



KASHI INSTITUTE OF TECHNOLOGY

Managed by: JAIN EDUCATION SOCIETY

E-mail: info@kashiit.ac.in . Website: www.kashiit.ac.in ☎1800-123-321-123

ISO 9001 : 2015 (QUALITY MANAGEMENT SYSTEM)

COURSE FILE

ON

ENGINEERING CHEMISTRY

(KAS102T)

By

Dr. Rupesh Kumar Singh

Associate Professor

Department of Applied Science and Humanities

Kashi Institute of Technology, Mirzamurad

Varanasi

Year/Semester – 1st / 1st (Odd)

2021- 2022

Sign of the faculty

Head of the Department
Applied Science & Humanities



Director
Kashi Institute of Technology

Department of Applied Science & Humanities
COURSE FILE: Index

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(1) Institution Vision & Mission:

Vision:

To empower young generation for substantial contribution to economical, technological and social progress of the society worldwide.

Mission:

- To contribute to the development of the human resources in the form of professional leaders of global cadre.
- To develop holistic personality of the learners.
- To make this Institute as a Leading Centre of Research.





KASHI INSTITUTE OF TECHNOLOGY

Managed by: Jain Education Society

23 km Milestone, Varanasi- Allahabad Road, Mirzamurad, Varanasi (U. P.)

E-mail: info@kashiit.ac.in, Website: www.kashiit.ac.in

Vision, Mission & PEO are published & disseminated at following places:

Vision , Mission & PEOs

Sr. No.	Place of Dissemination	Item	Dissemination Detail
1	College Website	Vision ,Mission, PEO	Permanent
2	Depart Area	Vision ,Mission, PEO	Permanent
3	Laboratory Area	Vision ,Mission, PEO	Permanent
4	Notice Board	Vision, Mission,	Permanent
5	Employer Survey Form	Vision ,Mission, PEO	When Required
6	Bulk SMS	Vision ,Mission,	At New Admission
7	Email	Vision ,Mission,	Footer in Every Mail
8	Home Page of ERP	Vision ,Mission,	Permanent
9	Laboratory Manuals	Vision ,Mission,	Permanent
10	Faculty Meetings	Vision ,Mission, PEO	At regular interval
11	In Alumni Interactions	Vision, Mission, PEO	Alumni Meet
12	Back Grounds of all Computers in the Department	Vision, Mission	Permanent





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VISION & MISSION OF THE DEPARTMENT:

VISION

To educate undergraduate, post graduate, doctoral students in field of applied science, preparing sincere and socially responsible students to thrive and contribute to an ever-changing global society.

MISSION

*To provide strong foundation to the students through basic courses and value added teaching in areas of technical field, innovation, personality development & competitive abilities and guide for their respective discipline.

*To provide students with a flexible yet solid learning infrastructure through proactive and adaptive service systems.

*To create and propagate knowledge and tools at the interfaces between areas of engineering, emerging trends of industries and other core areas of Applied Sciences and Humanities.





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Academic Calendar: Odd Semester: 2021-22

B. Tech & MBA

S. No.	Description	Semester System Exam			
		I-Sem.	III-Sem	V-Sem	VII-Sem
1.	Student's Online Registration for the session 2021-22, Odd Semester	-	Up to 09-09-2021	Up to 07-09-2021	Up to 28-08-2021
2.	Commencement of Classes for all students	01-10-2021	13-09-2021	10-09-2021	01-09-2021
3.	Sessional Examination	15-11-2021 to 19-11-2021	30-10-2021 to 03-11-2021	30-10-2021 to 03-11-2021	30-10-2021 to 03-11-2021
4.	PUT Examination	17-01-2022 to 21-01-2022	20-12-2021 to 28-12-2021	20-12-2021 to 28-12-2021	20-12-2021 to 28-12-2021
5.	Makeup Sessional Examination	07-03-2022 to 11-03-2022	30-12-2021 to 03-01-2022	30-12-2021 to 03-01-2022	30-12-2021 to 03-01-2022
6.	End Semester Theory Examination	21-03-2022 to 04-04-2022	04-01-2022	04-01-2022	04-01-2022
7.	Student's Online Registration for the session 2021-22, Even Semester	-	Up to 31-01-2022	Up to 31-01-2022	Up to 31-01-2022
8.	Commencement of Classes Even Semester for the session 2021-22	-	01-02-2022	01-02-2022	01-02-2022

Note:

1. The Academic calendar may change as per new Academic Calendar of AKTU (as and when required).
2. Sessional: Before Sessional Exam, 50% of the subject syllabus must be covered.
3. PUT: Before PUT Exam 100% of the subject syllabus will be covered.
4. Makeup Sessional: Only for NOC students & students those were absent in Sessional examination will be allowed for Makeup Sessional.
5. Unit wise, Class Test and Assignment must be scheduled.


Dean Academic



Revised Structure B. Tech 1st Year
B.Tech. I Semester
 (All branches except Bio Technology and Agriculture Engg.)

S. No.	Course Code	Course Title	Periods			Evaluation Scheme				End Semester		Total	Credits
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KAS101T/ KAS102T	Engineering Physics/ Engineering Chemistry	3	1	0	30	20	50		100		150	4
2	KAS103T	Engineering Mathematics-I	3	1	0	30	20	50		100		150	4
3	KEE101T/ KEC101T	Basic Electrical Engineering/ Emerging Domain in Electronics Engineering	3	0	0	30	20	50		100		150	3
4	KCS101T/ KME101T	Programming for Problem Solving / Fundamentals of Mechanical Engineering & Mechatronics	3	0	0	30	20	50		100		150	3
5	KAS151P/ KAS152P	Engineering Physics Lab/ Engineering Chemistry Lab	0	0	2				25		25	50	1
6	KEE151P/ KEC151P	Basic Electrical Engineering Lab/ Electronics Engineering Lab	0	0	2				25		25	50	1
7	KCS151P/ KAS154P	Programming for Problem Solving / English Language Lab	0	1	2				25		25	50	1
8	KCE151P/ KWS151P	Engineering Graphics & Design Lab/ Mechanical Workshop Lab	0	1	2				50		50	100	1
9	KMC101/ KMC102	AI For Engineering/ Emerging Technology for Engineering	2	0	0	15	10	25		25		50	2
10	KNC101	Soft Skill I	2	0	0	15	10	25		25			NC
11	MOOCs	(For B.Tech. Hons. Degree)*											
		Total										900	20



ENGINEERING CHEMISTRY
(KAS-102/KAS-202)

Credits: 04

L	T	P
3	1	0

UNITS	CONTENTS	Lecture Hrs
UNIT-1	Atomic and Molecular Structure: Molecular orbital's of diatomic molecules. Band theory of solids. Liquid crystal and its applications. Point defects in solids. Structure and applications of Graphite and Fullerenes. Concepts of Nanomaterials and its application.	08 lectures
UNIT-2	Spectroscopic techniques and Applications: Elementary idea and simple applications of Rotational, Vibrational, Ultraviolet & Visible and Raman spectroscopy.	08 lectures
UNIT-3	Electrochemistry Nernst Equation and application, relation of e.m.f. with thermodynamic functions (ΔH , ΔF and ΔS). Lead storage battery. Corrosion; causes, effects and its prevention. Phase Rule and its application to water system.	08 lectures
UNIT-4	Water Analysis; Hardness of water, Techniques for water softening (Lime-soda, Zeolite, Ion exchange resin and Reverse osmosis method). Fuels: classification of fuels, Analysis of coal, Determination of calorific value (Bomb calorimeter and Dulong's methos).	08 lectures
UNIT-5	Polymer; Basic concepts of polymer-Blend and composites, Conducting and biodegradable polymers. Preparation and application of some industrially important polymers (Buna-S, Buna-N, Neoprene, Nylon-6, nylon-6,6 and Terylene). General methods of synthesis of organometallic compounds (Grignard reagent) and their applications.	08 lectures

Course Outcomes:

1. Get an understanding of the theoretical principles understanding molecular structure, bonding and properties.
2. Know the fundamental concepts of determination of structure with various techniques.
3. Know the fundamental concepts of chemistry applicable in industrial processes.

Reference Books:

1. University Chemistry By B.H. Mahan
2. University Chemistry By C.N.R. Rao
3. Organic Chemistry By I.L. Finar
4. Physical Chemistry By S. Glasstone
5. Engineering Chemistry By S.S. Dara
6. Polymer Chemistry By Fre W., Billmeyer



ENGINEERING CHEMISTRY PRACTICAL
(KAS-152/KAS-252)

Credits: 1.5

L	T	P
0	0	3

LIST OF EXPERIMENTS

1. Determination of alkalinity in the given water sample.
2. Determination of temporary and permanent hardness in water sample using EDTA.
3. Determination of iron content in the given solution by Mohr's method.
4. Determination of viscosity of given liquid.
5. Determination of surface tension of given liquid.
6. Determination of chloride content in water sample.
7. Determination of available chlorine in bleaching powder.
8. Determination of pH by pH-metric titration.
9. Preparation of Phenol-formaldehyde and Urea-formaldehyde resin.
10. Determination of Cell constant and conductance of a solution.
11. Determination of rate constant of hydrolysis of esters.
12. Verification of Beer's law.

NOTE: Choice of any 10 experiments from the above. Institute can change any 02 experiments from the aforesaid experiments.

Course Outcomes:

1. Use of different analytical instruments.
2. Measure molecular/system properties such as surface tension, viscosity, conductance of solution, chloride and iron content in water.
3. Measure hardness of water.
4. Estimate the rate constant of reaction.



Syllabus: Chemistry (KAS-102T/202T)

Syllabus (as prescribed by affiliating university, i.e. AKTU)

KAS-102T/202T : Chemistry (L T P 3 1 0)

Module-1 (8)

Atomic And Molecular Structure

Molecular orbital's of diatomic molecules. Band theory of solids. Liquid crystals and its applications. Point defects in solids. Structure and applications of Graphite and Fullerenes. Concepts of nano-materials and its applications.

Module- 2 (8)

Spectroscopic Techniques And Applications

Elementary ideas and simple applications of Rotational, Vibrational, Ultraviolet & Visible, and Raman spectroscopy.

Module- 3 (8)

Electrochemistry

Nernst Equation and application, relation of EMF with thermodynamic functions (ΔH , ΔF and ΔS). Lead storage battery.

Corrosion causes, effects and its prevention.

Phase rule and its application to water system.

Module-4 (8)

Water Analysis

Hardness of water, Techniques of water softening (Lime- soda , Zeolite, Ion exchange resin and Reverse osmosis method).

Fuels Classification of fuels, Analysis of Coal, Determination of Calorific values (bomb calorimeter & Dulong's method),

Module- 5 (8)

Polymers Basic concepts of polymer – blends and composites, Conducting and biodegradable polymers, Preparations and applications of some industrially important polymers (Buna-S, Buna-N, Neoprene, Nylon 6, Nylon 6, 6, and Terylene). General methods of synthesis of organometallic compound (Grignard Reagent) and their applications.



Syllabus: Chemistry (KAS-102T/202T)

Syllabus as per CO

KAS-102T/202T : Chemistry (LTP 3 1 0)

CO-1: *On completion of this course student will be able to apply fundamental concepts of chemistry in different fields of Engineering.*

Module-1 (11)

Atomic And Molecular Structure

Molecular orbital's of diatomic molecules. Band theory of solids. Liquid crystals and its applications. Point defects in solids. Structure and applications of Graphite and Fullerenes. Concepts of nano-materials and its applications.

CO-2: *On completion of this course student will be able to identify compounds using different spectroscopic techniques.*

Module- 2 (10)

Spectroscopic Techniques And Applications

Elementary ideas and simple applications of Rotational, Vibrational, Ultraviolet & Visible, and Raman spectroscopy.

CO-3: *On completion of this course student will be able to understand the basic principles of electrochemistry for different engineering applications.*

Module- 3 (10)

Electrochemistry

Nernst Equation and application, relation of EMF with thermodynamic functions (ΔH , ΔF and ΔS). Lead storage battery.

Corrosion causes, effects and its prevention.

Phase rule and its application to water system.

CO-4 : *On completion of this course student will be able to illustrate different types of impurities in water and its softening techniques.*

Module-4 (16)

Water Analysis

Hardness of water, Techniques of water softening (Lime- soda , Zeolite, Ion exchange resin and Reverse osmosis method).

Fuels Classification of fuels, Analysis of Coal, Determination of Calorific values (bomb calorimeter & Dulong's method),

CO-5: *On completion of this course student will be able to recall the basic knowledge of polymerization & and applications*

Module- 5 (8)

Polymers Basic concepts of polymer – blends and composites, Conducting and biodegradable polymers, Preparations and applications of some industrially important polymers (Buna-S, Buna-N, Neoprene, Nylon 6, Nylon 6, 6, and Terylene). General methods of synthesis of organometallic compound (Grignard Reagent) and their applications.

Reference Books:

1. University Chemistry By B.H.Mahan
2. University Chemistry By C.N.R.Rao
3. Organic Chemistry By I.L. Finar
4. Physical Chemistry By S. Glasstone
5. Engineering Chemistry By S.S. Dara
6. Polymer Chemistry By Fre W. Billmeyer
7. Engineering Chemistry By Satya Prakash



Kashi Institute of Technology, Mirzamurad, Varanasi
Department of ASH (Chemistry)

Lecture Plan (Theory Subject) : B. Tech. 1st Year -2021-22

Subject Name with Code: Chemistry KAS 102T/202T

Unit: 01

S. No	Lecture No.	Module No.	CO	Topics	Remarks, if any
1	1	1	1	Molecular orbital theory- Introduction	
2	2	1	1	Application of Molecular orbital theory to Homodiatomic molecules	
3	3	1	1	Application of Molecular orbital theory to Heterodiatomic molecules	
4	4	1	1	Application of Molecular orbital theory to Heterodiatomic molecules	
5	5	1	1	Band theory of solids	
6	6	1	1	Point defects in solids	
7	7	1	1	Liquid crystals- Introduction and classification	
8	8	1	1	Applications of Liquid crystals	
9	9	1	1	Structure and applications of Graphite and Fullerenes	
10	10	1	1	Concepts of nano-materials	
11	11	1	1	Applications of nano-materials	
12	12	2	2	Elementary Idea of spectroscopy	
13	13	2	2	UV Spectroscopy- THEORY	
14	14	2	2	UV Spectroscopy- Application	
15	15	2	2	IR Spectroscopy- Theory	
16	16	2	2	IR Spectroscopy- Application	
17	17	2	2	Raman Spectroscopy- Theory	
18	18	2	2	Raman Spectroscopy- Applications	
19	19	2	2	Rotational Spectroscopy- Theory	
20	20	2	2	Rotational Spectroscopy- Applications	
21	21	2	2	Numerical problems of spectroscopy	
22	22	3	3	Basic concepts of electrochemistry- Nernst Equation	
23	23	3	3	Applications of Nernst Equation	
24	24	3	3	Relation of EMF with thermodynamic functions and Numerical	
25	25	3	3	Lead storage battery	

S. No	Lecture No.	Module No.	CO	Topics	Remarks, if any
26	26	3	3	Corrosion; causes and types	
27	27	3	3	Corrosion - theory	
28	28	3	3	Corrosion; prevention	
29	29	3	3	Phase Rule- Introduction and terminology	
30	30	3	3	Application of phase rule to one component system (water system)	
31	31	4	4	Hardness of water, Type and units of hardness and Numerical	
32	32	4	4	Disadvantage of hard water- Boiler troubles	
33	33	4	4	Techniques for water softening- Zeolite process	
34	34	4	4	Techniques for water softening- Ion exchange process	
35	35	4	4	Techniques for water softening- Lime-Soda process & types	
36	36	4	4	Reactions and Calculation steps for numerical of Lime-Soda process	
37	37	4	4	Numerical based on Lime-Soda process	
38	38	4	4	Reverse osmosis	
39	39	4	4	Fuels- Classification of fuels	
40	40	4	4	Determination of calorific values by Bomb calorimeter	
41	41	4	4	Numerical based on Determination of Calorific values	
42	42	4	4	Analysis of Coal- proximate analysis	
43	43	4	4	Analysis of Coal- Ultimate analysis	
44	44	4	4	Analysis of Coal- Combustion	
45	45	4	4	Numerical based on Combustion	
46	46	4	4	Basic concepts of polymer	
47	47	5	5	Polymer- blends	
48	48	5	5	Polymer -composites	
49	49	5	5	Preparations and applications of some industrially important polymers	
50	50	5	5	Conducting polymers	
51	51	5	5	Biodegradable polymers	
52	52	5	5	General methods of synthesis of organometallic compound (Grignard Reagent)	
53	53	5	5	Applications of organometallic compound	
54	54			Revision	
55	55			Revision	



Lecture Delivery Schedule

NAME OF FACULTY: Dr. RUPESH KUMAR SINGH
DEPARTMENT: Applied Science & Humanity
SUBJECT & CODE: CHEMISTRY (KAS102T)
TOTAL PERIODS: 5+5

SESSION: 2021-22
SEMESTER: 1ST
BRANCH: CSE-AI&ML (A&B)
L T P 3+1+0 = 4

COs	TOPIC COVERED	LECTURE NO.	PLANNED DATE	ACTUAL DATE	REFERENCES USED
1	Molecular orbitals of diatomic molecule	1,2,3	11,12,13,10,2021	11,12,13,10,2021	T1+R1
	Band theory of solids	4,5	16,18,10,2021	16,18,10,2021	T1+R1
	Liquid crystal and its applications	6,7	19,20,10,2021	19,20,10,2021	T1+R1
	Point defects in solids	8	23,10,2021	23,10,2021	T1+R1
	Structure and application of Graphite & Fullerene	9	25,10,2021	25,10,2021	T1+R1
	Concept of Nanomaterials and its applications	10	27,10,2021	27,10,2021	T1+R1
	CLASS TEST	11	1,11,2021	1,11,2021	
	Spectroscopic techniques and applications	12	2,11,2021	2,11,2021	T1+R1
	Applications of rotational spectroscopy	13	8,11,2021	8,11,2021	T1+R1
	Applications of vibrational spectroscopy	14	9,11,2021	9,11,2021	T1+R1
2	Applications of UV & VIS spectroscopy	15	11,11,2021	11,11,2021	T1+R1
	Applications of Raman spectroscopy	16	15,16,11,2021	15,16,11,2021	T1+R1
	CLASS TEST	17	17,11,2021	17,11,2021	
	Nernst equation and application	18	18,11,2021	18,11,2021	T1+R1
	Relation of EMF with thermodynamic functions	19,20,21	19,20,22,11,21	19,20,22,11,21	T1+R1
	Lead storage battery	22,23	23,24,11,21	23,24,11,21	T1+R1
	Corrosion, causes, effects and its prevention	24,25	26,27,11,21	26,27,11,21	T1+R1
	Phase rule and its applications for water system	26,27	29,30,11,21	29,30,11,21	T1+R1
	CLASS TEST	28	1,12,21	1,12,21	
	Water analysis , hardness of water	29,30	2,6,12,21	2,6,12,21	T1+R1
3	Technique for water softing (Lime soda process)	31,32	9,10,12,21	9,10,12,21	T1+R1
	Permutit (Zeolite) process, Ion exchange process	33,34,35	20,21,22,12,21	20,21,22,12,21	T1+R2
	Reverse osmosis method	36,37	25,27,12,21	25,27,12,21	T1+R2
	Fuels, Classification of fuels	38,39	28,29,31,12,21	28,29,31,12,21	T1+R2
	analysis of coals (Proximate and Ultimate analysis)	40,41,42,43	1,3,4,5,1,22	1,3,4,5,1,22	T1+R2
	Determination of Calorific value HCV & NCV	44,45,46	10,11,12,1,22	10,11,12,1,22	T1+R2
	Bomb calorimetre and Dulong's method	47,48,49	13,16,17,1,22	13,16,17,1,22	T1+R2
	CLASS TEST	50	18,1,22	18,1,22	
	Basic concept of polymer- Blend & composite	51,52,53,54	19,20,21,22,1,22	19,20,21,22,1,22	T1+T2
	Conducting and biodegradable polymers	55,56,57	24,25,27,1,22	24,25,27,1,22	T1+T2
4	Preparation and application of Buna-N, Buna-S,	58,59,60,61,62	28,29,31,1,22	28,29,31,1,22	T1+T2
	Ncoprene, Terylene, Nylon-6, Nylon-6,6 (preparation)	63,64,65,66	1,2,3,2,22	1,2,3,2,22	T1+T2
	Synthesis and applications of Grignard Reagent	67,68,69,70,71	4,5,7,8,9,10,2,22	4,5,7,8,9,10,2,22	T1+T2
	CLASS TEST	72	11,02,2022	11,02,2022	
	Course revision & MODEL Question Paper Discussion	73,74	12,13,02,2022	12,13,02,2022	UQP
	Course revision & MODEL Question Paper Discussion	75	14,02,2022	14,02,2022	UQP
	Total No. of Lectures Planned:	60			
	Total No. of Lectures Held:	75			

Faculty Signature

HOD Signature



KASHI INSTITUTE OF TECHNOLOGY, MIRZAPURAD - VARANASI

Faculty Time Table Session 2021 - 22 (1st / ODD Semester)

Effective From: 11th October 2021

Room No:	B. Tech: 1 Year (Section : A, B & C), Semester: 1		Effective From: 11th October 2021						
Lecture	1st	2nd	3rd	4th	5th	6th	7th	8th	
Training	09:00 - 9:50 am	9:50 - 10:40 am	11:00 - 11:50 pm	11:50 - 12:30pm	12:50 - 1:40PM	1:40 - 2:30pm	2:30 - 2:50pm	2:50 - 3:40 pm	3:40 - 4:30 PM
MON	A		Engg. CHEM		Engg. Chemistry Lab A11			Engg. Chemistry	
	B								
	C								
TUE	A	Engg. Chemistry Lab A12	Engg. CHEM						
	B								
	C								
WED	A		Engg. CHEM						
	B								
	C				Engg. CHEM Lab B11			Engg. Chemistry	
THU	A		Engg. CHEM						
	B	Engg. Chemistry Lab B12							
	C								
FRI	A								
	B								
	C			Engg. CHEM					
SAT									
Faculty Name		Subject Name		Total Lecture	Contact No				
Dr. Rupesh Kumar Singh		Engg. Chemistry/Chemistry Lab		12	7380767935				
Subject Code		Subject Name		Total Lecture		Contact No			
KAS102TKAS152*		Engg. Chemistry/Chemistry Lab		12		7380767935			





LIST OF STUDENTS

B.Tech 1st Year (CSE) - Sec - A

List of Students

Sr. No.	Registration No	Roll No	InstituteId	Course	Branch	Shift	Name	Gender	Father's Name
1	PREERN210017377	2104280100001	428	B.Tech	CSE	Shift I	ABHAY VISHWAKARMA	M	RAVINDRA NATH
2	PREERN210019738	2104280100002	428	B.Tech	CSE	Shift I	ABHINAV KUMAR SINGH	M	DEEP KUMAR SINGH
3	PREERN210022123	2104280100003	428	B.Tech	CSE	Shift I	ABHISHEK PANDEY	M	SURENDRA PRASAD PANDEY
4	PREERN210008850	2104280100004	428	B.Tech	CSE	Shift I	ABHISHEK SHARMA	M	SANTOSH KUMAR SHARMA
5	PREERN210003448	2104280100005	428	B.Tech	CSE	Shift I	ADARSH GIRI	M	DHARMENDRA KUMAR GIRI
6	PREERN210008778	2104280100006	428	B.Tech	CSE	Shift I	ADITYA GUPTA	M	SANJAY KUMAR GUPTA
7	PREERN210022132	2104280100007	428	B.Tech	CSE	Shift I	ADITYA KUMAR	M	OM PRAKASH
8	PREERN210009525	2104280100008	428	B.Tech	CSE	Shift I	AKANKSHA GUPTA	F	RAM KUMAR GUPTA
9	PREERN210001744	2104280100009	428	B.Tech	CSE	Shift I	AKASH DWIVEDI	M	MITHILESH KUMAR DWIVEDI
10	PREERN210019618	2104280100010	428	B.Tech	CSE	Shift I	AKASH JAISWAL	M	PAWAN KUMAR JAISWAL
11	PREERN210022833	2104280100011	428	B.Tech	CSE	Shift I	AKSHARA SRIVASTAVA	F	AJAY SRIVASTAVA
12	PREERN210078269	2104280100012	428	B.Tech	CSE	Shift I	AMAN PANDEY	M	SHIVAJEE
13	PREERN210019616	2104280100013	428	B.Tech	CSE	Shift I	AMAN SINGH	M	SANTOSH SINGH
14	PREERN210019622	2104280100014	428	B.Tech	CSE	Shift I	AMAN YADAV	M	AJAY YADAV
15	PREERN210022984	2104280100015	428	B.Tech	CSE	Shift I	ANANYA SINGH	F	SANJAY KUMAR SINGH
16	PREERN210004457	2104280100016	428	B.Tech	CSE	Shift I	ANKIT KUMAR SINGH	M	RADHESHYAM SINGH
17	PREERN210009743	2104280100017	428	B.Tech	CSE	Shift I	ANKIT SRIVASTAV	M	ASEEM SRIVASTAV
18	PREERN210019607	2104280100018	428	B.Tech	CSE	Shift I	ANUP KUMAR PANDEY	M	ARVIND KUMAR PANDEY
19	PREERN210008392	2104280100019	428	B.Tech	CSE	Shift I	ANUPRIYA SINHA	F	PANKAJ SINHA
20	PREERN210005116	2104280100020	428	B.Tech	CSE	Shift I	ANURAG SRIVASTAV	M	ANIL KUMAR SRIVASTAVA
21	PREERN210008299	2104280100021	428	B.Tech	CSE	Shift I	APARNA CHAURASIA	F	RADHAKRISHNA CHAURASIA
22	ERN212200005176	2104280100022	428	B.Tech	CSE	Shift I	ARHANT UPADHYAY	M	SUJIT KUMAR UPADHYAY
23	PREERN210001274	2104280100023	428	B.Tech	CSE	Shift I	ARUJ SRIVASTAVA	M	VIVEK KUMAR
24	PREERN210022003	2104280100024	428	B.Tech	CSE	Shift I	ARYAN SINGH	M	SHYV SHANKAR SINGH
25	PREERN210070484	2104280100025	428	B.Tech	CSE	Shift I	ASHISH KUMAR	M	SATYENDRA NARAIN SINGH
26	PREERN210021924	2104280100027	428	B.Tech	CSE	Shift I	ATUL TIWARI	M	PANKAJ TIWARI
27	PREERN210073641	2104280100029	428	B.Tech	CSE	Shift I	AYUSHI ADITI	F	BISHWAJEET KUMAR
28	PREERN210023149	2104280100030	428	B.Tech	CSE	Shift I	AYUSHI SINGH	F	CHANDRA MOHAN SINGH
29	PREERN210009653	2104280100031	428	B.Tech	CSE	Shift I	BALENDU NARAYAN JHA	M	GOKULENDRA NARAYAN JHA
30	PREERN210019610	2104280100032	428	B.Tech	CSE	Shift I	CHETAN SINGH	M	RAJ BIHARI SINGH
31	PREERN210001666	2104280100033	428	B.Tech	CSE	Shift I	GAURAV SHARMA	M	KRISHNA MURARI SHARMA
32	PREERN210002849	2104280100034	428	B.Tech	CSE	Shift I	GULPHAM HUSSAIN	M	VAHID ALI
33	PREERN210003359	2104280100035	428	B.Tech	CSE	Shift I	GULSHAN KUMAR MAURYA	M	RAJESH MAURYA
34	PREERN210023044	2104280100036	428	B.Tech	CSE	Shift I	GUNJA SINGH YADAV	F	SUKKHU RAM YADAV
35	PREERN210004966	2104280100037	428	B.Tech	CSE	Shift I	GYAN PRAKASH	M	RAM RAJ
36	PREERN210022055	2104280100038	428	B.Tech	CSE	Shift I	GYANENDRA PRATAP SINGH	M	AJAY SINGH
37	PREERN210029708	2104280100039	428	B.Tech	CSE	Shift I	HARSH PANDEY	M	RAJESH PANDEY
38	PREERN210009846	2104280100040	428	B.Tech	CSE	Shift I	HARSH SHUKLA	M	RAJESH KUMAR SHUKLA
39	PREERN210004594	2104280100041	428	B.Tech	CSE	Shift I	HARSH SINGH	M	JAI PRAKASH SINGH
40	PREERN210019752	2104280100042	428	B.Tech	CSE	Shift I	HIMANSHU TIWARI	M	VIDYA SHANKAR TIWARI
41	PREERN210000916	2104280100043	428	B.Tech	CSE	Shift I	HIMANSHU UPADHYAY	M	YOGESHWAR UPADHYAY
42	PREERN210004733	2104280100044	428	B.Tech	CSE	Shift I	JAGRITI SINGH	M	RANG BAHADUR SINGH
43	ERN212200006287	2104280100045	428	B.Tech	CSE	Shift I	JANHAVI SINGH	F	DHIRENDRA SINGH
44	PREERN210018544	2104280100046	428	B.Tech	CSE	Shift I	JATIN KUMAR	M	SUNJIL KUMAR
45	PREERN210002736	2104280100047	428	B.Tech	CSE	Shift I	KARAN SINGH	M	SHRIPRAKASH SINGH
46	PREERN210019631	2104280100048	428	B.Tech	CSE	Shift I	KHYATI VISHWAKARMA	F	OM PRAKASH VISHWAKARMA
47	PREERN210009583	2104280100049	428	B.Tech	CSE	Shift I	KM KOMAL GIRI	F	VIJAY GIRI
48	PREERN210049298	2104280100050	428	B.Tech	CSE	Shift I	KUNWAR GAURAV SINGH	M	DARSHAN SINGH
49	PREERN210004239	2104280100051	428	B.Tech	CSE	Shift I	LAIBA FATIMA KHAN	F	REHAN AHMAD KHAN
50	PREERN210003230	2104280100052	428	B.Tech	CSE	Shift I	LAVKUSH	M	GOPAL CHAUHAN
51	PREERN210049284	2104280100053	428	B.Tech	CSE	Shift I	MADHABI BISWAS	F	BIDHAN BISWAS
52	PREERN210010067	2104280100054	428	B.Tech	CSE	Shift I	MAHIMA TRIPATHI	F	RATNESH NATH TRIPATHI
53	PREERN210023249	2104280100055	428	B.Tech	CSE	Shift I	MANDISHA KAUSHIK	F	ANAND PRAKASH SHARMA
54	PREERN210003062	2104280100056	428	B.Tech	CSE	Shift I	MOHAMMAD SHAHIL	M	HARUN SEKH
55	PREERN210073605	2104280100057	428	B.Tech	CSE	Shift I	MOHIT SINGH	M	RAMPYARE SINGH
56	PREERN210019635	2104280100058	428	B.Tech	CSE	Shift I	NIDHI MAURYA	F	SANJAY KUMAR MAURYA
57	PREERN210001523	2104280100059	428	B.Tech	CSE	Shift I	NIRAJ PAL	M	VIJAY BAHADUR PAL
58	PREERN210010117	2104280100060	428	B.Tech	CSE	Shift I	OM PRAKASH MISHRA	M	AMARNATH MISHRA
59	PREERN210010780	2104280100061	428	B.Tech	CSE	Shift I	OM SHARAN RAO	M	RAJ NARAYAN RAO
60	PREERN210049139	2104280100062	428	B.Tech	CSE	Shift I	PAWAN RAI	M	VINDHYESHWARI SINGH
61	PREERN210021874	2104280100063	428	B.Tech	CSE	Shift I	PIYUSH KUMAR SHAH	M	AWDHESH KUMAR SHAH
62	PREERN210021767	2104280100064	428	B.Tech	CSE	Shift I	PRAKHAR SRIVASTAVA	M	VIJAY KUMAR SRIVASTAVA
63	PREERN210069913	2104280100065	428	B.Tech	CSE	Shift I	PRANJAL MAURYA	M	SHRAWAN KUMAR MAURYA
64	PREERN210049151	2104280100066	428	B.Tech	CSE	Shift I	PRASHANT JAISWAL	M	GOPAL JI JAISWAL
65	PREERN210010833	2104280100067	428	B.Tech	CSE	Shift I	PRATEEK KUMAR SRIVASTAVA	M	PRADEEP KUMAR SRIVASTAVA
66	PREERN210075845	2104280100069	428	B.Tech	CSE	Shift I	PRAVEEN SHARMA	M	VIRENDRA KUMAR SHARMA
67	PREERN210011480	2104280100070	428	B.Tech	CSE	Shift I	PRINCE BHARDWAJ	M	BALARAM
68	PREERN210049214	2104280100071	428	B.Tech	CSE	Shift I	PRIYANK VERMA	M	ANIL VERMA
69	PREERN210057794	2104280100072	428	B.Tech	CSE	Shift I	PRIYANSHU SINGH	M	SHAILENDRA KUMAR SINGH
70	PREERN210015463	2104280100073	428	B.Tech	CSE	Shift I	PRIYANSHU SINGH	M	TARKESHWAR SINGH
71	PREERN210010579	2104280100074	428	B.Tech	CSE	Shift I	RAHI SHARMA	M	NAGENDRA SHARMA
72	PREERN210008151	2104280100075	428	B.Tech	CSE	Shift I	RANI KUSHWAHA	F	DAROGA KUSHWAHA
73	PREERN210075315	2104280100076	428	B.Tech	CSE	Shift I	RATAN SINGH	M	RAM ASHISH SINGH
74	PREERN210010213	2104280100077	428	B.Tech	CSE	Shift I	RAVI KANT SINGH	M	VIJENDRA KUMAR SINGH
75	PREERN210015675	2104280100078	428	B.Tech	CSE	Shift I	RAVI MISHRA	M	VIJAY KUMAR MISHRA
76	PREERN210011202	2104280100079	428	B.Tech	CSE	Shift I	RAY SAHAB PATEL	M	CHHAVINATH PATEL
77	PREERN210019601	2104280100080	428	B.Tech	CSE	Shift I	RIKESH KUMAR YADAV	M	TEJBAHADUR YADAV
78	PREERN210073595	2104280100081	428	B.Tech	CSE	Shift I	RISHA FAROOQUI	F	ABDUL RASHID
79	PREERN210010921	2104280100082	428	B.Tech	CSE	Shift I	RISHIKA PATEL	F	SHYAM NARAYAN PATEL
80	PREERN210022203	2104280100084	428	B.Tech	CSE	Shift I	ROSHAN KUMAR SHARMA	M	RAJ KUMAR

B.Tech 1st Year (CSE & CS- AIMM) - Sec - B

Upt of Students

S.N.	Roll No.					Name	Fathers Name
1	2104280100085	428	B.Tech	CSE	Shift I	SAJAL OJHA	
2	2104280100086	428	B.Tech	CSE	Shift I	SAKSHI VISHWAKARMA	DILEPAK OJHA
3	2104280100087	428	B.Tech	CSE	Shift I	SAKSHI VISHWAKARMA	NAVNEET KUMAR VISHWAKARMA
4	2104280100088	428	B.Tech	CSE	Shift I	SAMEER SINGH	SURENDRA PRATAP SINGH
5	2104280100089	428	B.Tech	CSE	Shift I	SANTOSH KUMAR SHUKLA	ISHWAR PRASAD SHUKLA
6	2104280100090	428	B.Tech	CSE	Shift I	SARTHAK SINGH	CHANDRASHEKHAR SINGH
7	2104280100091	428	B.Tech	CSE	Shift I	SARUBH PANDEY	SANJAY PANDEY
8	2104280100092	428	B.Tech	CSE	Shift I	SATYAM PATEL	VINAY KUMAR SINGH
9	2104280100093	428	B.Tech	CSE	Shift I	SATTYAM TIWARI	SHYAM KUMAR TIWARI
10	2104280100094	428	B.Tech	CSE	Shift I	SAURABH KUMAR	SHIVA LAL
11	2104280100095	428	B.Tech	CSE	Shift I	SAURABH SINGH	RAMESH SINGH
12	2104280100096	428	B.Tech	CSE	Shift I	SEJAL SINGH	SARYAJIT SINGH
13	2104280100097	428	B.Tech	CSE	Shift I	SHIVAM RAI	SUDHIR MOHAN RAI
14	2104280100098	428	B.Tech	CSE	Shift I	SHIVAM TIWARI	LAXMINARAYAN TIWARI
15	2104280100099	428	B.Tech	CSE	Shift I	SHIVANSH PANDEY	ANIL KUMAR PANDEY
16	2104280100100	428	B.Tech	CSE	Shift I	SHIVANSH SINGH	SUSHEEL KUMAR SINGH
17	2104280100101	428	B.Tech	CSE	Shift I	SHREYA GUPTA	SANJAY GUPTA
18	2104280100102	428	B.Tech	CSE	Shift I	SHREYANSH JAIN	MANOJ KUMAR JAIN
19	2104280100103	428	B.Tech	CSE	Shift I	SHRUBHAM SINGH	SUKHRAM SINGH
20	2104280100104	428	B.Tech	CSE	Shift I	SHUKLA SHIVAM GHANSHYAM	GHANSHYAM SHUKLA
21	2104280100105	428	B.Tech	CSE	Shift I	SIDDHARTH VISHWAKARMA	ASHOK KUMAR VISHWAKARMA
22	2104280100106	428	B.Tech	CSE	Shift I	SIMRAN KUMARI	RAJESH KUMAR SAINIK
23	2104280100107	428	B.Tech	CSE	Shift I	SINGH AADARSH SANJAY	SANJAY KUMAR SINGH
24	2104280100108	428	B.Tech	CSE	Shift I	SONU GUPTA	VINOD KUMAR GUPTA
25	2104280100109	428	B.Tech	CSE	Shift I	SONU KUMAR	PLAKHARI YADAV
26	2104280100110	428	B.Tech	CSE	Shift I	SUDHANSHU GWAL	RAM AWADH YADAV
27	2104280100111	428	B.Tech	CSE	Shift I	SUPRIT DUBEY	SANJAY KUMAR DUBEY
28	2104280100112	428	B.Tech	CSE	Shift I	SURYA DEV SINGH	KESHAV PRASAD SINGH
29	2104280100113	428	B.Tech	CSE	Shift I	SWAROOP TIWARI	VIJAY TIWARI
30	2104280100114	428	B.Tech	CSE	Shift I	VAIBHAV SINGH	AMARESH SINGH
31	2104280100115	428	B.Tech	CSE	Shift I	VIKAS CHAUHAN	RAM NARESH CHAUHAN
32	2104280100116	428	B.Tech	CSE	Shift I	VINIT DUBEY	VED PRAKASH DUBEY
33	2104280100117	428	B.Tech	CSE	Shift I	VIRENDRA KUMAR PATEL	AJAY KUMAR SINGH
34	2104280100118	428	B.Tech	CSE	Shift I	YADVENDRA YADAV	AKHILESH KUMAR YADAV
35	2104281530001	428	B.Tech	CSE (AI & ML)	Shift I	YUVRAJ PATEL	UDAY PRATAP SINGH
36	2104281530002	428	B.Tech	CSE (AI & ML)	Shift I	ADARSH GUPTA	SWAMI NATH GUPTA
37	2104281530003	428	B.Tech	CSE (AI & ML)	Shift I	ADARSH SINGH	AJAY SINGH
38	2104281530004	428	B.Tech	CSE (AI & ML)	Shift I	AKASH KUMAR AJANAVI	SHIV MURTI SINGH YADAV
39	2104281530005	428	B.Tech	CSE (AI & ML)	Shift I	AKASH TRIPATHI	DIWAKAR TRIPATHI
40	2104281530006	428	B.Tech	CSE (AI & ML)	Shift I	AKHIL KUMAR SAXENA	ANIL KUMAR SAXENA
41	2104281530007	428	B.Tech	CSE (AI & ML)	Shift I	AMAN GUPTA	MAHESH KUMAR GUPTA
42	2104281530008	428	B.Tech	CSE (AI & ML)	Shift I	ANIKET DUBEY	SHARMA DUBEY
43	2104281530009	428	B.Tech	CSE (AI & ML)	Shift I	ANKIT KUMAR UPADHYAY	DINA NATH UPADHYAY
44	2104281530010	428	B.Tech	CSE (AI & ML)	Shift I	ARYAN DWIVEDI	RADHIKA RANJAN DWIVEDI
45	2104281530011	428	B.Tech	CSE (AI & ML)	Shift I	ASHESH GUPTA	SHEKHAR GUPTA
46	2104281530012	428	B.Tech	CSE (AI & ML)	Shift I	ASHISH	ANIL
47	2104281530013	428	B.Tech	CSE (AI & ML)	Shift I	ASTHA SHARMA	RAMNIVAS SHARMA
48	2104281530014	428	B.Tech	CSE (AI & ML)	Shift I	AWANISH KUMAR	MAYANK CHOUBEY
49	2104281530015	428	B.Tech	CSE (AI & ML)	Shift I	AYUSH GUPTA	PRAMOD KUMAR GUPTA
50	2104281530016	428	B.Tech	CSE (AI & ML)	Shift I	AYUSH SINGH	ASHOK SINGH
51	2104281530017	428	B.Tech	CSE (AI & ML)	Shift I	CHAITANYA PRAKASH TIWARI	SHIVADITYA SHARAN TIWARI
52	2104281530018	428	B.Tech	CSE (AI & ML)	Shift I	CHANDAN	GULAB CHAND BIND
53	2104281530019	428	B.Tech	CSE (AI & ML)	Shift I	DEEPESH KUMAR SINGH	SHIV KUMAR SINGH
54	2104281530020	428	B.Tech	CSE (AI & ML)	Shift I	DHRUV KESHWANI	TARA CHANDRA KESHWANI
55	2104281530021	428	B.Tech	CSE (AI & ML)	Shift I	GAURAV KUMAR SINGH	VIJAY KUMAR SINGH
56	2104281530022	428	B.Tech	CSE (AI & ML)	Shift I	HIMANSHU KUMAR SINGH	SANJEEV KUMAR SINGH
57	2104281530023	428	B.Tech	CSE (AI & ML)	Shift I	KARAN SINGH	MANOJ SINGH
58	2104281530024	428	B.Tech	CSE (AI & ML)	Shift I	KRISH JAINSWAL	SANJAY KUMAR JAINSWAL
59	2104281530025	428	B.Tech	CSE (AI & ML)	Shift I	MAURYA KHUSHI RAMJEET	RAMJEET MAURYA
60	2104281530026	428	B.Tech	CSE (AI & ML)	Shift I	MISHRA SATYAM PRAMOD	PRAMOD MISHRA
61	2104281530027	428	B.Tech	CSE (AI & ML)	Shift I	NILESH KUMAR YADAV	BHOLA NATH YADAV
62	2104281530028	428	B.Tech	CSE (AI & ML)	Shift I	POOJA KUMARI	BRABMA DEO MAURYA
63	2104281530029	428	B.Tech	CSE (AI & ML)	Shift I	PREM PRITAM	RAJEEV RANJAN
64	2104281530030	428	B.Tech	CSE (AI & ML)	Shift I	PRIYA CHAURASIYA	ANANT PRASAD CHAURASIYA
65	2104281530031	428	B.Tech	CSE (AI & ML)	Shift I	RAHUL YADAV	BRU LAL YADAV
66	2104281530032	428	B.Tech	CSE (AI & ML)	Shift I	SACHIN KUMAR VERMA	RAMESH VERMA
67	2104281530033	428	B.Tech	CSE (AI & ML)	Shift I	SANQI YADAV	DEVRAJ YADAV
68	2104281530034	428	B.Tech	CSE (AI & ML)	Shift I	SATYARTH SINGH	KEDAR SINGH
69	2104281530035	428	B.Tech	CSE (AI & ML)	Shift I	SAURABH MOURYA	DHARM RAI MOURYA
70	2104281530036	428	B.Tech	CSE (AI & ML)	Shift I	SHASHANK SHEKHAR SINGH	SURENDRA SINGH
71	2104281530037	428	B.Tech	CSE (AI & ML)	Shift I	SHIVAM CHAUHAN	CHAMDU CHAUHAN
72	2104281530038	428	B.Tech	CSE (AI & ML)	Shift I	SHREYA TRIPATHI	ARUN KUMAR TRIPATHI
73	2104281530039	428	B.Tech	CSE (AI & ML)	Shift I	SHRUBHAM SHARMA	RAKESH KUMAR SHARMA
74	2104281530040	428	B.Tech	CSE (AI & ML)	Shift I	SHRUBHAM SRIVASTAVA	SANDEEP SRIVASTAVA
75	2104281530041	428	B.Tech	CSE (AI & ML)	Shift I	SRIANTI SOMKAR	RATAN KUMAR
76	2104281530042	428	B.Tech	CSE (AI & ML)	Shift I	SUPRIYA	DEEPAK KUMAR PRAJAPATI
77	2104281530043	428	B.Tech	CSE (AI & ML)	Shift I	SURBHU RAI	VIKASH NARAYAN RAI
78	2104281530044	428	B.Tech	CSE (AI & ML)	Shift I	UTTAM SINGH	CHANDRA SHEKHAR SINGH
79	2104281530045	428	B.Tech	CSE (AI & ML)	Shift I	VINEETA DUBEY	ANIL KUMAR DUBEY
80	2104281530046	428	B.Tech	CSE (AI & ML)	Shift I	VINOD SINGH PATEL	RAMBALI PATEL
81	2104281530047	428	B.Tech	CSE (AI & ML)	Shift I	VISHAL KUMAR GUPTA	RAJESH GUPTA
82	2104281530048	428	B.Tech	CSE (AI & ML)	Shift I	VISHAL RAWAT	DEVENDRA KUMAR RAWAT
83	2104281530049	428	B.Tech	CSE (AI & ML)	Shift I	VIVEK KUMAR PATEL	RAM SEVAK PATEL
84	2104281530050	428	B.Tech	CSE (AI & ML)	Shift I	VIVEK KUMAR UPADHYAY	SANJAY UPADHYAY

B.Tech 1st Year (ME, CE, EC, EN, BIOTECH) - Sec - C**List of Students**

Sr. No.	Roll No	Name	Father's Name	Branch
1	2104280210002	ANAND KESHARI	RAJESH KESHARI	EN
2	2104280210003	ANURAG VISHWAKARMA	RAM BALI VISHWAKARMA	EN
3	2104280210004	GAURAV PATHAK	VINOD PATHAK	EN
4	2104280210005	KARAN KANAUIYA	CHHOTELAL KANAUIYA	EN
5	2104280210006	RISHIKA KRISHNA	SHIVA LAL	EN
6	2104280210007	SNEHA TIWARI	TRILOKI NATH TIWARI	EN
7	2104280400002	AJMAL ANSARI	ABDUL KHALIK ANSARI	ME
8	2104280400003	ANIKET TIWARI	SUDHISH KUMAR TIWARI	ME
9	2104280400004	DEVNATH SETH	DURGA PRASAD SETH	ME
10	2104280400005	RAJNEESH SHUKLA	NAGESHWAR PRASAD SHUKLA	ME
11	2104280400006	RAVI SHANKAR DUBEY	GHANSHYAM DUBEY	ME
12	2104280400007	RISHI SINGH	RAMESH SINGH	ME
13	2104280400008	SATYAM PANDEY	MANOJ KUMAR PANDEY	ME
14	2104280400009	SWARAJ DESH PANDEY	ANIL PANDEY	ME
15	2104280400010	VIBHANSHU SINGH	ZILEDAR SINGH	ME
16	2104280310001	AMRIT PANDEY	LALAN PANDEY	EC
17	2104280310002	ASHISH RANJAN	RAMESH SINGH	EC
18	2104280310003	DIVYASHU KUMAR TIWARI	NIRBHAYA KUMAR TIWARI	EC
19	2104280310004	SHUBHAM PATEL	PAPPU PATEL	EC
20	2104280310005	SONAM PATEL	LALJI PATEL	EC
21	2104280310006	SURAJ DUBEY	RAMASHANKAR DUBEY	EC
22	2104280000001	ABHISHEK CHAUHAN	NANHU SINGH CHAUHAN	CE
23	2104280000002	ABHISHEK SINGH	VINOD SINGH	CE
24	2104280000004	ANKUR SINGH	VIJAY PATEL	CE
25	2104280000005	GAURAV TIWARI	RAKESH TIWARI	CE
26	2104280000006	KISHAN KUMAR PANDEY	PARASHURAM PANDEY	CE
27	2104280000007	PRASHANT SINGH	BIRENDRA SINGH	CE
28	2104280000008	RAHUL CHAUHAN	BIRENDRA CHAUHAN	CE
29	2104280000009	ROHIT	RAMPATI	CE
30	2104280000010	ROHIT PAL	RANNU PAL	CE
31	2104280000011	SATYAM KUMAR RAI	SURENDRA KUMAR RAI	CE
32	2104280000012	SHIVAM GIRI	SUBHAS GIRI	CE
33	2104280000013	YUVRAJ SINGH	AJAY SINGH	CE
34	2104280540001	AKANKSHA SONKAR	MUNNA LAL SONKAR	BIOTECH
35	2104280540002	ANKITA RAJ SRIVASTVA	NEERAJ SRIVASTAVA	BIOTECH
36	2104280540003	DHEERAJ KUMAR RAI	RAJENDRA PRASAD	BIOTECH
37	2104280540005	NITISHA YADAV	RAMJEET YADAV	BIOTECH
38	2104280540006	OM SHRI PANDEY	RAMESH CHANDRA PANDEY	BIOTECH
39	2104280540007	PALAK KASHYAP	PAWAN KASHYAP	BIOTECH



Kashi Institute of Technology, Varanasi
Department Applied Science And Humanity
Faculty Introductory Class at the beginning of the Semester

Date: 11/10/21

Sem/ Sec: I/CSE Period: III & IV Sub code:KAS102T

Sub Name: CHEMISTRY

1. Name of the Faculty Member: **Dr. Rupesh Kumar Singh**
2. Did you teach this/ similar subject earlier in any class?:**No**
3. **Class Room Management** - When you enter the class observe the following:**Everything is find OK**
 - (a) Students should get up & pay compliments; if not teach them to do so.Reply back & tell them to sit down
 - (b) See that the seating arrangement is proper. If required make changes.
 - (c) Ask General Welfare of the students especially hosteller regarding their mess & food.
 - (d) In case any particular student is found not cheerful, ask the reason & do the needful.
 - (e) Make the students aware of General Discipline, Dress Code, Attendance and class etiquettes.
 - (f) Emphasize importance of taking down notes in separate copies for different subjects, keeping in step with the class and Establish importance of asking questions.
 - (g) Importance of communication in English for the professionals.
4. When you find that the students are comfortable and ready to listen, then talk on the following points:**Yes**
 - (a) Introduce yourself i.e. Name, qualification and experience in research etc. and any other information which may influence the students to regard you as their teacher/ guide or mentor.
 - (b) Introduce the subject to be taught highlighting the following:
 - Course Objectives
 - Course Outcomes
 - Expectations from the students after attending the Course
 - Evaluation Scheme, Syllabus and Books
 - Course Delivery to include – Total number of Units to be taught in the semester, number of Units to be covered up before 1st sessional, tests, sessional test schedules, duration and course coverage in the tests, number of assignments/ quizzes, sessional marks policy etc.
 - Importance and relevance of the subject in engineering field/ management.
 - Its importance for career in the industry & likely career avenues, Need of the knowledge in human life, at national & international level.
 - Brief summary of the subject taught in previous semester (to connect the current subject with the subject taught earlier-pre-requisites)
 - Clarify doubts, if any, about the curriculum and about any other matter.
 - (c) Create interest amongst the students so that they will eagerly wait to attend your classes.
 - (d) Provide information about various co-curricular and extra-curricular activities and clubs in the college and emphasize their importance for their overall personality development and help in placement. Also inform the incentive schemes for their participation in such activities within the college and outside.
 - (e) Provide information about technical Society/ professional magazines being promoted by the department and various Centers of Excellence in the college.
5. Just before the end of the class, enquire if they have any comments or suggestion.
6. Submit the report to the HOD after the introductory class.

Observations/ Report

As per the instructions above, everything was done and it was observed that students are less in number but the present students are more enthusiastic towards the learning of this subject in coming lectures. Also the pre requisite questions were done on the spot by students.


Dr. Rupesh Kumar Singh


Signature of the HOD
(ASH)



Course objectives:

1. Intended outcomes written to help guide instruction for what the students will learn in the course.
2. Course objectives are measurable objectives that the learner is expected to accomplish at the end of an instructional.
3. A statement of an action that a learner should be able to perform after successfully completing the learning material. e.g. course objective of engineering chemistry.

Course objective (Engineering Chemistry):

- To bring adaptability to the concepts of chemistry and to acquire the required skills to become a perfect engineer.
- To impart the basic knowledge of atomic, molecular and electronic modifications which makes the student to understand the technology based on them.
- To acquire the skills pertaining to Spectroscopy and to apply them for medical and other fields.
- To acquire the knowledge of electrochemistry, corrosion and water treatment which are essential for the Engineers and in industry?
- To bring about the overall awareness of the use of polymers.

COURSE OUTCOME STATEMENT:

Course Outcomes (COs):

CO statements indicating what a student can do after the successful completion of a course. Every Course leads to some Course Outcomes. The CO statements are defined by considering the course content covered in each module of a course. For every course there may be 5 or 6 COs. The keywords used to define COs are based on Bloom's Taxonomy. A well written CO facilitates lecturers in measuring the achievement of the CO at the end of the semester. It also helps the lecturers in designing suitable delivery and assessment methods to achieve the designed CO. Graduates Attributes (GAs) are the components indicative of the graduate's potential to acquire competence to practice at the appropriate level. Gas form a set of individually assessable outcomes of the programmed. For e.g. a course such as Engineering Chemistry might have the following course outcomes set.



4-LEVELS OF OUTCOMES:

Terminology (Abbreviations)

• **Outcomes Based Education (OBE):** Outcome-Based Education (OBE) is a student-centric teaching and learning Methodology in which the course delivery, assessment are planned to achieve stated Objectives and Outcomes. It focuses on measuring student performance i.e. outcomes at different levels.

OBE is all about feedback and outcomes there are four levels of Outcomes from OBE are:

1-Course Outcomes (COs)

2-Program Outcomes (POs)

3-Program Educational Objectives (PEOs)

4-Program Specific Outcomes (PSOs)

• **Course Outcomes (COs):**

Course Outcomes (COs) are what the student should be able to do at the end of a course. The most important aspect of a CO is that it should be observable and measurable form of a set of individually assessable outcomes of the programme. Graduates Attributes (GAs) are the components indicative of the graduate's potential to acquire competence to practice at the appropriate level.

• **Program Outcomes (POs):**

Program outcomes are statements that describe what the knowledge, skills and attitudes students should have at the time of graduation from an engineering program. That means just at the end of 4 years these represent what is the knowledge, skills and attitudes they should have.

• **Program Educational Objectives (PEOs):**

These are broad statements that describe the career and professional accomplishments in four to five years after graduation that the program is preparing the graduates to achieve.

• **Program Specific Outcomes (PSOs):**

Program Specific Outcomes are statements that describe what the students of a specific engineering program should be able to do.





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Course 1 - Engineering Chemistry: (KAS102T)		
COURSE OUTCOMES (COs)/UNITS		Knowledge Level (Blooms Level)
S. No.	By the end of the course student will be able to	
CO1	Remember, Understand & Applying the use of different analytical instruments.	L1 : Remember L2: Understand L3 : Applying
CO2	Evaluate & Analyze Measure molecular /system properties such as surface tension, viscosity, conductance of solution, chloride content in water.	L5 : Evaluate L4 : Analyze
CO3	Evaluate the hardness of water	L5 : Evaluate
CO4	Synthesize, create & Analyze the rate constant of reaction	L4 : Analyze L6: Synthesis
CO5	Understand & Apply the basic knowledge on structure, synthesis, properties and application of different types of polymers.	L2: Understand L3 : Applying



Program Outcomes (POs):

POs are defined by Accreditation Agencies of the country (NBA in India), which are the statements about the knowledge, skills and attitudes, graduate attributes of a formal engineering program should have. Graduate Attributes (GAs) are the components indicative of the graduate's potential to acquire competence to practice at the appropriate level. GAs form a set of individually assessable outcomes of the program. The NBA laid down the graduate attributes relating to program outcomes and is to be derived by Program. These are broad and cover a wider area than of COs. 12 Program Outcomes, or Graduate Attributes for the sake of unity and quality assurance.

The Program outcomes reflect the ability of graduates to demonstrate knowledge in fundamentals of Basic Sciences, Humanities and Social Sciences, Engineering Sciences and apply these principles in understanding and practically apply the knowledge in professional core subjects, electives and projects which enables the graduates to be competent at the time of graduation. The graduates must adhere to professional and ethical responsibilities in the pursuit of their careers and also for the benefit of the society. These outcomes also enable the graduate to pursue higher studies and engage in R&D for a successful professional career. The proper definition and the attainment of POs contribute to the attainment of Program Educational Objectives which will help the graduate to perform his/ her duties, professional responsibilities, design, development, production and testing of novel products, ability to deal with finances and project management during his/her early professional career of 3 to 4 years. We'll discuss each of them here. The Program Outcomes set by the institution must reflect on these Science under graduates, graduate and doctorates will be able to do-

PROGRAM OUTCOMES (PO's)

PO-1. Scientific knowledge: Apply the knowledge of mathematics, science, Scientific fundamentals, and scientific specialization to the solution of complex scientific problems.

PO-2. Problem analysis: Identify, formulate, research literature, and analyze scientific problems to arrive at substantiated conclusions using first principles of mathematics, nature, and sciences.

PO-3. Design/development of solutions: Design solutions for complex scientific problems and design system components, processes to meet the specifications with consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO-4. Conduct investigations of complex problems: Use research-based knowledge including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.



PO-5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern scientific tools including prediction and modeling to complex activities with an understanding of the limitations.

PO-6. Scientific temper 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 practice.

PO-7. Environment and sustainability: Understand the impact of the professional scientific solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO-8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the work practice.

PO-9. Individual and team work: Function effectively as an individual, and as a member or leader in teams, and in multidisciplinary settings.

PO-10. Communication: Communicate effectively with their community and with society at large. Be able to comprehend and write effective reports documentation. Make effective presentations, and give and receive clear instructions.

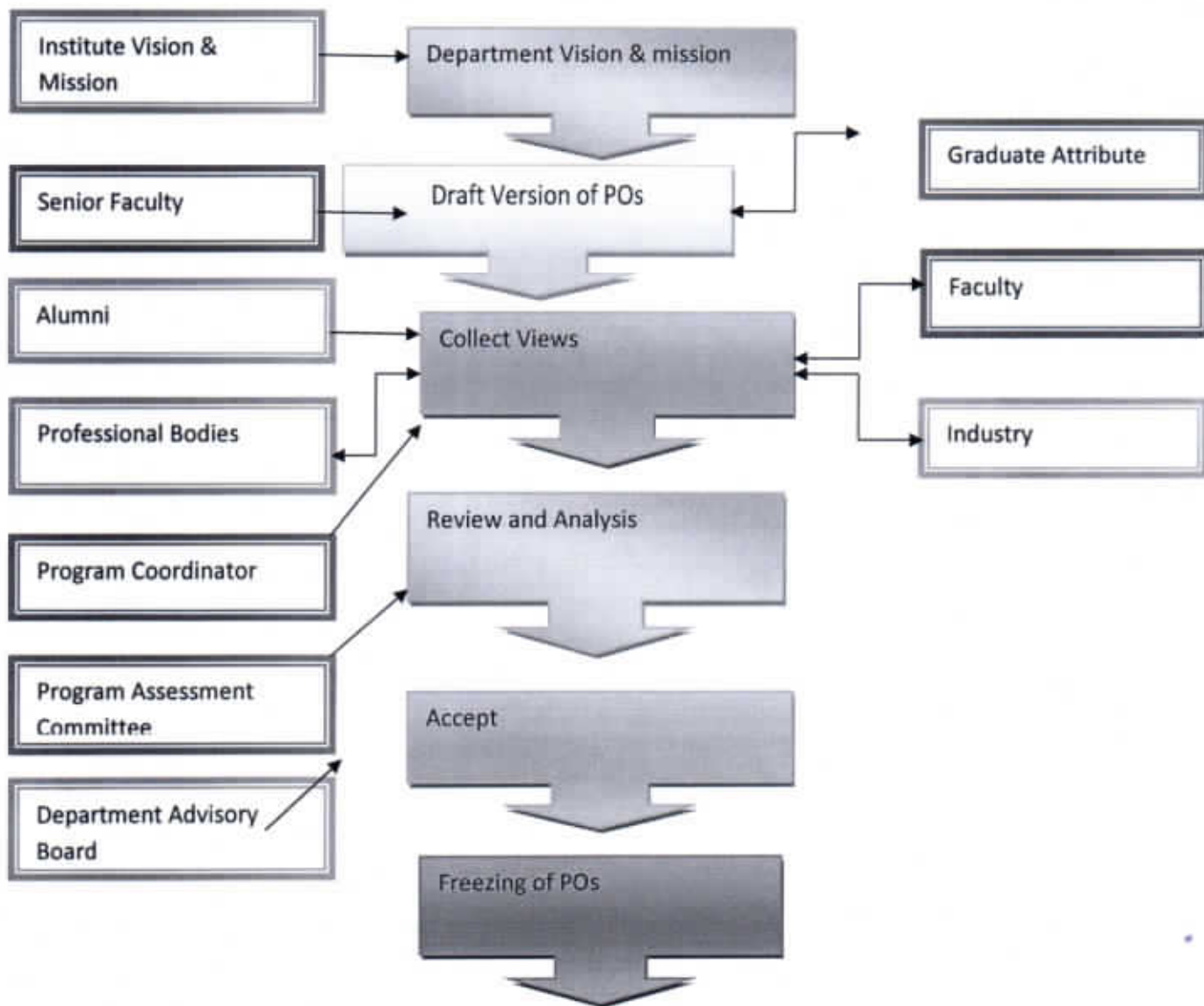
PO-11. Project management and finance: Demonstrate knowledge and understanding of scientific and management principles and apply these to one's own work, as a member and leader in a team. Manage projects in multidisciplinary environments.

PO-12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.



Process to define Program Outcomes (POs) of the department:

Fig. 1



PROGRAM EDUCATIONAL OBJECTIVES (PEOs):

Program Educational Objectives (PEO) are statements that describe the career and professional accomplishments that the program is preparing the graduates to achieve. PEO's are measured 4–5 years after graduation. They are set in order to measure the effectiveness of the program, and to check whether it has prepared the students to deal with the real world, where they could apply and use the skills and knowledge they've learned to good use.

PEO1 - PROFICIENT DEVELOPMENT

To develop in the students the capacity to obtain knowledge on Mathematics, Science and Engineering and apply it expertly inside sensible requirements, for example, financial, natural, social, political, moral, wellbeing and security, manufacturability and manageability with due moral obligation.

PEO2-CORE PROFICIENCY

To provide ability to recognize, plan, appreciate formulate, comprehend, analyze, design and solve engineering problems with hands on experience in different advancement involving modern tools necessary for engineering practice to fulfill the necessities of society and the business.

PEO3 - SPECIALISED ACHIEVEMENT

To furnished the students with the capacity to explore, reenact, design, simulate, experiment, analyze, optimize and interpret in their core applications through multi disciplinary ideas and contemporary figuring out how to incorporate them into industry prepared graduates.

PEO4 - PROFESSIONALISM

To provide training, exposure and awareness on importance of soft skills for better career and holistic personality development as well as professional attitude towards ethical issues, team work, responsibility, accountability, multidisciplinary approach and capability to relate engineering issues to broader social context.

PEO5 - LEARNING ENVIRONMENT

To furnish students with an academic environment and make them mindful of greatness, foster the desire of revelation, imagination, creativity, authority, composed moral codes and rules and the long lasting figuring out how to turn into an effective expert in Electronics and Communication Engineering.



The Process for Establishing the PEO's

The PEOs are established through the following process steps:

STEP 1: Vision and Mission of the Institute & Department are taken into consideration to interact with various stake holders, and establish the PEO's

STEP 2: The Head of the Department, Program Coordinator and other Senior Faculty prepares the draft version of PEOs and POs.

STEP 3: The draft rendition is examined with partners and their perspectives are gathered by the Program co-ordinator

STEP 4 : The Program Assessment Committee surveys and dissects the PEOs and POs and presents its recommendations to the Departmental advisory Board.

STEP 5: The Departmental advisory Board deliberates on the recommendations and freezes the PEOs and POs and submits them to the BOG for final approval. The Program curriculum is planned by integrating inputs from members of Board of Studies and Academic council who are drawn from various academic institutions, R&D associations and industry.

PROGRAM SPECIFIC OUTCOMES (PSOs):

The graduates of the department will attain:

PSO1: Problem tackling ability

Graduates will actually want to apply the capacity to break down, plan and carry out application explicit electronic framework for complex designing issues for simple, advanced area, correspondences and sign handling applications by applying the information on essential sciences, designing arithmetic and designing basics.

PSO2: Professional Skill

Graduates will actually want to foster quick changes in apparatuses and innovation with a comprehension of cultural and biological issues pertinent to proficient designing practice through long lasting learning.

PSO3: Successful Career Graduates will actually want to have great versatility to work in multi-disciplinary workplace, great relational abilities as a forerunner in a group in enthusiasm for proficient morals and cultural obligations.

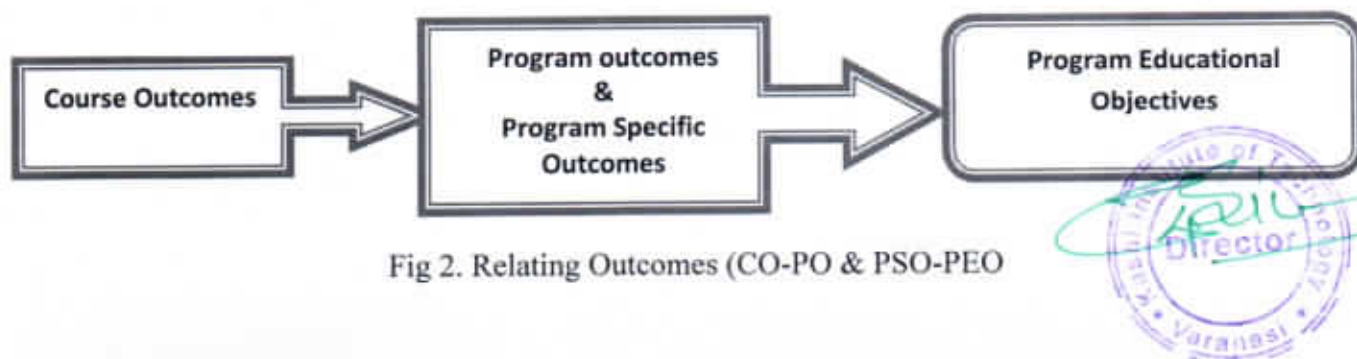


Fig 2. Relating Outcomes (CO-PO & PSO-PEO)

This figure shows the building block of CO-PO & PSO-PEO Relationship. After CO statements Develop by course in-charge, CO will map with any possible POs based on the relationship exist between them. But all POs are not necessary mapped with one CO and it may be left blank. Anyhow, it is mandatory that all POs should be mapped with any one of PSO and PEO which are specified in the program.

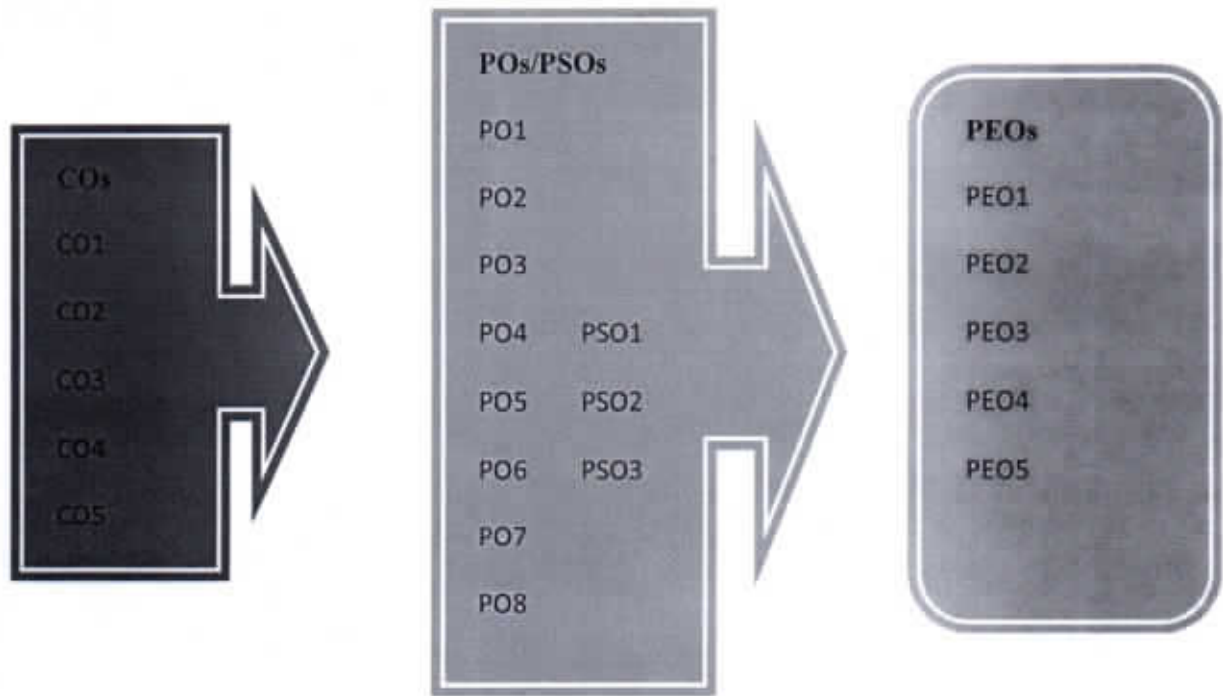


Fig. 3 Relationship between CO, PO, PSO & PEO



Fig.4 Hierarchy of Faculty Involvement



- **Course Coordinator:** write appropriate COs and finalize the CO-PO mapping.
- **Year wise Coordinator:** Consolidate the CO attainment of the respective year.
- **Program Assessment Committee:** Consolidate the CO attainment and PO attainment of the respective program.
- **Program Coordinator:** Monitor and Guide the Program Assessment Committee.
- **Department Advisory Board:** All these works mention above have to be done under the supervision of Department Advisory Board.



A handwritten signature in green ink is written over a purple circular stamp. The stamp contains the text "K. J. Somaiya Institute of Technology" around the perimeter and "VERANASI" at the bottom. The signature is written in a cursive style.



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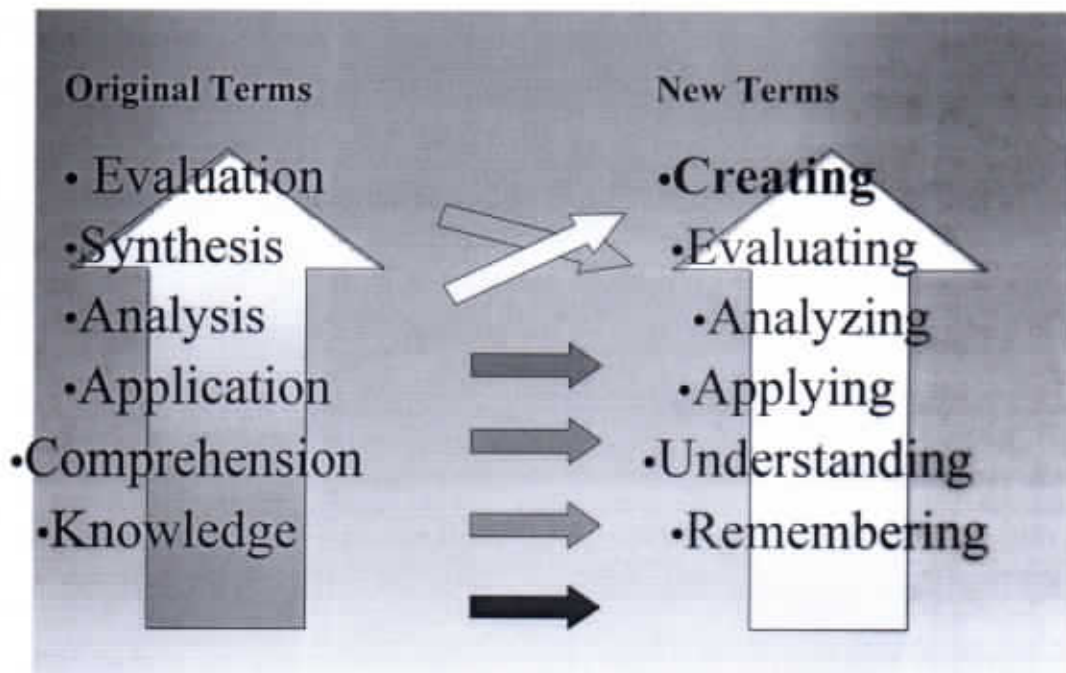
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- Revised Bloom's Taxonomy

Bloom's Taxonomy was created in 1956 under the leadership of educational psychologist Dr Benjamin Bloom in order to promote higher forms of thinking in education, such as analyzing and evaluating concepts, processes, procedures, and principles, rather than just remembering facts. It is most often used when designing educational, training and learning processes.



Critical thinking is a skill that you are expected to develop as you progress through University. Critical thinking will become part of your research, your reading, your planning and reflection and of your academic writing. It involves a set of skills and an attitude of mind that you will need to cultivate and practice - it won't necessarily come easily or naturally! If you can develop critical thinking skills in relation to your subject, they will be valuable to you in many other aspects of life (including employment).

Bloom's taxonomy of thinking and learning illustrates forms of thinking, in ascending order of complexity, from lower-order thinking skills (LOTS) to higher-order thinking skills (HOTS). It begins with **remembering** and ends with **creating**. This is used by lecturers to set learning outcomes and assessment criteria for a course or module; you will often find these verbs in your module handbooks. The knowledge about a subject alone, like having access to a range of information, or 'facts', is at the simplest or lowest level. So using only, or mostly, descriptive language in your writing, to communicate what you know about a topic is not likely to generate many marks. Higher and more complex levels include the ability to analyze, synthesize and evaluate information by comparing and contrasting different points of view, sets of information or experiences. This might involve recognizing patterns of behavior, for example, and using them to make predictions.

BLOOM'S REVISED TAXONOMY OF THINKING SKILLS Fig.6

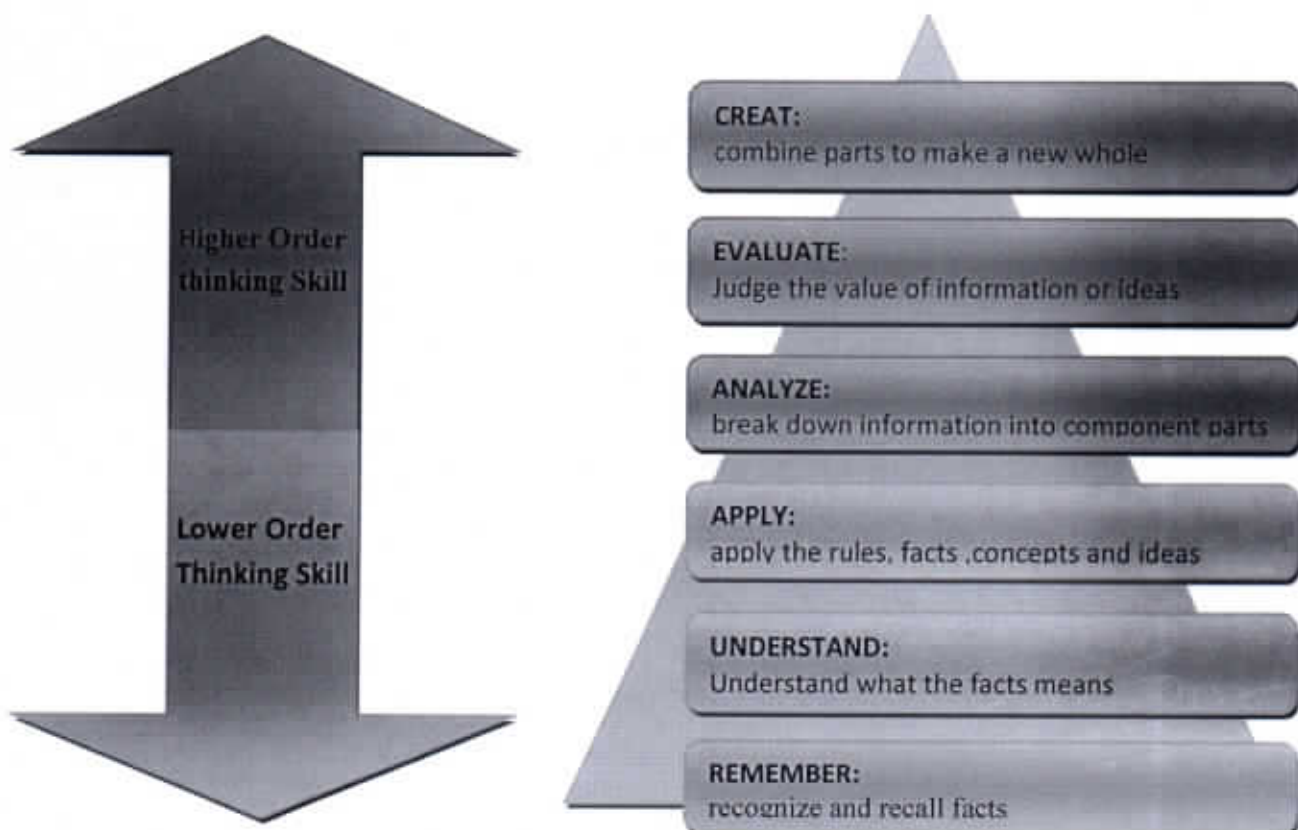
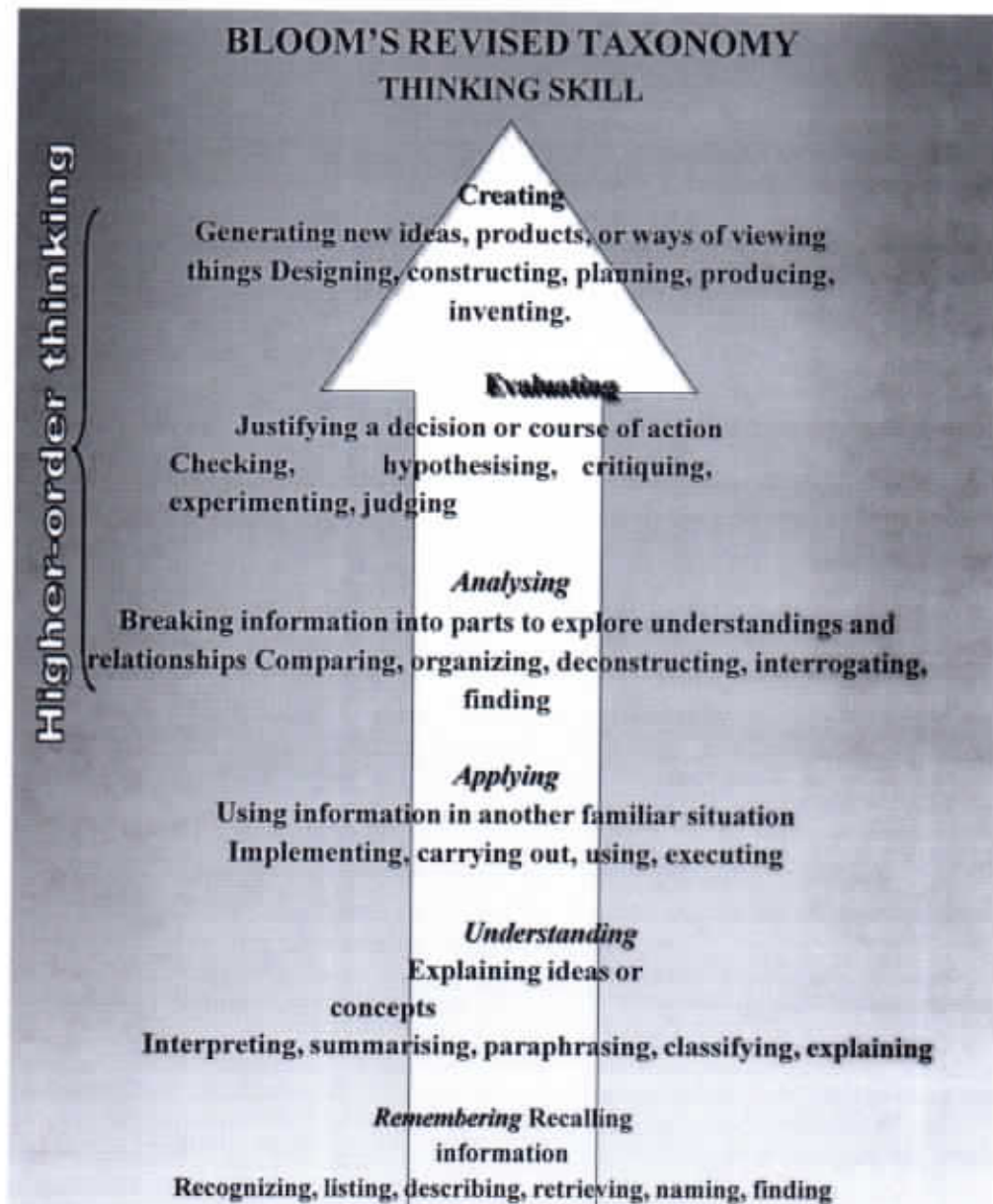


Fig.7



Cognitive processes: Level 1- C1

Categories & Cognitive Processes	Alternative Names	Definition
Apply		Applying a procedure to a familiar task
Executing	Carrying out	Applying a procedure to a familiar task
Implementing	Using	Applying a procedure to an unfamiliar task

Categories & Cognitive Processes	Alternative Names	Definition
Understand		Construct meaning from instructional messages, including oral, written, and graphic communication
Interpreting	Clarifying Paraphrasing Representing Translating	Changing from one form of representation to another
Exemplifying	Illustrating Instantiating	Finding a specific example or illustration of a concept or principle
Classifying	Categorizing Subsuming	Determining that something belongs to a category
Summarizing	Abstracting Generalizing	Abstracting a general theme or major point(s)
Inferring	Concluding Extrapolating Interpolating Predicting	Drawing a logical conclusion from presented information
Comparing	Contrasting Mapping Matching	Detecting correspondences between two ideas, objects, and the like
Explaining	Constructing models	Constructing a cause and effect model of a system

Level- 2 C2

Level- 3 C3

Categories & Cognitive Processes	Alternative Names	Definition
Remember		Retrieve knowledge from long- term memory
Recognizing	Identifying	Locating knowledge in long-term memory that is consistent with presented material
Recalling	Retrieving	Retrieving relevant knowledge from long-term memory



Analyze		Break material into its constituent parts and determine how the parts relate to one another and to an overall structure or purpose
Differentiating	Discriminating Distinguishing Focusing Selecting	Distinguishing relevant from irrelevant parts or important from unimportant parts of presented material
Organizing	Finding coherence Integrating Outlining Parsing Structuring	Determining how elements fit or function within a structure
Attributing	Deconstructing	Determine a point of view, bias, values, or intent underlying presented material

Level-4 C4

Evaluate		Make judgments based on criteria and standards
Checking	Coordinating Detecting Monitoring Testing	Detecting inconsistencies or fallacies within a process or product; determining whether a process or product has internal consistency; detecting the effectiveness of a procedure as it is being implemented
Critiquing	Judging	Detecting inconsistencies between a product and external criteria; determining whether a product has external consistency; detecting the appropriateness of a procedure for a given problem

Level- 5 C5

Categories & Cognitive Processes	Alternative Names	Definition
Create		Put elements together to form a coherent or functional whole; reorganize elements into a new pattern or structure
Generating	Hypothesizing	Coming up with alternative hypotheses based on criteria
Planning	Designing	Devising a procedure for accomplishing some task
Producing	Constructing	Inventing a product

Level-6 c6





Fig-8 Pictorial representation of Blooms Taxonomy

The Knowledge Dimension

Dimension	Definition
Factual Knowledge	The basic elements students must know to be acquainted with a discipline or solve problems in it
Conceptual Knowledge	The interrelationships among the basic elements within a larger structure that enable them to function together
Procedural Knowledge	How to do something, methods of inquiry, and criteria for using skills, algorithms, techniques, and methods
Met cognitive Knowledge	Knowledge of cognition in general as well as awareness and knowledge of one's own cognition

Cognitive Process 1: To Remember

Remembering consists of recognizing and recalling relevant information from long-term memory.

Verbs associated with this level:

Choose, define, describe, find, identify, label, list, locate, match, name, recall, recite, recognize, record, relate, retrieve, say, select, show, sort and tell

Cognitive Process 2: To understand

Understanding is the ability to make your own meaning from educational material such as reading and teacher explanations. The sub-skills for this process include interpreting, exemplifying, classifying, summarizing, inferring, comparing, and explaining.

Verbs associated with this level:

Categorize, clarify, classify, compare, conclude, construct, contrast, demonstrate, distinguish, explain, illustrate, interpret, match, paraphrase, predict, represent, reorganize, summarize, translate and understand

Cognitive Process 3: To apply

Applying refers to using a learned procedure either in a familiar or new situation.

Verbs associated with this level:

Apply, carry out, construct, develop, display, execute, illustrate, implement, model, solve and use

Cognitive process 4: To Analyze

To analyze is to break material into its constituent parts and determine how the parts relate to one another and to an overall structure or purpose. Students analyze by differentiating, organizing, and attributing.



Verbs associated with this level:

Analyze, ascertain, attribute, connect, deconstruct, determine, differentiate, discriminate, dissect, distinguish, divide, examine, experiment, focus, infer, inspect, integrate, investigate, organize, outline, reduce, solve (a problem) and test fo

Cognitive Process 5: To evaluate

To evaluate is to make judgments based on criteria and standards.

Verbs associated with this level:

Appraise, assess, award, check, conclude, convince, coordinate, criticize, critique, defend, detect, discriminate, evaluate, judge, justify, monitor, prioritize, rank, recommend, support, test, value

Cognitive Process 6: To Create

To create is to put elements together to form a coherent or functional whole; reorganize elements into a new pattern or structure; inventing a product. This skill involves putting things together to make something new. To accomplish creating tasks, learners generate, plan, and produce.

Verbs associated with this level:

Adapt, build, compose, construct, create, design, develop, elaborate, extend, formulate, generate, hypothesize, invent, make, modify, plan, produce, originate, refine, transform.

CO – PO AND CO – PSO MAPPING OF COURSES:**Mapping Factor (Correlation Level)**

The role of CO-PO mapping will be assigned to the faculty as per hierarchy. The course in-charge is responsible for writing the necessary COs for their corresponding course after receiving the department's course (subject) allocation.. COs will be created utilizing the action verbs of the various learning levels., CO statements that are relevant to the skills, knowledge, and behavior that students will learn during the end of each course should be more specific and quantifiable.

After writing the CO statements, CO will be mapped with PO of the department. If the department is having more than one section in a year or the same course is available for more than one program of the same institute in a semester, the subject expert will be nominated as course coordinator of the corresponding course. The role of the course coordinator is to review the CO statements and the CO-PO mapping which has been done by course in-charge. The year wise coordinator has to consolidate the CO's of the respective year and maintain the documentation of the CO attainment level of the respective year courses as well as documentation of the individual students' extra-curricular and co-curricular activities. These details will hand over to the program coordinator in order to evaluate PO attainment of the individual student as well as individual course at the end of the 8th semester. The Program coordinator has to evaluate the PO attainment of individual student through direct and indirect method after the student completing their program. All these works have to be done under the guidance of Department Advisory Committee (DAC). CO – PO mapping indicates to what extent a certain component (either assessment method to CO or CO to PO or PO to

PEO & PSO are correlated to each other. Course correlation matrix shows the **Learning Relationship** (level of learning achieved) between COs and POs of a course. This matrix also strongly indicates whether the students are able to achieve the course outcomes/objectives. All the courses together must cover all the POs and PSOs. For a course we map the COs to POs through the CO-PO matrix and to PSOs through the CO-PSO matrix. The matrix can be used for any course and it is good method to evaluate a course syllabus. The various correlation levels are:

- * **3- indicates Substantial (high)** mapping (high contribution towards attainment)
- * **2- indicates Moderate** (medium) mapping (medium contribution towards attainment)
- * **1- indicates Slight (low)** mapping (some contribution towards attainment)
- * **“-” indicates there is no correlation.**

Procedure followed while assigning the values by Mapping COs to POs:

Judging the importance of the particular COs in relation to the POs.

- If the CO matches strongly with a particular PO criterion then **Assign 3.**
- If it matches moderately then **Assign 2.**
- If the match is low then **Assign 1.**
- If there is no correlation between any CO with PO else mark with **‘-’ Symbol**
- If an action verb used in a CO is repeated at multiple Blooms levels, then we need to judge which Blooms level is the best fit for that action verb the first five POs are purely of **technical** in nature, while the other POs are **non-technical**.
- Writing the COs, we need to restrict ourself between Blooms Level 1 to Level 4. Again, if it is a programming course, restrict between Blooms Level 1 to Level 3 but for the other courses, we can go up to Blooms Level 4.
- For the laboratory courses, while composing COs, we need to restrict our self between Blooms Level 1 to Level 5.
- Only for Mini-project and Main project, you may extend up to Blooms Level 6 while composing COs.

Note: * The table given below gives information about the action verbs used in the POs and the nature of POs, stating whether the POs are technical or non-technical. we need to understand the intention of each POs and the Bloom’s level to which each of **POs** and the Blooms level to which each of these action verbs in the POs correlates to. Once you have understood the **POs** then you can write the COs for a course and see to what extent each of those COs correlate with the POs.



Table 1: Process for mapping the values for CO-PO Matrix

Type	POs	Action Verb(s) in POs	Bloom's Level(s) for POs	Blooms Level(s) for COs	Type	Thumb Rule
Technical	PO1	Apply	L3	Blooms L1 to L4 for Theory Courses	Non Technical	PO7 If Blooms L1 Action Verbs of a CO -> Correlates any of PO7 to PO12 -> then Assign 1
	PO2	Identify	L2			
		Formulate	L6			
		Review	L2			
	PO3	Design	L3,L6	Blooms L1 to L5 for Laboratory Courses		PO8 If Blooms L2 to L3 Action Verbs of a CO -> Correlates any of PO7 to PO12 -> then Assign 2
		Develop	L3,L6			
	PO4	Analyze	L4	Blooms L1 to L6 for Mini Project and Major Project		PO9
		Interpret	L2 , L3			PO10
		Design	L6			PO11
	PO5	Create	L6	Blooms L1 to L6 for Mini Project and Major Project		PO12 If Blooms L4 to L6 Action Verbs of a CO -> Correlates any of PO7 to PO12 -> then Assign 3
		Select	L1 , L2 L6			
		Apply	L3			
	PO6	Apply	L3	Blooms L1 to L6 for Mini Project and Major Project		PO12 If Blooms L4 to L6 Action Verbs of a CO -> Correlates any of PO7 to PO12 -> then Assign 3
		Assess	L5			



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DEPARTMENT OF APPLIED SCIENCE AND HUMANITIES

Course : BTech

Semester: 1st &2nd

Academic Year:2021-2022

Course Code : KAS102T/KAS202T

Course Name : Engineering Chemistry

CO-PO & PSO MATRIX

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	2	-	-	-	-	-	-	-	-	3	1	-
CO2	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
CO3	2	-	1	-	-	-	-	-	-	-	-	-	1	-	-
CO4	2	1	1	-	-	-	-	-	-	-	-	-	-	1	-
CO5	2	-	-	-	-	-	-	-	-	-	-	-	-	1	-



Attainment of Course Outcomes

In the Outcome Based Education (OBE), assessment is done through one or more than one processes, carried out by the department, that identify, collect, and prepare data to evaluate the achievement of course outcomes (CO's).

The process for finding the attainment of Course outcomes uses various tools/methods. These methods are classified into two types:

Assessment Methodology (Direct and Indirect)

Direct methods:

Direct methods display the student's knowledge and skills from their performance in the class assignment test (It is a metric used to continuously assess the student's understanding capabilities), internal assessment tests [the Internal Assessment marks in a theory paper shall be based on two tests, sessional test(mid-1) & pre university test (PUT) mid-2], End semester examinations (theory or practical), seminars, laboratory assignments/experiments (it is a qualitative performance assessment tool designed to assess student's practical knowledge and problem solving skills), mini/major projects, add on courses, certification, presentations (as per the requirement) etc. These methods provide a sampling of what students know and/or can do and provide strong evidence of student learning.

Various methods used in assessment process that periodically documents and demonstrates the degree to which the Course Outcomes are attained.

Indirect methods:

Indirect methods such as course exit survey/assignments of course outcomes by feedback, assignments of mini/major project by external experts, faculty feedback, examiner feedback & others survey to reflect on student's learning. They are used to assess opinions or thoughts about the graduate's knowledge or skills.

Collect variety of information about course outcomes from the students after learning entire course.

Rubrics are used for both formative and summative assessment of students. Same rubric is used for assessing an outcome so that the faculty is able to assess student progress and maintain the record of the same for each student.

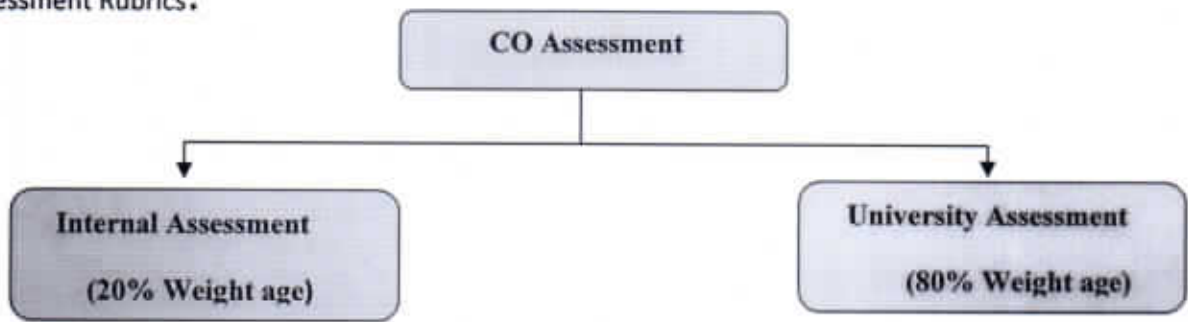
ASSESSMENT PROCESS

Assessment Process for CO Attainment:

For the evaluation and assessment of CO's and PO's, rubrics are used. The rubrics considered here are given below:



CO Assessment Rubrics:



Assessment Type	Assessment method	weight age	Assessment Period	Assessment and Reviewed By
Direct	Assessment tool based on Subject nature	80% (80% of AKTU Examination + 20% of the Assessment tools)	Once per Semester	Department Advisory committee
	AKTU Examination		Once per Semester	
Indirect	Current Passing out Students Survey	20%	8 th semester	Department Advisory committee
	Recruiters Survey		Every Placement activity	
	Alumni Survey		Once per Year	

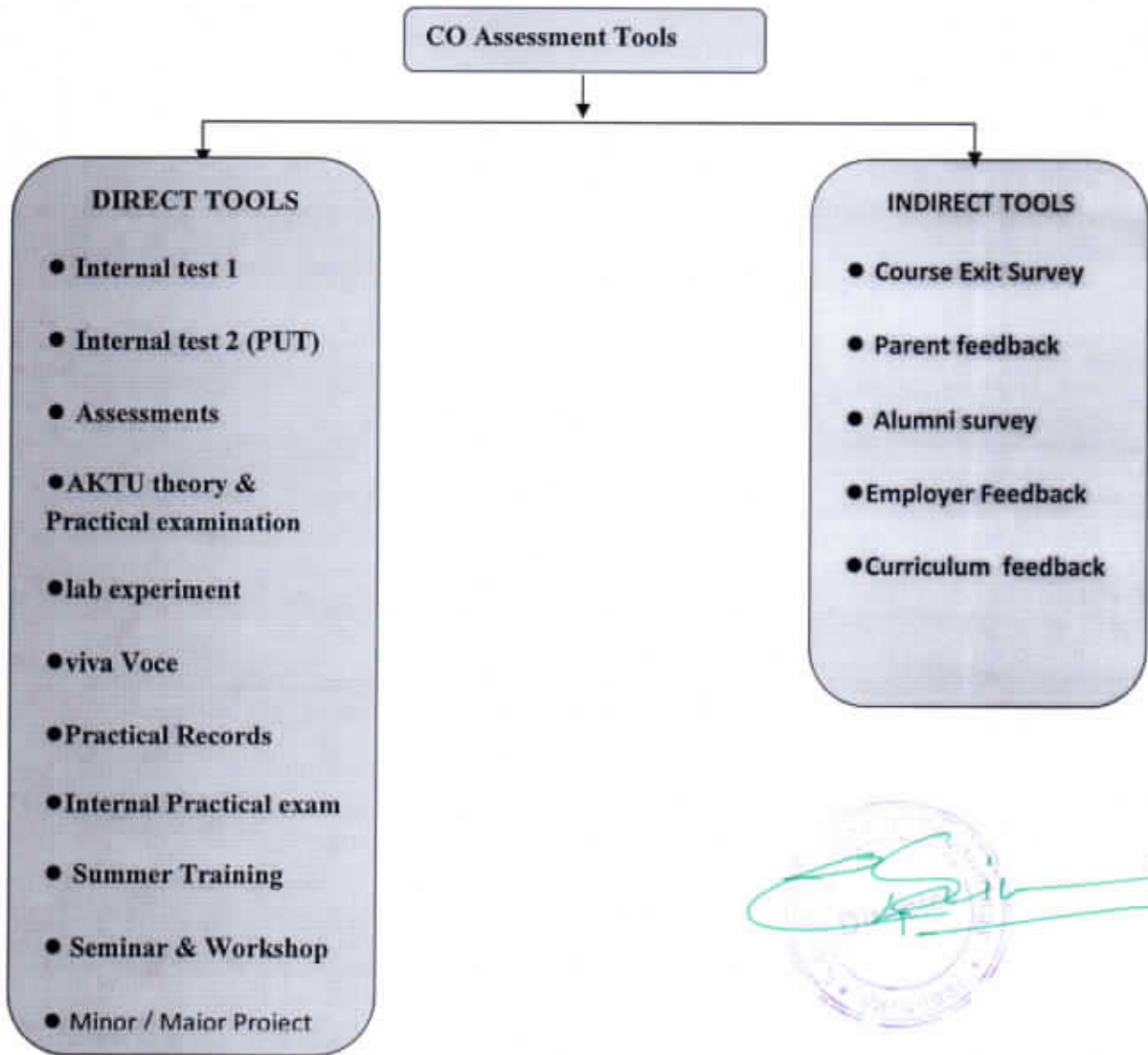
Course Outcome is evaluated based on the performance of students in internal assessments and in university examination of a course. Internal assessment contributes 20% and university assessment contributes 80% to the total attainment of a CO.

CO Assessment Tools

The description of Assessment tools used for the evaluation of program outcomes is given in Table below. The various assessment tools used to evaluate COs and the frequency with which the assessment processes are carried out are listed in this table. In each course, the level of attainment of each CO is compared with the predefined targets, if it is not, the course coordinator takes necessary steps for the improvement to reach the target. With the help of CO against PO/PSO mapping, the PO/PSO attainment is calculated by program coordinator. Assessment Tools are of two types' direct tools and indirect tools. Which are described below?



Fig-9



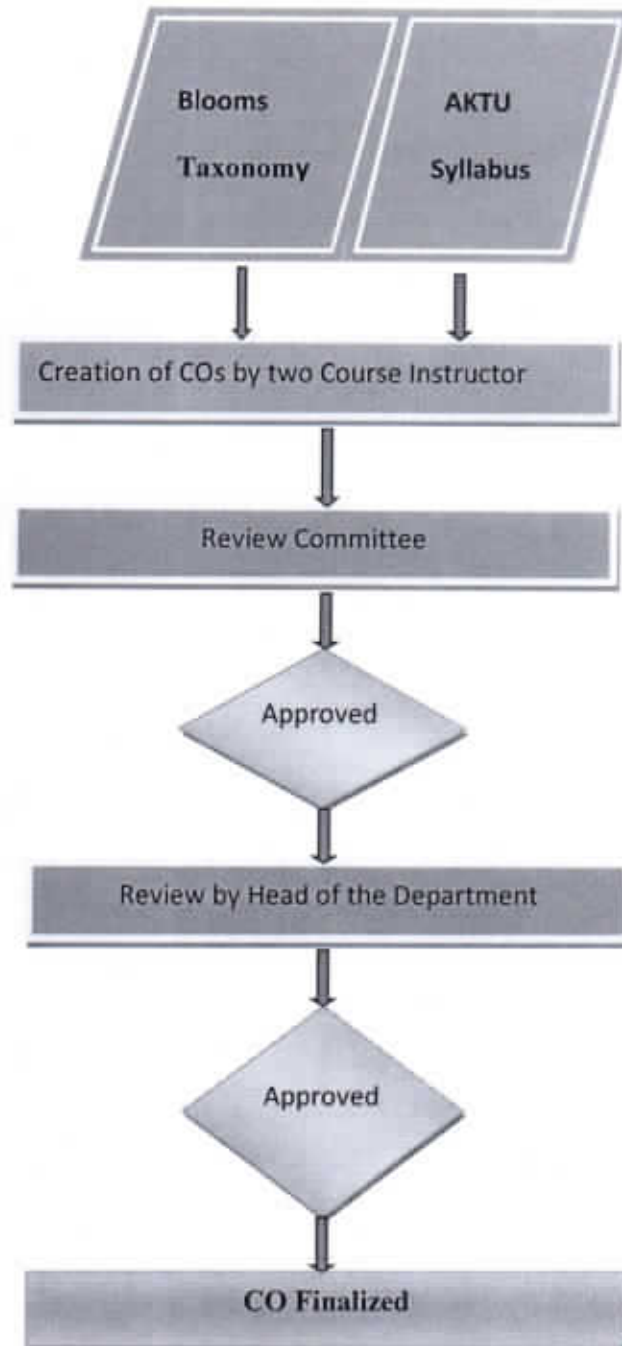
Assessment process

for calculating the attainment of POs and PSOs

Assessment Process for Evaluation of Course Outcomes:

Assessment tools and its frequency, the responsible authority to collect the data and its relevant COs, are tabulated as follows:

Fig.



Assessment Method & Attainment Level :

Step 1: Obtain Course Outcome.

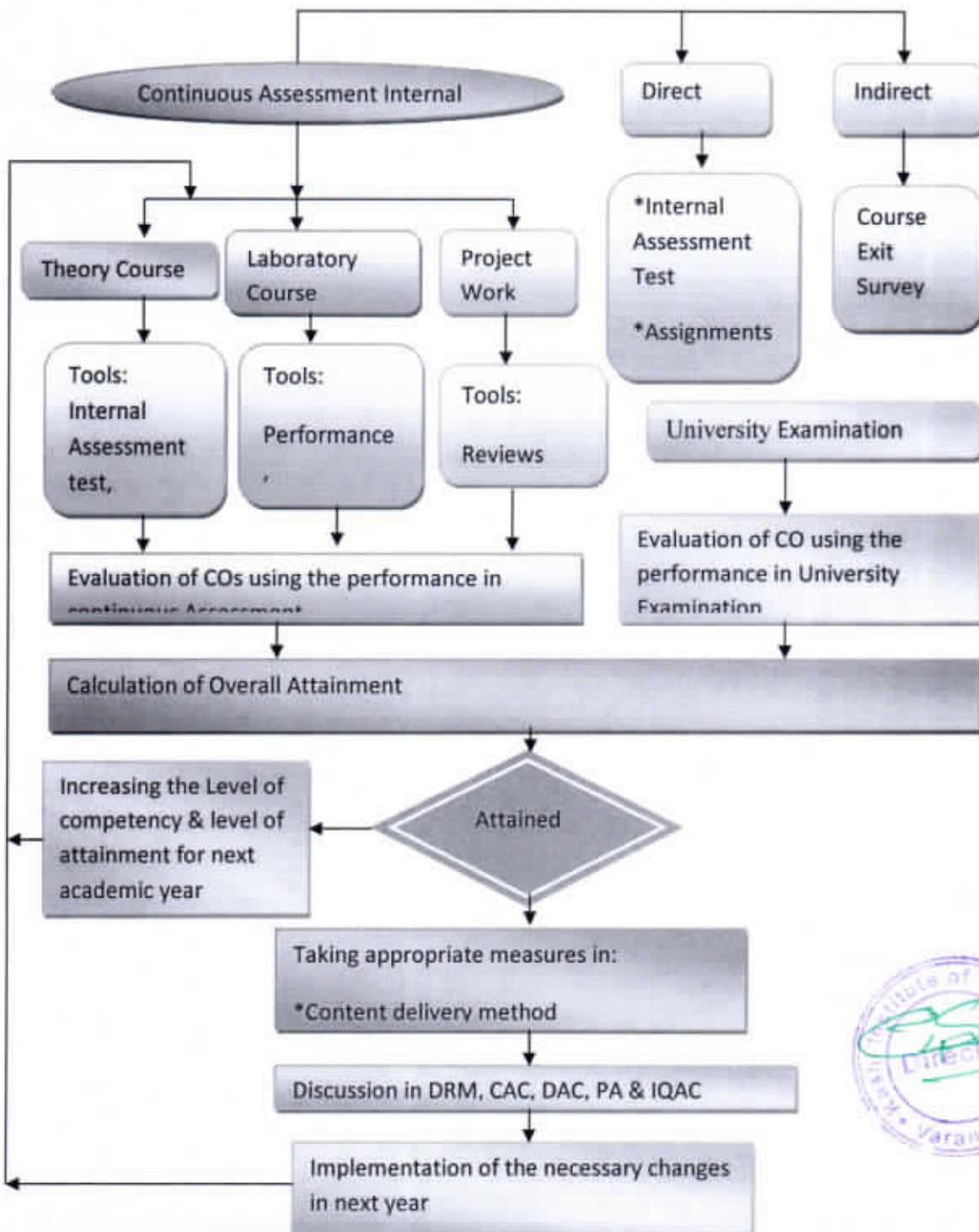
Step 2: Mapping of CO with PO.

Step 3: Setting weight- age for CO assessment.

Step 4: COs measurement through assessment.

Step 5: Obtain PO attainment table through direct and indirect method.

Process for CO Attainment: Fig. 10



Methodology for Evaluating Course Outcomes (COs) Internal

Concurrent Evaluation Criteria				
Pattern	Nature of Course Full / Half Credit	Concurrent Evaluation	Nature of Exam/Assignments/Others	Converted Marks
1. B. Tech Odd/Even (2021- 22)	1- Generic Core Courses (Full credit)	Internal Test 1 (sessional)	Test 1 Marks- 40 (CO1 & CO2- 20 Mark each)	Test 1: CO1 & CO2 (Objective) = 20 (10 marks each)
		&	Test 2 (PUT) Marks - 60 (CO ₃ , CO ₄ & CO ₅ - 20 Marks each)	Test 2 : CO ₃ , CO ₄ & CO ₅ (Descriptive) = 30 (10 marks each)
	2- Generic Elective courses (Half Credit)	Internal Test 2 (PUT)		
		Assignments (Unit wise)	Unit-1 Unit-2 Unit-3 Unit-4 Unit-5	25 (5 Marks Each)
2. MBA- Odd/Even (2021- 22)		*Others	Seminar/Presentation/Project (Mini/Major)/Viva/Quiz/Work shop etc.	25 (5 Marks Each)
			Total Marks (Each COs)-	100

Table: 2

* Presentation / Case Study / Role Play/ Industrial Visit/Field Visit/ Seminar/Guest Lecture /MCQs/Research paper writing/ Viva etc.



Methodology for Evaluating Course Outcomes (COs) External

COMPUTATION OF SGPA, YGPA & CGPA

The Dr. A.P.J. Abdul Kalam Technical University (APJAKTU), Lucknow adopts absolute grading system wherein the marks are converted to grades and every semester results will be declared with semester grade point average (SGPA). Yearly Grade Point Average (YGPA) shall be calculated at each year by calculating from the formula given in section 14.4 (b) of an academic year. The Cumulative Grade Point Average (CGPA) shall be calculated at the end of last semester of the program. The grading system is with the following letter grades and grade points scale as given below:

Score (Marks) Range	(AKTU Guidelines) Letter Grade	Level	Grade Points
≥ 90	A ⁺	Outstanding	10
< 90	A	Excellent	9
$< 80, \geq 70$	B ⁺	Very Good	8
$< 70, \geq 60$	B	Good	7
$< 60, \geq 50$	C	Above Average	6
$< 50, \geq 45$	D	Average	5
$< 45, \geq 40$	E	Poor	4
< 40	F	Fail	00



KASHI INSTITUTE OF TECHNOLOGY, VARANASI

CO Attainment for End Semester Examination (AKTU 80%)

Course : B.Tech
Course Code : KAS102T
Section : A
Name of the Faculty : Dr. Rupesh Kumar Singh

Semester: 1st

Academic Year:2021-2022
Course Name : Engineering Chemistry

S.N.	University Roll No.	NAME OF STUDENT	Internal Marks (50)	External Marks (100)	Total Marks (150)	Percentage	Grade Point Obtained
			Marks Obtained	Marks Obtained			
1	2104280100001	ABHAY VISHWAKARMA	43	6	49	32.6666667	F
2	2104280100002	ABHINAV KUMAR SINGH	44	30	74	49.3333333	D
3	2104280100004	ABHISHEK SHARMA	40	20	60	40	D
4	2104280100005	ADARSH GIRI	43	19	62	41.3333333	D
5	2104280100006	ADITYA GUPTA	44	34	78	52	C
6	2104280100007	ADITYA KUMAR	43	22	65	43.3333333	D
7	2104280100008	AKANKSHA GUPTA	43	16	59	39.3333333	F
8	2104280100009	AKASH DWIVEDI	45	42	87	58	C
9	2104280100010	AKASH JAISWAL	44	11	55	36.6666667	F
10	2104280100011	AKSHARA SRIVASTAVA	45	31	76	50.6666667	C
11	2104280100012	AMAN PANDEY	41	3	44	29.3333333	F
12	2104280100013	AMAN SINGH	50	54	104	69.3333333	B
13	2104280100014	AMAN YADAV	46	14	60	40	D
14	2104280100015	ANANYA SINGH	43	16	59	39.3333333	F
15	2104280100016	ANKIT KUMAR SINGH	49	36	85	56.6666667	C
16	2104280100017	ANKIT SRIVASTAV	44	50	94	62.6666667	B
17	2104280100018	ANUP KUMAR PANDEY	44	6	50	33.3333333	F
18	2104280100019	ANUPRIYA SINHA	49	53	102	68	B
19	2104280100020	ANURAG SRIVASTAV	45	10	55	36.6666667	F
20	2104280100021	APARNA CHAURASIA	44	34	78	52	C
21	2104280100022	ARIHANT UPADHYAY	46	47	93	62	B
22	2104280100023	ARIJIT SRIVASTAVA	45	30	75	50	C
23	2104280100024	ARYAN SINGH	46	5	51	34	F
24	2104280100025	ASHISH KUMAR	46	4	50	33.3333333	F
25	2104280100027	ATUL TIWARI	46	14	60	40	D
26	2104280100029	AYUSHI ADITI	38	60	98	65.3333333	B
27	2104280100030	AYUSHI SINGH	43	22	65	43.3333333	D
28	2104280100031	BALENDU NARAYAN JHA	48	25	73	48.6666667	D
29	2104280100032	CHETAN SINGH	45	1	46	30.6666667	F
30	2104280100033	GAURAV SHARMA	50	48	98	65.3333333	B
31	2104280100034	GULPHAM HUSSAIN	50	39	89	59.3333333	C
32	2104280100035	GULSHAN KUMAR MAURYA	48	49	97	64.6666667	B
33	2104280100036	GUNJA SINGH YADAV	43	44	87	58	C
34	2104280100037	GYAN PRAKASH	48	30	78	52	C
35	2104280100038	GYANENDRA PRATAP SINGH	46	15	61	40.6666667	D
36	2104280100039	HARSH PANDEY	42	30	72	48	D
37	2104280100040	HARSH SHUKLA	45	30	75	50	C
38	2104280100041	HARSH SINGH	48	46	94	62.6666667	B
39	2104280100042	HIMANSHU TIWARI	42	0	42	28	F
40	2104280100043	HIMANSHU UPADHYAY	43	30	73	48.6666667	D



41	2104280100044	JAGRITI SINGH	42	21	63	42	D
42	2104280100045	JANHAVI SINGH	47	46	93	62	B
43	2104280100046	JATIN KUMAR	43	33	76	50.6666667	C
44	2104280100047	KARAN SINGH	41	26	67	44.6666667	D
45	2104280100048	KHYATI VISHWAKARMA	46	42	88	58.6666667	C
46	2104280100049	KM KOMAL GIRI	47	34	81	54	C
47	2104280100050	KUNWAR GAURAV SINGH	48	52	100	66.6666667	B
48	2104280100051	LAIBA FATIMA KHAN	44	36	80	53.3333333	C
49	2104280100052	LAVKUSH	45	20	65	43.3333333	D
50	2104280100053	MADHABI BISWAS	45	25	70	46.6666667	D
51	2104280100054	MAHIMA TRIPATHI	50	54	104	69.3333333	B
52	2104280100055	MANDISHA KAUSHIK	43	16	59	39.3333333	F
53	2104280100056	MOHAMMAD SHAHIL	46	1	47	31.3333333	F
54	2104280100057	MOHIT SINGH	44	15	59	39.3333333	F
55	2104280100058	NIDHI MAURYA	47	32	79	52.6666667	C
56	2104280100059	NIRAJ PAL	43	49	92	61.3333333	B
57	2104280100060	OM PRAKASH MISHRA	44	15	59	39.3333333	F
58	2104280100061	OM SHARAN RAO	43	42	85	56.6666667	C
59	2104280100062	PAWAN RAI	44	38	82	54.6666667	C
60	2104280100063	PIYUSH KUMAR SHAH	43	16	59	39.3333333	F
61	2104280100064	PRAKHAR SRIVASTAVA	42	7	49	32.6666667	F
62	2104280100065	PRANJAL MAURYA	46	58	104	69.3333333	B
63	2104280100066	PRASHANT JAISWAL	45	11	58	37.3333333	F
64	2104280100067	PRATEEK KUMAR SRIVASTAVA	46	40	86	57.3333333	C
65	2104280100070	PRINCE BHARDWAJ	44	30	74	49.3333333	D
66	2104280100071	PRIYANK VERMA	44	52	96	64	B
67	2104280100072	PRIYANSHU SINGH	47	14	61	40.6666667	D
68	2104280100073	PRIYANSHU SINGH	44	50	94	62.6666667	B
69	2104280100074	RAHI SHARMA	50	62	112	74.6666667	B+
70	2104280100075	RANI KUSHWAHA	50	55	105	70	B+
71	2104280100076	RATAN SINGH	43	18	59	39.3333333	F
72	2104280100077	RAVI KANT SINGH	44	58	102	68	B
73	2104280100078	RAVI MISHRA	43	0	43	28.6666667	F
74	2104280100079	RAY SAHAB PATEL	46	30	76	50.6666667	C
75	2104280100080	RIKESH KUMAR YADAV	44	36	80	53.3333333	C
76	2104280100081	RISHA FAROOQUI	44	41	85	56.6666667	C
77	2104280100082	RISHIKA PATEL	45	33	78	52	C
78	2104280100084	ROSHAN KUMAR SHARMA	47	38	85	58.6666667	C
79	2104280100085	SAJA. OJHA	35	30	65	43.3333333	D
80	2104280100086	SAKSHI VISHWAKARMA	44	4	48	32	F
81	2104280100087	SAMEER SINGH	43	48	91	60.6666667	B
82	2104280100088	SANTOSH KUMAR SHUKLA	47	37	84	56	C
83	2104280100089	SARTHAK SINGH	47	16	63	42	D
84	2104280100090	SARLBH PANDEY	45	10	55	36.6666667	F



85	2104280100091	SATYAM PATEL	44	44	88	58.6666667	C
86	2104280100092	SATYAM TIWARI	46	23	69	46	D
87	2104280100093	SAURABH KUMAR	44	0	44	29.3333333	F
88	2104280100094	SAURABH SINGH	47	35	82	54.6666667	C
89	2104280100095	SEJAL SINGH	45	42	87	58	C
90	2104280100096	SHIVAM RAI	43	12	55	36.6666667	F

Total Number Of Student					90
Number of Students Secured >= 50 % Marks					46
% of Students Attained					51.11111111
Attainment Level					2

Gap Analysis				
Achieved Attainment %	Target Attainment %	Target in Level	Attainment Level	Gap = Target in level - Attainment in level
51.11111111	Target Attainment >= 50 %	3	2	1

Action Taken Report	
COs	Action Taken
CO1, CO2, CO3, CO4, CO5	Attained

Action taken for identified Gap (For Next Semester)
*Students are encouraged to Enrol NPTEL online certification course and to appear for certification exam.
*Remedial Classes will be conducted.
*Bridge classes for units.
*Assignments for critical topic.
*Solution for university question for unit.



Rationale :

Since question wise students marks are not provided by affiliating university these marks are kept separate. If results are available with question wise marks COs wise analysis might have been done.

As we expect that each student must at least get 40% marks and he/ she may secure with pass percentage.

% of Marks Secured in a Subject / Course	Letter Grade (AKTU Guidelines)	LEVEL	Grade Points
≥ 90	A+	(Outstanding)	10
< 90	A	(Excellent)	9
$< 80, \geq 70$	B+	(Very Good)	8
$< 70, \geq 60$	B	(Good)	7
$< 60, \geq 50$	C	(Above Average)	6
$< 50, \geq 45$	D	(Average)	5
$< 45, \geq 40$	E	(Poor)	4
< 40	F	(Fail)	0

Target / Threshold Level & Attainment Level		
60% Students Scoring $\geq 50\%$ Marks	If 50% Students Scoring $\geq 50\%$	If 40% Students Scoring $\geq 50\%$ Marks
Attainment Level - 3 (H)	Attainment Level - 2 (G)	Attainment Level - 1 (F)

Direct Assessment of COs, POs & PSOs:

(Quality / Relevance of Assessment Process)

Assessment Process for Evaluation of Theory Courses

Assessment Tools and its frequency, the responsible authority to collect the data and its relevant COs, are tabulated in tables.

Assessment Tools	Assessment Period	Assessed By	Reviewed By	Mapping with COs
Class Test -1 Class Test -2 (Pre University Test) (PUT)	Once Per Semester	Course Instructor	Department Advisory committee (DAC)	Relevant CO
Assignments-1	Once Per Semester	Course Instructor	Department Advisory committee (DAC)	CO1
Assignments-2				CO2
Assignments-3				CO3
Assignments-4				CO4
Assignments-5				CO5
Quizzes	Once Per Semester	Course Instructor	Department Advisory committee (DAC)	All COs
University Semester Exam	Once Per Semester	Course Instructor	Department Advisory committee (DAC)	All COs



Assessment Tools	Assessment Period	Assessed By	Reviewed By	Mapping with COs
Lab Experiment	Throughout Semester	Course Instructor	Department Advisory committee (DAC)	All COs
Viva Voce	Throughout Semester	Course Instructor		All COs
Practical Record	Throughout Semester	Course Instructor		All COs
Internal Practical Exam	Once Per Semester	Internal Examiners		All COs
University Semester Exam	Once Per Semester	Internal Examiners appointed by the department & External Examiners Appointed by AKTU		All COs

Assessment Process for Evaluation of Laboratory Courses



Assessment Tools		Assessed Period	Assessed By	Reviewed By	Mapping with COs								
Topic Approval		7 th Sem	Project Review committee	Department Advisory committee (DAC)	All COs								
Progress Presentation 1	Presentation Skill	7 th Sem			Project Review committee	Department Advisory committee (DAC)	All COs						
	Viva Voce												
	Implementation report												
	Faculty Interaction												
Progress Presentation 2	Presentation Skill	7 th Sem					Project Review committee	Department Advisory committee (DAC)	All COs				
	Viva Voce												
	Implementation report												
	Faculty Interaction												
Internal Final Presentation	Presentation Skill	8 th Sem							Internal Examiners appointed by the department & External Examiners Appointed by AKTU	Department Advisory committee (DAC)	All COs		
	Viva Voce												
	Implementation report												
	Faculty Interaction												
External Presentation	Presentation Skill	8 th Sem									Internal Examiners appointed by the department & External Examiners Appointed by AKTU	Department Advisory committee (DAC)	All COs
	Viva Voce												
	Implementation report												
	Faculty Interaction												

Assessment Process for Evaluation of Project Courses



Assessment Process for Evaluation of Seminar Courses & Industrial Training Courses

Assessment Tools		Assessed Period	Assessed By	Reviewed By	Mapping with COs
External Presentation	Presentation Skill Viva Voce Implementation report Faculty Interaction	Once Per Semester	Seminar Review committee	Department Advisory committee (DAC)	All COs

Assessment Process for General Proficiency Course

Assessment Tools	Assessed Period	Assessed By	Reviewed By	Mapping with COs
Sports Event	Throughout the program	Sports Committee	Department Advisory Committee (DAC)	CO1
Cultural Events		Cultural Committee		CO2
Technical Events		Technical Committee		CO3
Societal & Environmental Events		Societal & Environmental Committee		CO4
Discipline		Proctorial Board		CO5

Institute of Technology
Director
Varanasi

CO Attainment Target Level Methods:

There can be several methods. e.g.

- Same target is identified for all the COs of the course i.e. target can be class average marks $\geq 60\%$ marks.
- Target are same for all COs and are set in terms of performance level of different groups of students. While this method classifies students in to different categories, it does not provide any specific clues to plans for improvements of quality of learning. e.g.

Target			
(% of students getting < 50)	(% of students getting >50 and < 65)	(% of students getting >65 and < 80)	(% of students getting ≥ 80)
10	40	40	10

- Targets are set for each CO of a course separately. It does not directly indicate the distribution of performance among the students. However, it has the advantage of finding out the difficulty of specific COs.

Fig.

COs	Target (Class Average)
CO1	70%
CO2	80%
CO3	75%
CO4	65%
CO5	80%

Target Level :

- Targets are quantized in to certain level, 3 being the most common number of levels.
- Level 3: If 70% students scoring $\geq 60\%$ of Marks allocated to CO
- Level 2: If 60% student scoring $\geq 60\%$ of Marks in CO
- Level 1: If 50% student scoring $\geq 60\%$ of Marks in CO
- Level 0: If < 50% student scoring $\geq 60\%$ of Marks in CO



Aim is to attain Level 3

CO Attainment Calculation:

The course outcomes for all the courses are calculated in terms of percentage using the formula.

$$\text{COx in \%} = \frac{\text{Marks obtained by the students in COx}}{\text{Maximum marks allotted in COx}} \times 100$$

Where $x = [1 \text{ to } N]$, $N = \text{Number of COs}$

Each course outcome is calculated for all the students based on marks obtained by the students.

$$\text{COx Attainment in \%} = \left[\frac{\text{No. of Students scored } \geq 70 \text{ of Marks in COx}}{\text{Total No. of students}} \times 100 \right]$$

Where $x = [1 \text{ to } N]$, $N = \text{Number of COs}$

CO Attainment Level is defined based on the following criteria:

Fig.

Assessment Method	COs Attainment Level	
Internal Assessment	Level 3	If 70% students scoring $\geq 70\%$ of Marks in COs
	Level 2	If 60% student scoring $\geq 70\%$ of Marks in COs
	Level 1	If 50% student scoring $\geq 70\%$ of Marks in COs

After calculating the attainment level of each COs from the performance of Internal Assessment Test 1 & 2, the attainment level of Internal Assessment Test is calculated with ratio of sum of all

the COs attained by total number of COs as shown below:



$$\text{IAT Attainment Level} = \frac{\text{Sum of all COs attained by students}}{\text{Total Number of COs}}$$

Where IAT = Internal Assessment Test

IAT is calculated as follows:

$$\text{E.g. Internal Assessment Test} = \frac{\text{CO1} + \text{CO2} + \text{CO3} + \text{CO4} + \text{CO5}}{5}$$

Based on university grade, the attainment level of COs is calculated. The attainment level is decided on the following criteria.

Fig.

Assessment Method	Cox Attainment Level	
University (External) Assessment	Level 3	If 60% student scoring \geq 50% of Marks in University Exam
	Level 2	If 50% student scoring \geq 50% of Marks in University Exam
	Level 1	If 40% student scoring \geq 50% of Marks in University Exam

The university attainment level is calculated as follows

$$\text{Over all CO Attainment } \textit{Direct} = \left(\frac{\sum_{i=1}^n \text{CO}_i}{n} \times 0.2 \right) + (\text{UA} \times 0.8)$$

(Where n = Number of course outcome)

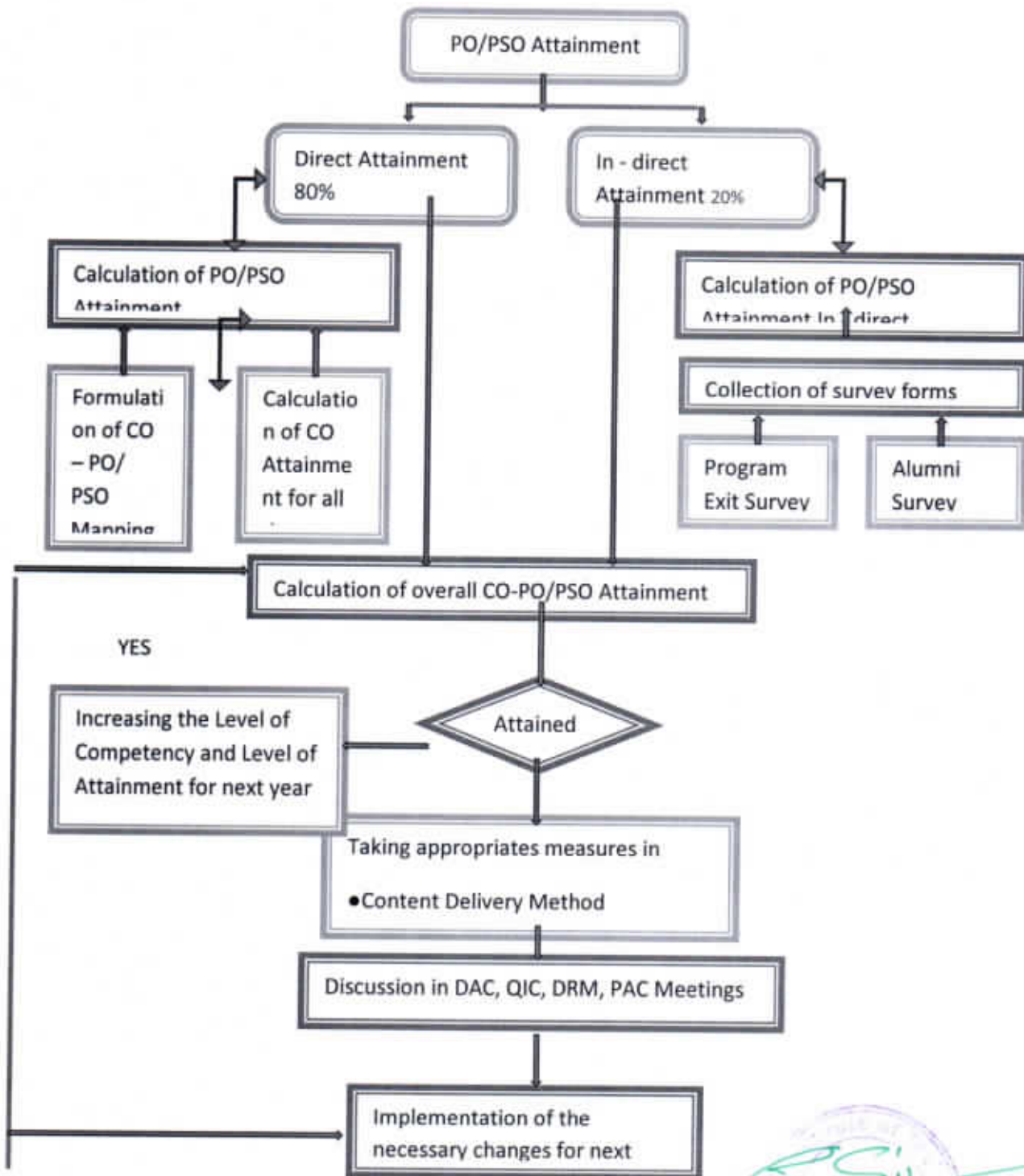
$$\text{Over all Attainment} = \frac{(\text{DTA} + \text{UA}) + \text{IDA}}{2}$$

(Where UA = University Attainment level)

(DTA= Direct Attainment level, IDA = Indirect attainment Level)



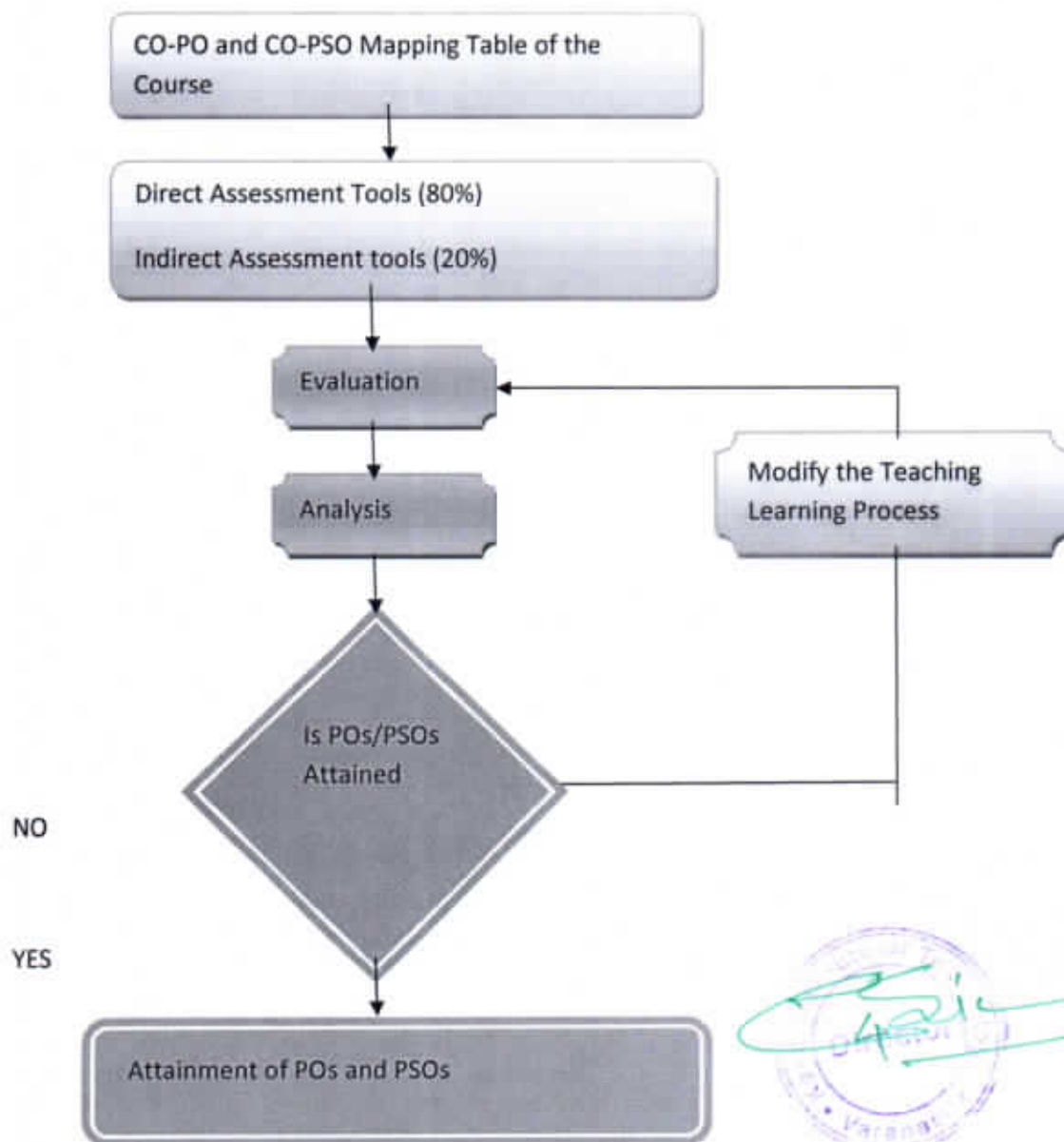
Process for PO/PSO Attainment: Fig: 1



Assessment tools and processes used for measuring the Attainment of each of the Program Outcomes (POs) and Program Specific Outcomes (PSOs):

Evaluation of attainment of POs and PSOs is based on direct and indirect assessment tools. Direct assessment of POs and PSOs is based on student's performance in continuous assessment and university examination. Indirect assessment is based on Program Exit Survey (Theory & Practical). The various direct and indirect tools and its frequency, the responsible authority to collect data for assessing the attainment of each POs and PSOs are given below table.

Fig.



Course level PO & PSO Attainment Calculation:

The PO & PSO attainment for the course is calculated using following formula

PO Attainment of Course (X)

$$= \text{CO Attainment \% of Course } (X) \times \text{PO}_y \text{ mapping value of course}(x)/100$$

PO Attainment Level of Course (X)

$$= (\text{weighted Average Value of PO} \times \text{CO Attainment Average}) / 3$$

PSO Attainment of Course (X)

$$= \text{CO Attainment \% of Course } (X) \times \text{PSO}_y \text{ mapping value of course}(x)/100$$

(Where, $y = [1 \text{ to } N]$, $N = \text{Number of Program Outcomes}$)

PSO Attainment Level of Course (X)

$$= (\text{weighted Average Value of PSO} \times \text{CO Attainment Average}) / 3$$

(Where, $y = [1 \text{ to } N]$, $N = \text{Number of Program Specific Outcomes}$)

PO & PSO ATTAINMENT

A handwritten signature in green ink is written over a circular official stamp. The signature appears to be 'S. S. S.' or similar. The stamp is purple and contains some text, including '2018' and '2019', but it is mostly illegible.

KASHI INSTITUTE OF TECHNOLOGY, VARANASI

DEPARTMENT OF APPLIED SCIENCE AND HUMANITIES

CO-PO ATTAINMENT

Course : B.Tech Semester: 1st Academic Year: 2021-2022
 Course Code : KAS102T Course Name : Engineering Chemistry
 Name of the Faculty : Dr. Rupesh Kumar Singh Section : A

CO-PO & PSO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	2	-	-	-	-	-	-	-	-	3	1	-
CO2	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
CO3	2	-	1	-	-	-	-	-	-	-	-	-	1	-	-
CO4	2	1	1	-	-	-	-	-	-	-	-	-	-	1	-
CO5	2	-	-	-	-	-	-	-	-	-	-	-	-	1	-

CO- PO & PSO COMPUTATION

COs	CO Attainment %	PO1		PO2		PO3		PO4		PO5		PO6		PO7		PO8		PO9		PO10		PO11		PO12		PSO1		PSO2		PSO3	
		P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A		
CO1	93.33	2	1.9	1	0.93	2	1.9	2	1.867	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	2.8	1	0.93	-	-
CO2	95.56	2	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	2.87	-	-	-	-
CO3	25.56	2	0.5	-	-	1	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.28	-	-	-	-
CO4	41.11	2	0.8	1	0.41	1	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.41	-	-
CO5	47.78	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.48	-	-
TOTAL	10	6.1	2	1.34	4	2.5	2	1.867	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	5.92	3	1.82	-	-
Attainment %		61		67.2		83		93.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	84.6		80.7	-	-	-
Attained Level		2		2		2		3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3		2	-	-	-
WEIGHTED AVERAGE VALUE OF POI/PSOs		1.21		0.67		0.84		1.87	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.97		0.81	-	-	-

P = PLANNED

A = ATTAINED

CO Attainments

S.N.	COs NO.	CO Percentage	CO ATM Level
1	CO1	93.33	3
2	CO2	95.56	3
3	CO3	25.56	1
4	CO4	41.11	1
5	CO5	47.78	1
AVERAGE		60.87	2.00

Action Taken Report

COs	Action Taken
CO1	Attained
CO2	Attained
CO3	Attained
CO4	Attained
CO5	Attained

Signature of faculty

Head of the Department
Applied Science and Humanities

(Handwritten Signature)

DEPARTMENT OF APPLIED SCIENCE AND HUMANITIES

INDIRECT ATTAINMENT

Course : B.Tech

Semester: Ist

Academic Year:2021-2022

Course Code : KAS102T

Course Name : Engineering Chemistry

Name of the Faculty : Dr. Rupesh Kumar Singh

Section : A

S.No.	Roll No.	Name	MM (20)	Percentage
1	2104280100001	ABHAY VISHWAKARMA	15	75
2	2104280100002	ABHINAV KUMAR SINGH	13	65
3	2104280100004	ABHISHEK SHARMA	14	70
4	2104280100005	ADARSH GIRI	14	70
5	2104280100006	ADITYA GUPTA	16	80
6	2104280100007	ADITYA KUMAR	15	75
7	2104280100008	AKANKSHA GUPTA	18	90
8	2104280100009	AKASH DWIVEDI	18	90
9	2104280100010	AKASH JAISWAL	18	90
10	2104280100011	AKSHARA SRIVASTAVA	18	90
11	2104280100012	AMAN PANDEY	15	75
12	2104280100013	AMAN SINGH	13	65
13	2104280100014	AMAN YADAV	14	70
14	2104280100015	ANANYA SINGH	15	75
15	2104280100016	ANKIT KUMAR SINGH	13	65
16	2104280100017	ANKIT SRIVASTAV	18	90
17	2104280100018	ANUP KUMAR PANDEY	18	90
18	2104280100019	ANUPRIYA SINHA	18	90
19	2104280100020	ANURAG SRIVASTAV	16	80
20	2104280100021	APARNA CHAURASIA	17	85
21	2104280100022	ARIHANT UPADHYAY	17	85
22	2104280100023	ARIJIT SRIVASTAVA	16	80
23	2104280100024	ARYAN SINGH	16	80
24	2104280100025	ASHISH KUMAR	15	75
25	2104280100027	ATUL TIWARI	15	75
26	2104280100029	AYUSHI ADITI	15	75
27	2104280100030	AYUSHI SINGH	18	90
28	2104280100031	BALENDU NARAYAN JHA	18	90
29	2104280100032	CHETAN SINGH	16	80
30	2104280100033	GAURAV SHARMA	20	100
31	2104280100034	GULPHAM HUSSAIN	18	90
32	2104280100035	GULSHAN KUMAR MAURYA	18	90
33	2104280100036	GUNJA SINGH YADAV	16	80
34	2104280100037	GYAN PRAKASH	18	90
35	2104280100038	GYANENDRA PRATAP SINGH	16	80
36	2104280100039	HARSH PANDEY	16	80
37	2104280100040	HARSH SHUKLA	18	90
38	2104280100041	HARSH SINGH	20	100



39	2104280100042	HIMANSHU TIWARI	15	75
40	2104280100043	HIMANSHU UPADHYAY	18	90
41	2104280100044	JAGRITI SINGH	20	100
42	2104280100045	JANHAVI SINGH	20	100
43	2104280100046	JATIN KUMAR	20	100
44	2104280100047	KARAN SINGH	15	75
45	2104280100048	KHYATI VISHWAKARMA	17	85
46	2104280100049	KM KOMAL GIRI	17	85
47	2104280100050	KUNWAR GAURAV SINGH	17	85
48	2104280100051	LAIBA FATIMA KHAN	15	75
49	2104280100052	LAVKUSH	15	75
50	2104280100053	MADHABI BISWAS	16	80
51	2104280100054	MAHIMA TRIPATHI	18	90
52	2104280100055	MANDISHA KAUSHIK	15	75
53	2104280100056	MOHAMMAD SHAHIL	12	60
54	2104280100057	MOHIT SINGH	12	60
55	2104280100058	NIDHI MAURYA	12	60
56	2104280100059	NIRAJ PAL	12	60
57	2104280100060	OM PRAKASH MISHRA	13	65
58	2104280100061	OM SHARAN RAO	13	65
59	2104280100062	PAWAN RAI	13	65
60	2104280100063	PIYUSH KUMAR SHAH	16	80
61	2104280100064	PRAKHAR SRIVASTAVA	18	90
62	2104280100065	PRANJAL MAURYA	17	85
63	2104280100066	PRASHANT JAISWAL	17	85
64	2104280100067	PRATEEK KUMAR SRIVASTAVA	17	85
65	2104280100070	PRINCE BHARDWAJ	16	80
66	2104280100071	PRIYANK VERMA	16	80
67	2104280100072	PRIYANSHU SINGH	15	75
68	2104280100073	PRIYANSHU SINGH	18	90
69	2104280100074	RAHI SHARMA	20	100
70	2104280100075	RANI KUSHWAHA	20	100
71	2104280100076	RATAN SINGH	15	75
72	2104280100077	RAVI KANT SINGH	18	90
73	2104280100078	RAVI MISHRA	16	80
74	2104280100079	RAY SAHAB PATEL	17	85
75	2104280100080	RIKESH KUMAR YADAV	17	85
76	2104280100081	RISHA FAROOQUI	18	90
77	2104280100082	RISHIKA PATEL	17	85
78	2104280100084	ROSHAN KUMAR SHARMA	17	85
79	2104280100085	SAJAL OJHA	15	75
80	2104280100086	SAKSHI VISHWAKARMA	20	100
81	2104280100087	SAMEER SINGH	15	75
82	2104280100088	SANTOSH KUMAR SHUKLA	18	90
83	2104280100089	SARTHAK SINGH	18	90
84	2104280100090	SARUBH PANDEY	16	80
85	2104280100091	SATYAM PATEL	16	80



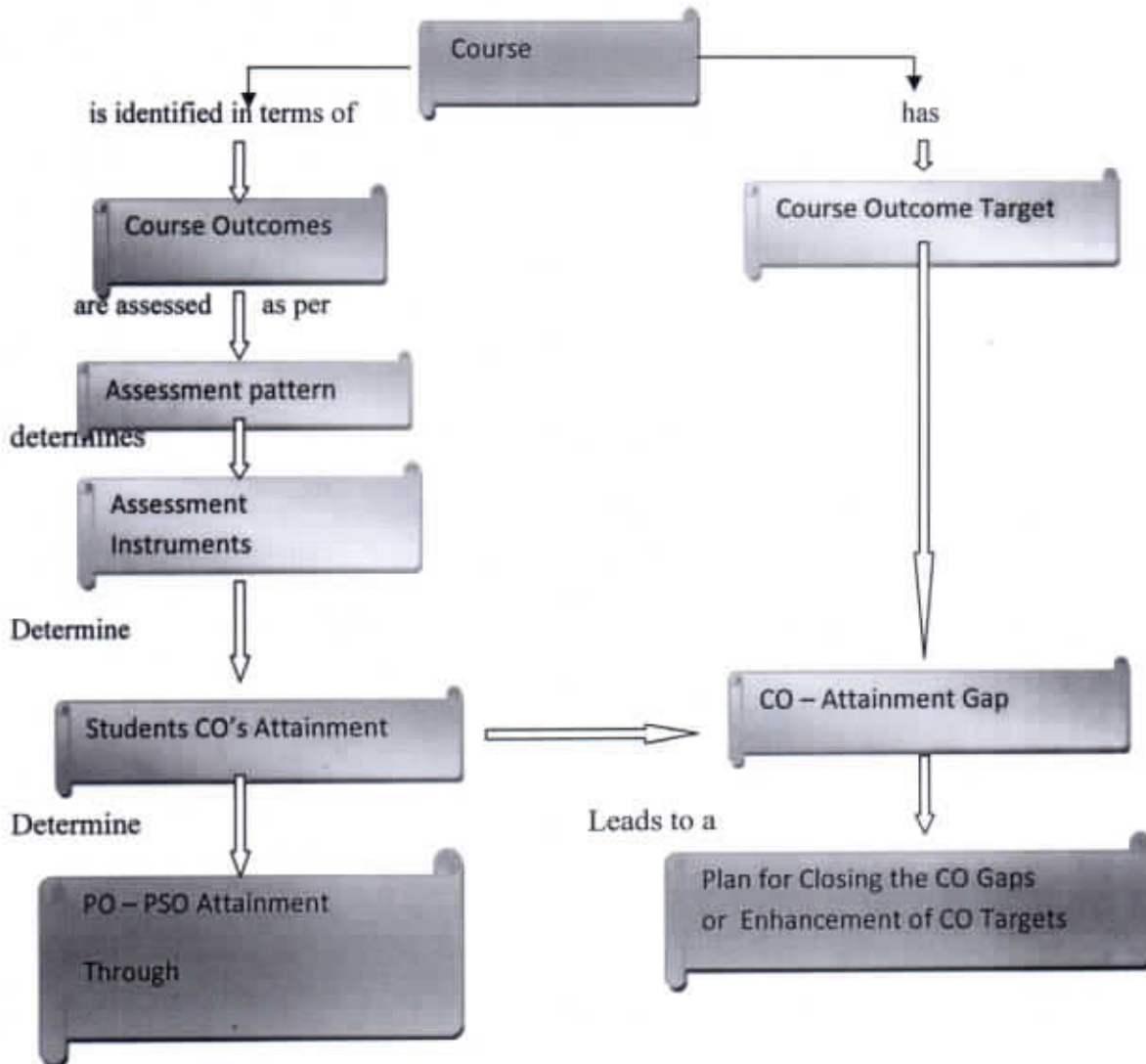
86	2104280100092	SATYAM TIWARI	16	80
87	2104280100093	SAURABH KUMAR	15	75
88	2104280100094	SAURABH SINGH	15	75
89	2104280100095	SEJAL SINGH	15	75
90	2104280100096	SHIVAM RAI	16	80
Total number of Students				90
Number of Student Secured \geq 70% Marks				80
% of Students Attained				89
Attainment Level				3

If 70% Students Scoring \geq 70% Marks
ATTAINMENT LEVEL 3
If 60% Students Scoring \geq 70% Marks
ATTAINMENT LEVEL 2
If 50% Students Scoring \geq 70% Marks
ATTAINMENT LEVEL 1

Action Taken Report	
COs	Action Taken
CO1, CO2, CO3, CO4, CO5	Attained



CO attainment and Gap Analysis:



Calculation of Gap Analysis:

$$\text{Gap} = \text{Target in level} - \text{Attainment in level}$$

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KASHI INSTITUTE OF TECHNOLOGY, VARANASI				
DEPARTMENT OF APPLIED SCIENCE AND HUMANITIES				
OVERALL ATTAINMENT				
Course : B.Tech		Semester: 1st		Academic Year:2021-2022
Course Code : KAS102T		Course Name : Engineering Chemistry		
Name of the Faculty : Dr. Rupesh Kumar Singh		Section : A		
DIRECT ATM LEVEL	AKTU (END SEM)ATM LEVEL	DT*0.2+AE*0.8	INDIRECT ATM LEVEL	OVERALL ATM LEVEL
1.80	2	1.96	3	2.48
OVERALL ATM AVG.		2.48		

Gap Analysis		
Target ATM level	Over all ATM Level	Gap = Target in level – Attainment in level
3.00	2.48	0.52

Action taken after identifying the gaps:

Convey the identified gaps to Board of Studies:

Considering the feedback from faculty, PAC committee, students and DAB committee, a representation is prepared by the department to convey the gaps and possible action plan to the Board of Studies (BOS). These inputs are taken into consideration by BOS while revising the syllabus

Following activities are planned to fulfil the identified gap.

Action taken for identified Gap
*Students are encouraged to Enrol NPTEL online certification course and to appear for certification exam.
*Remedial Classes will be conducted.
*Bridge classes for units.
*Assignments for critical topic.
*Solution for university question for unit.



Tutorial classes	15
Lecture beyond syllabus	2
Classes for gaps & Add-on classes	2
Total number of classes	78

Gaps in Syllabus :

S.No.	DESCRIPTION	PROPOSED ACTION	No of classes
1	Valence bond theory	PPT	2

TOPICS BEYOND SYLLABUS / ADVANCED TOPICS :

S.No.	DESCRIPTION	PROPOSED ACTION	No of classes
1	Waste water treatment	PPT	2



Kashi Institute of Technology, Varanasi

Department of Applied Science and Humanity

Semester: I

Session: 2021-22

Section: A + B

Subject Code: KAS102T

Subject Name: ENGG. CHEMISTRY

	Text Books
1	University Chemistry By B.H. Mahan
2	University Chemistry By C.N.R. Rao
3	Organic Chemistry By I.L. Finar
4	Physical Chemistry By S. Glasstone
5	Engineering Chemistry By Satya Prakash
6	Polymer Chemistry By Fre W., Billmeyer
7	Engineering Chemistry By S.S. Dara
8	Physical Chemistry By S. Glasstone
9	Fundamentals of molecular spectroscopy, by C.N. Ban well
10	Engineering Chemistry by P.C. Jain & M. Jain.
	Reference books
1	Organic Chemistry : Structure and function by K.P.C. Volhardt & N.E.Schore, 5 th Edition.
2	Engineering Chemistry, by B.M. Mohan, Pearson IVth Edition.
3	Physical Chemistry by P.W. Atkins
4	Engineering Chemistry (NPTEL Web Book), by B.L. Tembe, Kamaluddin and M.S.
5	Engineering Chemistry by O. Palanna, McGraw Hill Education.





Kashi Institute of Technology, Varanasi

Department of Applied Science and Humanity

Semester: I

Session: 2021-22

Section: A + B

Subject Code: KAS102T

Subject Name: ENGG. CHEMISTRY

Web Books : (Name of Books / Website)

- 1- <https://www.diet.ac.in/pages/library/NPTEL/bs>.
- 2- <https://nptel.ac.in/courses/122/106/122106028/>
- 3 <https://www.ncertbooks.guru/engineering-chemistry/>
- 4- <https://www.mlrinstitutions.ac.in/files/CSE/CHEMISTRY.pdf>
- 5- <https://www.iare.ac.in/sites/default/files/UG20/Chemistry.pdf>

Delivery / Instructional Methodologies :

CHALK & TALK	STUDY MATERIAL	WEB RESOURCES
LCD / SMART BOARDS	STUDY SEMINARS	ADD-ON COURSES

