Target achieved							
PO 3	89	89								
Action Taken:		I								
•Lab se	ssion for Pytho	n Programming w	as paid more attention.							
•Assign	ments were giv	ven to improve the	ir programming skill sets.							

• Hea	alth and safety	projects are encou	raged.						
PO4: The abilit	y to design and	conduct experime	ents, as well as to analyze and interpret data						
PO 4	89	89	Target achieved						
Action Taken:		1	-						
• Conduc	ted project disp	play to improve the	e problem solving skills.						
Organiz	• Organized Group Discussion, Debate, Industrial Visit to organizations to have a real time								
experie	nce								
Conduc	ted Student en	richment programs	5						
PO 5: The abili	ty to use the te	echniques, skills, a	and modern engineering tools necessary for engineering						
practice									
PO 5	90	90	Target achieved						
Action Taken:		1							
Arrange	ed guest lecture	er and seminar for	awareness of modern engineering tools.						
PO 6: The ability	ty to apply reas	oning informed by	the knowledge of contemporary issues						
PO 6	0	0							
Action Taken:			1						
• Encou	raged students	to do Socially rela	ited projects.						
PO 7:The abilit	y to broaden th	e education necess	sary to understand the impact of engineering solutions in						
a global, econor	nic, environme	ental, and societal	context						
PO 7	0	0							
Action Taken:			1						
1. Er	ncouraged stud	ents to take up soc	io-economic based activities.						
2. N	ISS and YRC	volunteers are ap	ppreciated and motivated to give seminar relevant to						
envi	ronmental stu	dies, health, safe	ety, legal and cultural issues and the consequent						
resp	onsibilities rela	tes to the profession	onal engineering practice.						
PO 8: The abili	ty to understa	nd professional ar	nd ethical responsibility and apply them in engineering						
practices									
PO 8	0	0							
Action Taken:		1							
• Pro	jects with socia	l cause were awar	ded with certificate and momentum during the project						
exh	ibition.								
• NS	S and YRC acti	vities were carried	l out to imbibe the ethical responsibility each has						

	towards the socie	ety.								
•	Conducted guest	lectures to improve	the professional responsibility.							
PO 9:The a	bility to function	on multidisciplinary	/ teams							
PO 9	88	88	Target achieved							
Action Tak	en:									
•	• Conducted an awareness program about the various domains available for projects.									
• Encouraged students to take implant training and group project on multidisciplinary										
domains.										
•	• Conducted gue	st lecture series for	Resource Management Techniques by mathematics							
	department.									
PO 10: Th	e ability to comm	nunicate effectively	with the engineering community and with society at							
large.										
PO 10	88	88	Target achieved							
Action Tak	en:									
• Sof	ft skill training co	nducted by the place	ement cell.							
• Att	ention paid to con	nmunication skill in	the communication lab							
• Spe	ecial coaching cl	asses for foreign	languages were conducted to improve the placement							
opp	portunities.									
PO 11: The	ability in underst	anding of the engine	eering and management principles and apply them in							
project and	finance managem	ent as a leader and	a member in a team.							
PO 11	0	0								
Action Tak	en:									
• Inc	entives for produc	et based projects giv	en during the project exhibit.							
• C	onducted one-day	workshop on "Entr	epreneurship development opportunities" to create							
awai	reness for entrepre	eneurial choices	epreneursmp development opportainties to ereate							
PO 12:The	ability to recogniz	ze the need for and	an ability to engage in life-long learning							
PO 12		88	Target achieved							
Action Tak	en:	00								
• Fn	courage students	to learn more by	recognizing the top rank students with prize and a							
cer	tificate.	to learn more by	recognizing the top funk students with prize and a							
• Se	eminar to be cond	ucted on awareness	on competitive exams for higher studies.							
• Cre	eate case studies for	or understanding the	e impact of the subjects in real time.							

8.5 Attainment of Program Outcomes of all first year courses

The Following table shows the PO attainment

PO Attainment for the batch (2021-2022)

PO Attainment for the batch (2021-2022)

COURSE CODE	COURSE NAME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
U20LEHJ01	Technical English	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	80.20	80.20	0.00	80.20
U20MABT01	Calculus and Linear Algebra	86.00	86.00	86.00	0.00	85.67	0.00	0.00	0.00	0.00	0.00	0.00	86.00
U20PYBJ01	Electromagnetic Theory, Wave Optics and Quantum Physics	87.40	87.67	88.00	86.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
U20CYBJ01	Engineering Chemistry	92.00	92.33	91.00	91.50	90.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
U20CYHT01	Social and Environmental Engineering	92.67	92.67	92.50	92.00	94.00	0.00	0.00	0.00	0.00	90.00	0.00	92.50

8.5.2 Action taken based on the results of evaluation of relevant POs

(The attainment levels by direct (student performance) are to be presented through Program level Course-PO matrix as indicated)

PO Attainment Levels and Actions for improvement – CAY only – Mention for relevant POs

POs	Target	Attainment	Observations					
	Level	Level						
PO1: The ability to apply knowledge of mathematics, science, and engineering fundamentals.								
PO1	89	89	Target achieved					
Action Taken:	Action Taken:							
• Conducted Induction program to familiarize them to the new environment and to rectify some								
critical	critical lacunas.							
Condu	• Conducted extra classes for physics and mathematics, so that they are able to keep up with							
what is	being taught i	n the classrooms						
PO2: The ability	v to identify, fo	rmulate, and solve	engineering problems					
PO2	89	89	Target achieved					
Action Taken:	I	I						
• The stu	• The students were found lagging in problem solving part. To overcome this, bridge courses							
were c	were conducted.							
Additio	• Additional coaching classes were conducted beyond the regular planned classes.							
• Condu	Conducted workshop handled by industry experts							
Conducted resea	Conducted research / innovation awareness program among students and faculty members.							
PO 3: The abili	PO 3: The ability to design a system, component, or process to meet the desired needs within realistic							
constraints suc	constraints such as economic, environmental, social, political, ethical, health and safety,							
manufacturability, and sustainability								
PO 3	89	89	Target achieved					
Action Taken:								
• Lab session for Python Programming was paid more attention.								
• Assignments were given to improve their programming skill sets.								
Health and safety projects are encouraged.								
PO4: The ability	PO4: The ability to design and conduct experiments, as well as to analyze and interpret data							
PO 4	90	90	Target achieved					

Action Taken:							
• Conducted project display to improve the problem solving skills.							
• Organized Group Discussion, Debate, Industrial Visit to organizations to have a real time							
experience	experience						
Conducted Student enric	hment programs						
PO 5: The ability to use the tech	miques, skills, a	nd modern engineering tools necessary for engineering					
practice							
PO 5 89	89	Target achieved					
Action Taken:							
• Arranged guest lecturer a	and seminar for a	awareness of modern engineering tools.					
PO 6: The ability to apply reason	ning informed by	the knowledge of contemporary issues					
PO 6 0 0	0						
Action Taken:							
• Encouraged students to	do Socially relat	ted projects.					
PO 7:The ability to broaden the e	education necess	ary to understand the impact of engineering solutions in					
a global, economic, environment	al, and societal c	ontext					
PO 7 0 0	0						
Action Taken:							
1. Encouraged studen	ts to take up soci	o-economic based activities.					
2. NSS and YRC ve	2. NSS and YRC volunteers are appreciated and motivated to give seminar relevant to						
environmental studie	environmental studies, health, safety, legal and cultural issues and the consequent						
responsibilities relates	responsibilities relates to the professional engineering practice.						
PO 8: The ability to understand professional and ethical responsibility and apply them in engineering							
practices							
PO 8 0 0	0						
Action Taken:							
• Projects with social cause were awarded with certificate and momentum during the project							
exhibition.							
• NSS and YRC activities were carried out to imbibe the ethical responsibility each has							
towards the society.							
Conducted guest lectures to improve the professional responsibility.							
	1. 1. 1. 1.						

PO 9	80	80	Target achieved					
Action Taken:								
• Co • Ei do	 Conducted an awareness program about the various domains available for projects. Encouraged students to take implant training and group project on multidisciplinary domains. 							
• C	 Conducted guest lecture series for Resource Management Techniques by mathematics 							
de	department.							
PO 10: The ab	ility to commu	inicate effectively	with the engineering community and with society at					
large.								
PO 10	85	85	Target achieved.					
Action Taken:		I						
• Soft ski	ll training cond	ucted by the place	ment cell.					
Attentio	on paid to comm	nunication skill in	the communication lab					
Special	coaching clas	ss for foreign la	nguages were conducted to improve the placement					
opportu	nities.							
PO 11: The abil	PO 11: The ability in understanding of the engineering and management principles and apply them in							
project and finar	project and finance management as a leader and a member in a team.							
PO 11	11 0 0							
Action Taken:	Action Taken:							
• Incentives for product based projects given during the project exhibit.								
Condu	• Conducted one-day workshop on "Entrepreneurship development opportunities" to create							
awareness for entrepreneurial choices.								
PO 12:The ability to recognize the need for, and an ability to engage in life-long learning								
PO 12	86	86	Target achieved					
Action Taken:								
• Encourage students to learn more by recognizing the top rank students with prize and a certificate.								
• Seminar to be conducted on awareness on competitive exams for higher studies.								
Create of	• Create case studies for understanding the impact of the subjects in real time.							

8.5 Attainment of Program Outcomes of all first year courses

The Following table shows the PO attainment

PO Attainment for the batch (2020-2021)

COURSE CODE	COURSE NAME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
U20LEHJ01	Technical English	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	82.50	82.50	0.00	82.50
U20MABT01	Calculus and Linear Algebra	80.80	80.80	81.00	0.00	80.30	0.00	0.00	0.00	0.00	0.00	0.00	80.80
U20PYBJ01	Electromagnetic Theory, Wave Optics and Quantum Physics	81.80	79.67	85.00	85.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
U20CYBJ01	Engineering Chemistry	90.00	93.33	90.33	91.00	89.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
U20CYHT01	Social and Environmental Engineering	92.33	92.67	92.50	91.33	94.00	0.00	0.00	0.00	0.00	91.00	0.00	92.50

8.5.2 Action taken based on the results of evaluation of relevant POs

(The attainment levels by direct (student performance) are to be presented through Program level Course-PO matrix as indicated)

PO Attainment Levels and Actions for improvement – CAY only – Mention for relevant POs

POs	Target	Attainment	Observations					
DO1. The shilits		ledge of mothems	tion anional and analyzating fundamentals					
PO1: The ability to apply knowledge of mathematics, science, and engineering fundamentals.								
POI	85	85	Target achieved					
Action Taken:								
Condu	Conducted Induction program to familiarize them to the new environment and to rectify some							
critical lacunas.								
Condu	cted extra class	ses for physics and	mathematics, so that they are able to keep up with					
what is	being taught i	n the classrooms						
PO2: The ability	to identify, fo	rmulate, and solve	engineering problems					
PO2	85	85	Target achieved					
Action Taken:	I	I						
• The students were found lagging in problem solving part. To overcome this, bridge courses								
were c	were conducted.							
Additio	onal coaching o	classes were condu	cted beyond the regular planned classes.					
• Condu	Conducted workshop handled by industry experts.							
Conducted resea	Conducted research / innovation awareness program among students and faculty members.							
PO 3: The ability	PO 3: The ability to design a system, component, or process to meet the desired needs within realistic							
constraints suc	constraints such as economic, environmental, social, political, ethical, health and safety,							
manufacturabilit	manufacturability, and sustainability							
PO 3	86	86	Target achieved					
Action Taken:								
• Lab session for Python Programming was paid more attention.								
• Assignments were given to improve their programming skill sets.								
Health and safety projects are encouraged.								
PO4: The ability	PO4: The ability to design and conduct experiments, as well as to analyze and interpret data							
PO 4	89	89	Target achieved					
		-	Ø					

Action Taken:							
• Conducted project display to improve the problem solving skills.							
• Organized Group Discussion, Debate, Industrial Visit to organizations to have a real time							
experier	experience						
Conduct	ted Student enr	ichment programs					
PO 5: The abilit	ty to use the te	chniques, skills, a	nd modern engineering tools necessary for engineering				
practice							
PO 5	86	86	Target achieved				
Action Taken:	1						
• Arrange	d guest lecture	r and seminar for a	awareness of modern engineering tools.				
PO 6: The abilit	y to apply rease	oning informed by	the knowledge of contemporary issues				
PO 6	0	0					
Action Taken:	1		·				
• Encour	raged students	to do Socially rela	ted projects.				
PO 7:The ability	to broaden the	e education necess	ary to understand the impact of engineering solutions in				
a global, econom	nic, environme	ntal, and societal c	context				
PO 7	0	0					
Action Taken:	1						
1. Er	couraged stude	ents to take up soc	io-economic based activities.				
2. N	2. NSS and YRC volunteers are appreciated and motivated to give seminar relevant to						
envir	environmental studies, health, safety, legal and cultural issues and the consequent						
respo	responsibilities relates to the professional engineering practice.						
PO 8: The ability to understand professional and ethical responsibility and apply them in engineering							
practices							
PO 8	0	0					
Action Taken:	Action Taken:						
Projects with social cause were awarded with certificate and momentum during the project							
exhibition.							
NSS and YRC activities were carried out to imbibe the ethical responsibility each has							
towards the society.							
Conducted guest lectures to improve the professional responsibility.							
PO 9:The ability	PO 9:The ability to function on multidisciplinary teams						

PO 9	83	83	Target achieved					
Action Taken:								
• Conducted an awareness program about the various domains available for projects.								
• Er	• Encouraged students to take implant training and group project on multidisciplinary							
do	domains.							
• Co	Conducted guest lecture series for Resource Management Techniques by mathematics							
de	department.							
PO 10: The abi	lity to commu	inicate effectively	with the engineering community and with society at					
large.								
PO 10	87	87	Target achieved.					
Action Taken:	I	I						
Soft ski	l training cond	lucted by the place	ment cell.					
• Attentio	n paid to comr	nunication skill in	the communication lab					
• Special	coaching clas	ss for foreign la	nguages were conducted to improve the placement					
opportu	opportunities.							
PO 11: The ability in understanding of the engineering and management principles and apply them in								
project and final	project and finance management as a leader and a member in a team.							
PO 11	0	0						
Action Taken:	Action Taken:							
• Incentiv	• Incentives for product based projects given during the project exhibit.							
• Conducted one-day workshop on "Entrepreneurship development opportunities" to create								
awareness for entrepreneurial choices								
PO 12: The ability to recognize the need for and an ability to engage in life-long learning								
PO 12	PO 12 84 84 • Target achieved							
Action Takan	Ur							
 Encourage students to learn more by recognizing the top rank students with prize and a certificate. 								
• Semina	• Seminar to be conducted on awareness on competitive exams for higher studies.							

• Create case studies for understanding the impact of the subjects in real time.