2.6.2 Attainment of Programme Outcomes and Course outcomes are evaluated by the Institution

List of Enclosures under

Sl. No.	File description
1	Attainment procedure of POs and COs with sample data
2	OBE manual

Attainment procedure of POs, and COs, with sample data

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SREE DATTHA INSTITUTE OF PHARMACY

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COURSEOUTCOMEASSESSMENTPROCESS

Attainment of Course Outcomes

The course outcomes were prepared by using action verbs of modified Bloom's Taxonomy. All the course outcomes are prepared in such away that they aremeasuredbymeansofwrittenandoralskills,presentationetc.Thevariousassessmentproce ssesusedtogetheratare as follows.

i. Internal (Mid) Examinations: Two mid examinations are conducted for each year students in each semester as per the university (JNTU, Hyderabad) prescribed norms. Internal marks consist of mid theory paper, objective paper and assignment. It is expected that a student should score at least 15 marks (60%) out of 25 marks for the attainment of that course outcome.

ii. End semester university examinations: The question paper for each course is set by the affiliated university. The students have to answer 5questions out of given 8 questions. Since the answer scripts are retained by the university, the information regarding the attainment levels of each course outcomes cannot be ascertained. However, the marks scored by the students in the end semester examinations are used to assess the attainment level of the whole course and the same is transferred to each course outcome attainment level, while calculating the overall attainment level. It is expected that a student should score at least 40% of the maximum marks of the course (i.e. 30 out of 75) for the attainment of course outcomes.

S. No	Assessment tool	Maximum marks per question	Threshold level (%)	Attainment level criteria	Attainment level
1	Internal Exams	25	60%	At least 80% of attempted students surpass threshold level (60%) marks	3
				At least 60%- 79% of attempted students surpass threshold level (60%) marks	2
				Upto 59% of attempted	1

				Student surpass the threshold level(60%) marks	
2	University Exams	75	40%	At least 80% of attempted students Surpass threshold level (50%) marks	3
				At least 60%-79% of Attempted students Surpass threshold level (50%) marks	2
				Upto 59% of attempted students surpass the threshold level (50%) marks	1

Final assessment of course outcomes

The final assessment level of a particular course outcome is calculated by giving 40% weightage to internal assessment tools and 60% weightage to end semester university examination. The following table illustrates the final attainment level calculation for all course outcomes.

Course outcome	Course outcome attainment level from Internal assessment				Course outcome attainment level from university exams	Final attainment level
	Mid–1	Mid–2	Assignment	Average value		
CO-1	a1	b1	c1	d1=a1+b1+c1/3	d1	(0.6)c1+0.4(d1)
CO-2	a2	b2				(0.6)c2+0.4(d2)
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CO-N	an	bn	cn	dn	dn	(0.6)cn+0.4(dn)

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Justification of weightage levels:

It is to be observed that as per university guidelines 25% weightage is given to internal assessment and 75% weightage is given to external exam assessment. However, 40% weightage is given to course outcome attainment level from internal assessment because the average marks obtained in university examinations is lower than the average marks of internal marks. Also the faculty member is able to assess at micro level about the attainment of course outcomes.

Program Outcome Assessment Process

Program Outcome attainment levels for all Pos are set first and then attainment levels done as following methods

A. Direct(student performance)

B. Indirect(surveys):

i. Graduate exit survey

ii. Alumni survey

iii. Employer survey

POs attainment levels are presented through program level Course-PO matrix as indicated. After defining course outcome, CO to PO mapping is done followed by setting of weightages for the same.

i. Graduate exit survey: a t the end of 4 years after graduation, a questionnaire is given to graduates to obtain feedback on the below mentioned parameters.
Awareness of pos
Relevance of course with respect to pos
Effectiveness of co-curricular and extra curricular activities effectiveness of infrastructural facilities towards the achievement of pos feedback on industry-institute interaction
Effectiveness of teaching and learning process
suggestion for improvement

ii. Alumni survey: A questionnaire is distributed to alumni membersduringtheperiodicalmeetingthatarearrangedbytheprogram.Their feedback is obtained on below meeting parameters.

UsefulnessoftheprogramofthecourseintheirprofessionalcareerNeedfor introduce in new courses in program to strengthen their career Self-assessment of their Pos after graduation

Suggestions for improvement

iii. Employer survey: The program assessment committee meets the employers periodically to know the performance of the employed graduates. A questionnaire is distributed to the HR personal based on the following parameters.

Rating of the employed graduate based on each POs

Overall impressionwithregardtotheireffectivenessintheorganizationRelevanceofeachofthecourseswithrespectPOs

Need for introducing industry demand courses

Overall PO assessment

The final assessment level of a particular program outcome is calculated by giving 80%weightagetodirect assessment and 20%weightagetoindirectassessment.

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CO attainment

Co attainment for batch 2023-2024

B.Pharmacy Ist Year Semester-I

Consolidated: University + InternalMarks

Course code	Course name	University attainment		Sessional attainment		Attainment level		%Attainment(Achieved /required)X100	Attainment inscale3
		100%	80% (100% X0.8)	100%	20% (100% X0.8)	Achieved	Required		
PS101	Human Anatomy andPhysiologyI	2.42	1.80	2.56	0.51	2.31	2.56	90.33	2.71
PS102	PharmaceuticalAnalysis –I	1.43	1.15	2.13	0.43	1.57	2.33	67.39	2.02
PS103	PharmaceuticsI	2.14	1.712	2.25	0.45	2.14	2.33	77.97	2.34
PS104	Pharm. Inorganic Chemistry	2.15	1.72	1.65	0.33	2.05	2.5	81.97	2.46
HS105	C101.6 Communication skills	1.16	1.05	1.46	0.29	1.34	2	67.25	2.02
PS108	HumanAnatomy& Physiology–ILab	2.67	2.13	2.81	0.56	2.70	2.37	100	3.00
PS109	Pharmaceutical Analysis– ILab	2.72	2.18	2.72	2.72	0.54	2.72	100	3.00
PS110	Pharmaceutics-I Lab	2.54	2.03	2.65	0.53	2.56	2.44	100	3.00
PS111	Ph.Inorg.Chemistry–ILab	1.19	1.94	2.42	0.48	2.42	2.33	100	3.00

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B.Pharmacy Ist Year Semester-II

Course code	Course name	University attainment		Sessional attainment		Attainment level		%Attainment(Achieved/required) X100	Attainment scale 3
		100%	80% (100% X0.8)	100%	20% (100% X0.8)	Achieved	Required		
PS201	Human Anatomy and Physiology–II	2.25	0.95	2.63	0.53	1.47	1.95	75.58	2.27
PS202	Pharm. Organic Chemistry-I	2.14	1.712	2.25	0.45	2.14	2.33	77.97	2.34
BS203	Biochemistry	2.00	1.60	2.02	0.40	2.00	2.2	91.06	2.73
BS204	Pathophysiology	2.15	1.72	1.65	0.33	2.05	2.5	81.97	2.46
CS205	Computer application inPharmacy	1.32	1.36	2.40	0.48	1.84	2.25	81.66	2.45
PS206	Human Anatomy& physiology	2.50	2.00	2.79	0.56	2.56	2.5	100	3.00
PS207	Pharmaceutical Organic chemistry I Lab	2.77	2.22	1.25	2.59	0.52	2.73	100	3.00
BS208	Biochemistry Lab	2.62	2.09	2.51	0.50	2.59	2.33	100	3.00
CS209	Computer Applications in Pharmacy Lab	2.87	2.30	2.79	0.56	2.86	2.37	100	3.00

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B.Pharmacy IInd Year Semester-I

Course code	Course name	University attainment		Sessional attainment		Attainment level		%Attainment(Achieved/ required)X 100	Attainment scale3
		100%	80% (100% X0.8)	100%	20% (100% X0.8)	Achieved	Required		
PS301	Pharmaceutical OrganicChemistry–II	2.45	1.72	1.65	0.33	2.05	2.5	81.97	2.46
PS302	Physical Pharmacy-I	2.15	1.72	1.65	0.33	2.05	2.5	81.97	2.46
PS303	Pharmaceutical Microbiology	2.00	1.60	2.31	0.46	2.06	2.10	98.17	2.95
PC304	Pharmaceutical Engineering	1.50	1.20	1.97	0.39	1.59	2.13	74.10	2.24
PS305	PharmaceuticalOrganicChemistry–II Lab	2.54	2.03	2.65	0.53	2.56	2.44	100	3.00
PS306	PhysicalPharmacy–I Lab	2.50	2.00	2.79	0.56	2.56	2.5	100	3.00
BS307	Pharmaceutical MicrobiologyLab	2.96	2.37	2.72	0.54	2.91	2.41	100	3.00
PC308	Pharmaceutical EngineeringLab	2.75	2.20	2.73	0.52	2.72	2.14	100	3.00

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B.Pharmacy IInd Year Semester-II

Course code	Course name	University attainment		Sessional attainment		Attainment level		%Attainment(Achieved/required) X100	Attainmentinscale3
		100%	80% (100% X0.8)	100%	20% (100% X0.8)	Achieved	Required		
PS401	Pharmaceutical OrganicChemistry-III	1.60	1.28	2.27	0.45	1.73	2.13	81.20	2.44
PS402	Physical Pharmaceutics II	1.50	1.20	1.97	0.39	1.59	2.13	74.10	2.24
PC403	Pharmacology–I	1.50	1.20	1.97	0.39	1.59	2.13	74.80	2.24
PC404	Pharmacognosy & Phyto chemistryI	1.53	1.22	1.62	0.32	1.55	2.15	71.91	2.16
PC405	Pharmaceutical Jurisprudence	1.16	0.93	1.49	0.30	1.23	2	61.31	1.84
PS406	Physical Pharmaceutics-II Lab	2.43	1.94	2.32	0.46	2.40	2.33	100	3.00
PC407	Pharmacology-I Lab	2.43	1.94	2.32	0.46	2.40	2.3	100	3.00
PC408	Pharmacognosy and Phytochemistry- I Lab	2.54	2.03	2.65	0.53	2.56	2.44	100	3.00
MC400	Gender Sensitization Lab	2.43	1.94	2.32	0.46	2.40	2.33	100	3.00

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B.Pharmacy IIIrdYear Semester-I

Course code	Course name	University attainment		Sessional attainment		Attainment level		%Attainment(Achieved/ required)X100	Attainmentin scale3
		100%	80% (100% X0.8)	100%	20% (100% X0.8)	Achieved	Required		
PS501	Medicinal Chemistry-I	1.60	1.28	2.36	0.47	1.63	2.13	76.61	2.30
PS502	IndustrialPharmacy–I	1.43	1.15	2.31	0.46	1.61	2	80.35	2.41
PS503	Pharmacology–II	1.45	1.16	2.27	0.45	1.73	2.13	81.20	2.44
PS504	Pharmacognosy& PhytochemistryII	1.45	1.16	2.36	0.47	1.63	2.13	76.61	2.30
PS507	CellandMolecular Biology	1.53	1.22	1.62	0.32	1.55	2.15	71.91	2.16
PS509	Medicinal Chemistry-I lab	2.75	2.20	2.73	0.52	2.72	2.14	100	3.00
PS510	Industrial Pharmacy–ILab	2.75	2.20	2.73	0.52	2.72	2.14	100	3.00
PS511	Pharmacology-ILab	2.43	1.94	2.32	0.46	2.40	2.3	100	3.00
PS512	Pharmacognosy and Phyto chemistry- II Lab	2.86	2.29	2.08	0.42	2.71	2.41	100	3.00
MC500	Environmental Science	1.16	0.93	1.49	0.30	1.23	2	61.31	1.84

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B. Pharmacy IIIrd Year Semester-II

Course code	Course name	University attainment		Sessional attainment		Attainment level		%Attainment(Achieved/required) X100	Attainmentinscale 3
		100%	80% (100% X0.8)	100%	20% (100% X0.8)	Achieved	Required		
PS601	Medicinal Chemistry–II	1.45	1.16	2.27	0.45	1.73	2.13	81.20	2.44
PS602	Pharmacology–III	1.62	1.29	2.11	0.42	1.71	2.3	74.50	2.24
PS603	Herbaldrug Technology	1.53	1.22	1.62	0.32	1.55	2.15	71.91	2.16
PS604	Bio pharmaceutics & Pharmacokinetics	1.15	0.92	2.51	0.50	1.42	1.9	74.74	2.24
PS608	Screening Methods In Pharmacology	1.12	0.90	2.05	0.41	1.31	2.2	59.35	1.78
PS609	Medicinal Chemistry II Lab	2.45	1.96	2.77	0.55	2.51	2.42	100	3.00
PS610	Pharmacology –III Lab	2.43	1.94	2.32	0.46	2.40	2.3	100	3.00
PS611	Herbal Drug Technology Lab	2.90	2.32	2.52	0.50	2.82	2.14	100	3.00
PS612	Biopharmaceutics &Pharmacokinetics lab	2.90	2.32	2.52	0.50	2.82	2.14	100	3.00
MC600	Human Values and Professional Ethics	1.95	1.56	2.23	0.45	2.00	2.05	97.69	3.00

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B.Pharmacy IVth Year Semester-I

	Course code/Course name	University attainment		Sessional attainment		Attainment level		%Attainment(Achieved /required) X 100	Attainmentinscale3
		100%	80% (100% X0.8)	100%	20% (100% X0.8)	Achieved	Required		
PC701	Instrumental method of Analysis	2.40	1.92	2.20	0.44	2.36	2.42	97.52	2.93
PC702	Industrial pharmacy-II	1.15	0.92	2.51	0.50	1.42	1.9	74.74	2.24
PC703	Pharmacy practice	1.53	1.22	1.62	0.32	1.55	2.15	71.91	2.16
PC704	Medicinal Chemistry–III	1.48	1.19	2.53	0.51	1.69	1.98	89.06	2.67
HS705	Pharmaceutical marketing	1.62	1.29	2.11	0.42	1.71	2.3	74.50	2.24
PC709	Instrumental method of Analysis lab	2.42	1.94	2.42	0.48	2.42	2.33	100	3.00
PC710	Practice School	2.50	2.00	2.79	0.56	2.56	2.47	100	3.00
PC711	Industrial training	2.42	1.94	2.42	0.48	2.42	2.33	100	3.00

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Pharmacy IVth Year Semester-II

	Course code/Course name	University attainment		Sessional attainment		Attainment level		%Attainment(Achieved /required) X 100	Attainmentinscale3
		100%	80% (100 %X 0.8)	100%	20% (100% X0.8)	Achieved	Required		
PC801	Biostatistics and Research methodology	1.87	1.50	2.45	0.49	1.99	2.12	93.72	2.81
PC802	Social and preventive pharmacy	1.66	1.33	2.04	0.46	1.79	2.33	76.64	2.30
PC803	NDDS	1.36	1.09	2.33	0.47	1.55	2.15	72.27	2.17
PC804	CADD	2.40	1.92	2.20	0.44	2.36	2.42	97.52	2.93
PC808	Noveldrugdelivery SystemsLab	2.43	1.94	2.32	0.46	2.40	2.3	100	3.00
	Project work	2.42	1.94	2.42	0.48	2.42	2.3	100	3.00

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INDIRECT Pos ATTAINMENT

Graduate exit survey											
	1	2	3	4	5	6	7	8	9	10	11
Level1	24	30	33	16	33	41	38	33	14	13	23
Level2	170	163	152	166	139	145	135	134	145	84	33
Level3	36	33	48	45	33	27	36	48	42	36	39
Level4											
Sumof Thelevelso fPOs	230	226	233	227	205	213	209	215	201	219	199
Totalcoun tofno.of survey	77	77	77	77	77	77	77	77	77	77	77
Graduate exit survey	2.99	2.94	3.03	2.95	2.66	2.77	2.71	2.79	2.61	2.66	2.58

Alumni survey											
	1	2	3	4	5	6	7	8	9	10	11
Level1	33	45	42	36	33	27	36	48	45	33	42
Level2	66	48	54	64	36	56	46	34	48	44	62
Level3	116	118	122	112	121	115	112	118	93	127	80
Level4											
Sumofth elevelsof POs	215	211	218	212	190	198	195	200	186	204	184
Totalcoun tofno.of survey	73	73	73	73	73	73	73	73	73	73	73
Alumni	2.95	2.89	2.99	2.90	2.60	2.71	2.66	2.74	2.55	2.79	2.52

survey											

Employer survey											
	1	2	3	4	5	6	7	8	9	10	11
Level1	12	9	9	9	12	18	6	6	9	9	15
Level2	16	18	14	18	14	16	24	18	14	12	10
Level3	19	16	17	17	16	12	15	14	18	18	20
Level4											
Sumof Thelevelso fPOs	47	43	40	44	42	46	45	38	41	39	45
Totalcoun tof no.of survey	16	16	16	16	16	16	16	16	16	16	16
Employer survey	2.94	2.69	2.50	2.75	2.63	2.88	2.81	2.38	2.56	2.44	2.81

Indirect POs attainment											
Graduate Exitsur vey	2.99	2.94	3.03	2.95	2.66	2.77	2.71	2.79	2.61	2.66	2.58
Alumni survey	2.95	2.89	2.99	2.90	2.60	2.71	2.66	2.74	2.55	2.79	2.52
Employer survey	2.94	2.69	2.50	2.75	2.63	2.88	2.81	2.38	2.56	2.44	2.81
Average	2.96	2.84	2.84	2.86	2.63	2.78	2.72	2.63	2.57	2.63	2.63

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CollegeCode:SDIP

Overall PO attainment

Course-POAttainment2023-2024

Course code	Course name	Program outcomes											Average programmeoutcomes (max3.00)
		1	2	3	4	5	6	7	8	9	10	11	
PS101	Human AnatomyandPhysiologyI	3	2.33	2.33	2	2	2.33	2	2	3	-	-	2.37
PS102	Pharmaceutical Analysis– I	3	-	1.8	1.6	-	-	-	-	-	-	2.2	2.15
PS103	PharmaceuticsI	3	-	2	1.75	-	3	1.25	-	-	-	3	2.33
PS104	Pharm.Inorganic Chemistry	3	-	2	1	-	-	-	-	-	-	-	2.00
HS105	communication skills	3	-	-	2	-	1	-	3	-	-	2	2.37
PS108	HumanAnatomy& Physiology–ILab	3	2.33	2.33	2	2	2.33	2	2.33	3	-	-	2.37
PS109	Pharmaceutical Analysis– ILab	2	3	2	2	2	2	-	2	-	-	-	2.44
PS110	Pharmaceutics-ILab	3	2.67	2.33	1.67	2	1.67	-	2.7	-	-	-	2.56
PS111	Ph.Inorg. Chemistry – ILab	2.67	3	2.67	2.33	2.67	2.33	-	3	-	-	-	2.67
PS201	HumanAnatomy AndPhysiology–II	3	-	2	1	-	-	-	-	-	-	-	2.00
PS202	Pharm.Organic Chemistry-I	3	-	3	1	-	-	-	-	-	1	-	1.88
BS203	Biochemistry	3	-	-	2		-	-	-	1.5	2	-	2.13
BS204	Pathophysiology	2	-	1	2		-	-	-	-	-	-	1.66
CS205	Computerapplicationin Pharmacy	1	-	3	2	-	-	-	-	-	-	3	2.25
PS207	HumanAnatony& PhysiologyIILab	3	2.33	2.33	2		2.33	2	2.33	3	-	-	2.37
PS208	Pharmaceutical	2	2.67	3	2	2.67	2	-	2	-	-	-	2.33

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	Organic ChemistryILab												
BS209	BiochemistryLab	2	2.67	3	2	2.67	2	-	2	-	-	-	2.33
CS210	ComputerApplicationsin PharmacyLab	2	2	3	2	3	2	-	3	-	-	2	2.37
PS301	Pharmaceutical Organic Chemistry–II	2	-	2	2	-	-	-	-	-	-	-	2.13
PS302	Physical Pharmacy-I	3	-	2	2	-	-	-	-	-	-	3	2.5
PS303	Pharmaceutical Microbiology	3	-	-	1.2	-	-	2.2	-	-	-	2	2.10
PC304	Pharmaceutical Engineering	3	2	2.7	2	-	-	1.5	-	2	-	-	2.5
PS305	Pharmaceutical OrganicChemistry–II Lab	2	2.67	3	2	2.67	2	-	2	-	-	-	2.44
PS306	Physical Pharmacy–ILab	3	-	2	2	-	-	-	-	-	-	3	2.5
BS307	Pharmaceutical MicrobiologyLab	3	2.67	2.6	2	2	2.3	2.3	2.3	-	-	-	2.41
PC301	Pharmaceutical EngineeringLab	3	2	2.7	2	-	-	1.5	-	2	-	-	2.14
PS401	Pharmaceutical OrganicChemistry-III	2	-	2	2	-	-	-	-	-	-	-	2.13
PS402	Physical PharmaceuticsII	2.5	-	2	2	-	-	-	-	-	-	-	2.17
PC403	Pharmacology–I	2.75	-	-	1.5	-	-	-	-	-	-	-	2.13
PC404	Pharmacognosy & PhytochemistryI	3	-	-	2		-	-	-	1.5	2	-	2.15
PC405	Pharmaceutical Jurisprudence	3	-	-	2	-	-	1	-	-	-	-	2.0
PS406	Physical Pharmaceutics-IILab	2	2.67	3	2	2.67	2	-	2	-	-	-	2.33
PC407	Pharmacology-I Lab	3	2	-		-		2	-	-	-	-	2.3
PC408	Pharmacognosy andPhytochemistry-I Lab	3	-		2			-	-	1.5	2	-	2.15

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MC400	Gender SensitizationLab	3	-	2	2	-	-	-	-	-	-	-	2.17
PS501	Medicinal Chemistry-I	2.8	-	-	2	-	-	1	-	-	-	-	1.98
PS502	Industrial Pharmacy–I	3	-	2	1	-	-	-	-	-	-	-	2.0
PS503	Pharmacology–II	3	2	-	-	-	-	2	-	-	-	-	2.3
PS504	Pharmacognosy &Phytochemistry II	3	-	-	2	-	-	-	-	1.5	2	-	2.13
PS507	Celland MolecularBiology	3	-	-	1.2	-	-	2.2	-	-	-	2	2.10
PS508	Medicinal Chemistry-I lab	3	2	-	-	-	-	2	-	-	-	-	2.3
PS509	IndustrialPharmacy–ILab	3	-	2	1	-	-	-	-	-	-	-	2.0
PS510	Pharmacology-I Lab	3	2	-	-	-	-	2	-	-	-	-	2.3
PS5111	Pharmacognosy andPhytochemistry-IILab	3	2.67	3	2	2	2.3	2.3	2	-	-	-	2.41
MC500	Environmental Science	-	-	-	-	2	-	2	-	-	2	-	2.00
PS601	Medicinal Chemistry–II	2.8	-	-	2	-	-	1	-	-	-	-	1.98
PS602	Pharmacology–III	2.5	-	2	2	-	-	-	-	-	-	-	2.17
PS603	Herbaldrug Technology	3	2	-	-	-	-	2	-	-	-	-	2.3
PS604	Biopharmaceutics& Pharmacokinetics	3	-	2.4	2	-	1.6	2	1.2	-	-	1	1.9
PS608	Screening Methodsin Pharmacology	3	3	3	2.5	2.5	3	1.25	2	-	-	-	2.53
PS609	C601.7 MedicinalChemistryII Lab	3	3	3	2	2	-	1	2	-	-	-	2.3
PS610	C601.9 Pharmacology–IIILab	3	3	3	2.5	2.5	3	1.25	2	-	-	-	2.53

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PS611	HerbalDrugTechnologyLab	3	3	3	2	2	-	1	2	-	-	-	2.18
MC600	HumanValues	-	-	-	-	-	2.5	-	2	2.5	-	2.3	1.91

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	AndProfessional Ethics												
PC701	Instrumental Method of Analysis	2.4	-	2	1.6	-	-	2	-	-	-	2.2	2.4
PC702	Industrial pharmacy-II	3	-	2.4	2	-	1.6	2	1.2	-	-	1	1.9
PC703	Pharmacy practice	2.5	-	2	2	-	-	-	-	-	-	-	2.17
PC704	Medicinal Chemistry–III	2.8	-	-	2	-	-	1	-	-	-	-	1.98
HS705	Pharmaceutical marketing	3	2	-	-	-	-	2	-	-	-	-	2.3
PC709	Instrumental Method of Analysis lab	3	3	3	2	2	-	1	2	-	-	-	2.3
PC710	Practice school	3	-	2.4	2	-	1.6	2	1.2	-	-	1	1.9
PC711	Industrial training	3	3	3	2	2	-	1	2	-	-	-	2.3
PC801	Biostatistics and Research methodology	1.6	-	2	2	-	-	-	-	-	-	-	2.12
PC802	Social and preventive pharmacy	2.8	-	2.4	1.8	-	-	2.4	-	-	-	2.2	2.32
PC803	NDDS	3	-	2	1.6	-	-	2	-	-	-	2.2	2.17
PC804	Nanotechnology	3	2	-	-	-	-	2	-	-	-	-	2.3
PC808	Noveldrug DeliverysystemsLab	3	3	3	2	2	-	1	2	-	-	-	2.3
PC810	MajorProject	3	3	3	2	2	-	1	2	-	-	-	2.3
B.Pharm,Directattainment(3Max)		2.42	2.32	2.16	2.09	2.53	2.09	2.09	2.16	1.96	1.91	1.91	

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B.Pharm,Directattainment(100%)	80.66	77.33	72	69.66	84.33	69.66	69.66	72	65.33	63.66	63.66
B.Pharm,Directattainment(80%)	64.66	61.86	57.60	55.72	67.46	55.72	55.72	57.47	57.60	50.92	50.92
B. Pharm, Indirectattainment(20%)	18.9	16.43	15.24	15	16.43	17.14	18.02	16.77	16.11	16.59	18.57
Totalattainment,%	83.56	78.29	72.84	70.72	83.89	72.86	73.74	74.24	73.71	67.51	69.49

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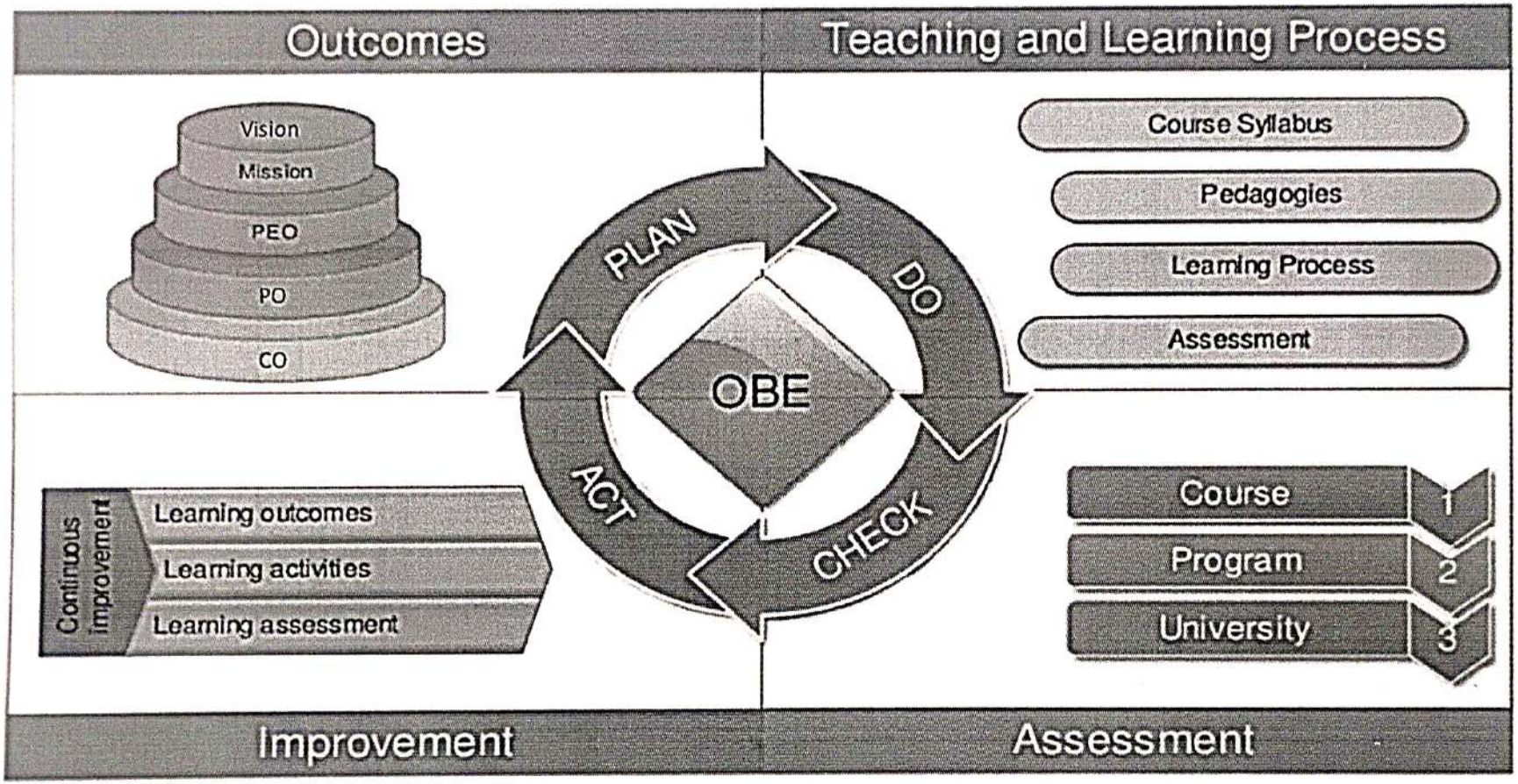
OBE Manual


Outcomes
Teaching and Learning Process
Vision
Mission
PEO
PO
CO
PLAN
DO
CHECK
ACT
OBE
Course Syllabus
Pedagogies
Learning Process
Assessment
Continuous improvement
Learning outcomes
Learning activities
Learning assessment
Course
Program
University
1
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3
Improvement
Assessment


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INDEX

Abbreviations:

OBE	Outcome Based Education	BTL	Bloom's Taxonomy Level
LOT	Lower Order of Thinking	HOT	Higher Order of Thinking
PEO	Program Educational Objectives	PO	Program Outcome
CO	Course Outcome	PSO	Program Specific Outcome
UE	University Theory Exam	POE	Practical Oral Exam
CE	Course Exit Survey	HoD	Head of Department
PC	Program Coordinator	DAB	Department Advisory Board
PAC	Program Assessment Committee	AY	Academic Year

Outcome Based Education (OBE) is an educational model that forms the base of a quality education system. There is no single specified style of teaching or assessment in OBE. All educational activities carried out in OBE should help the students to achieve the set goals. The faculty may adapt the role of instructor, trainer, facilitator, and/or mentor, based on the outcomes targeted.

OBE enhances the traditional methods and focuses on what the Institute provides to students. It shows the success by making or demonstrating outcomes using statements "able to do" in favor of students. OBE provides clear standards for observable and measurable outcomes.

Benefits of OBE

- **Clarity:** The focus on outcome creates a clear expectation of what needs to be accomplished by the end of the course.
- **Flexibility:** With a clear sense of what needs to be accomplished, instructors will be able to structure their lessons around the students' needs.
- **Comparison:** OBE can be compared across the individual, class, batch, program and institute levels.
- **Involvement:** Students are expected to do their own learning. Increased student involvement allows them to feel responsible for their own learning, and they should learn more through this individual learning.

India, OBE and Accreditation

From 13th June 2014, India has become the permanent signatory member of the Washington Accord. Implementation of OBE in higher technical education also started in India. The National Assessment and Accreditation Council (NAAC) and National Board of Accreditation (NBA) are the autonomous bodies for promoting global quality standards for technical education in India. NBA has started accrediting only the programs running with OBE from 2013.

The National Board of Accreditation mandates establishing a culture of outcome based education in institutions that offer Engineering, Pharmacy, Management program. Reports of outcome analysis help to find gaps and carryout continuous improvements in the education system of an Institute, which is very essential.

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Vision, Mission and Quality Policy of Institute

Vision of Institute: To become a leading Institute in producing high quality technical professionals for nation building.

Mission of Institute:	**Quality Policy of Institute:**
• To nurture the students with high quality education. • To promote creativity, excellence and discipline. • To explore career opportunities for the students. • To enhance industry-institute interaction and research activities. • To create social and environmental awareness.	We are committed to create quality professionals to meet the emerging industrial and social needs through: • Innovative quality education. • Technology oriented system administration. • State of art infrastructure. • Congenial & disciplined learning environment. • Inculcating moral & ethical values among faculty and students. • Aiming at continual improvement in all activities.

Program Outcomes (POs)

- **PO 1 : Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- **PO 2 : Problem Analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO 3 : Design/Development of Solutions :** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO 4 : Conduct Investigations of Complex Problems :** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- **PO 5 : Modern Tool Usage :** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
- **PO 6 : The Engineer and Society :** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- **PO 7 : Environment and Sustainability :** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- **PO 8 : Ethics :** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- **PO 9 : Individual and Team Work :** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- **PO 10 : Communication :** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- **PO 11 : Project Management and Finance :** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- **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.

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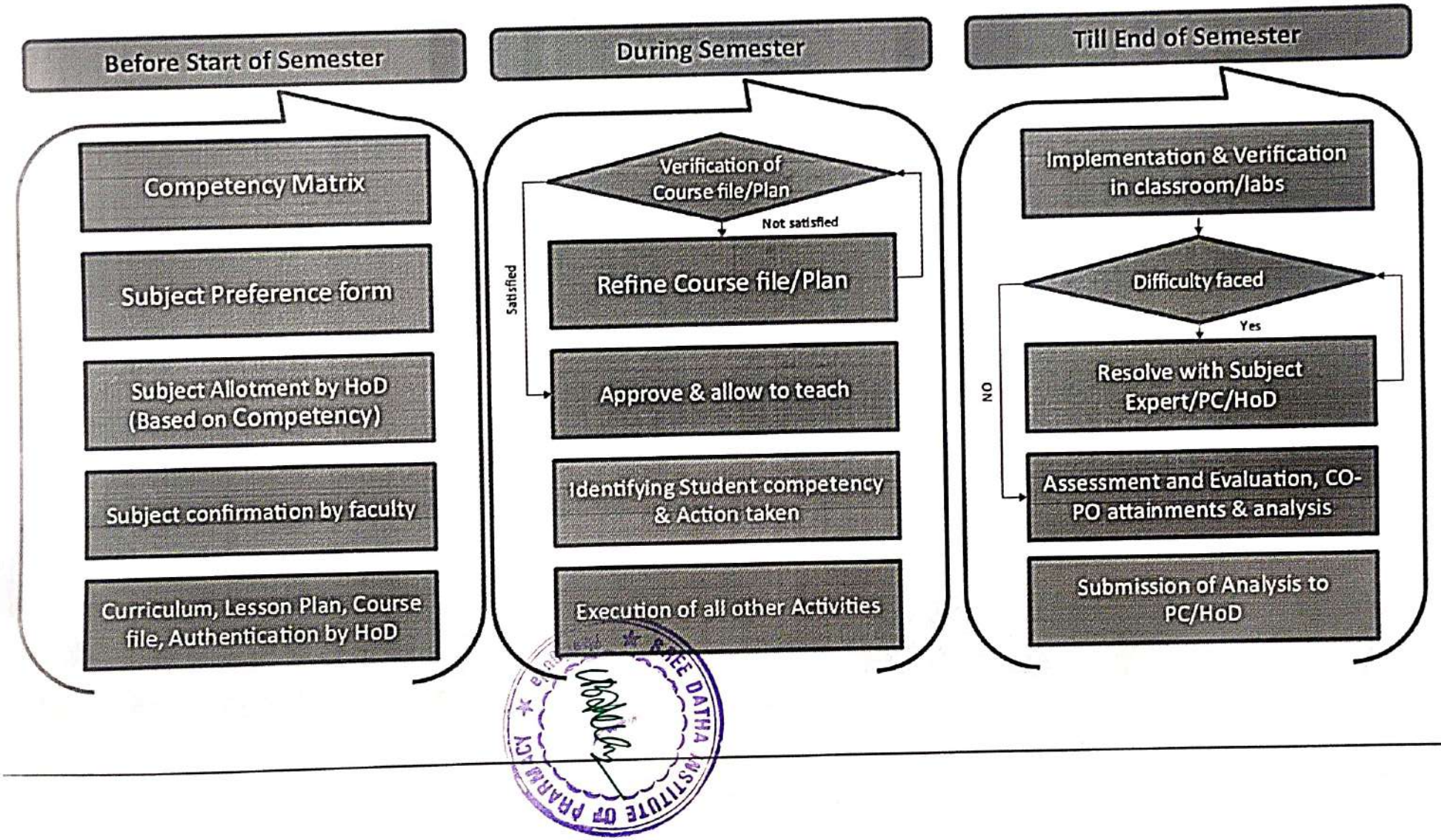
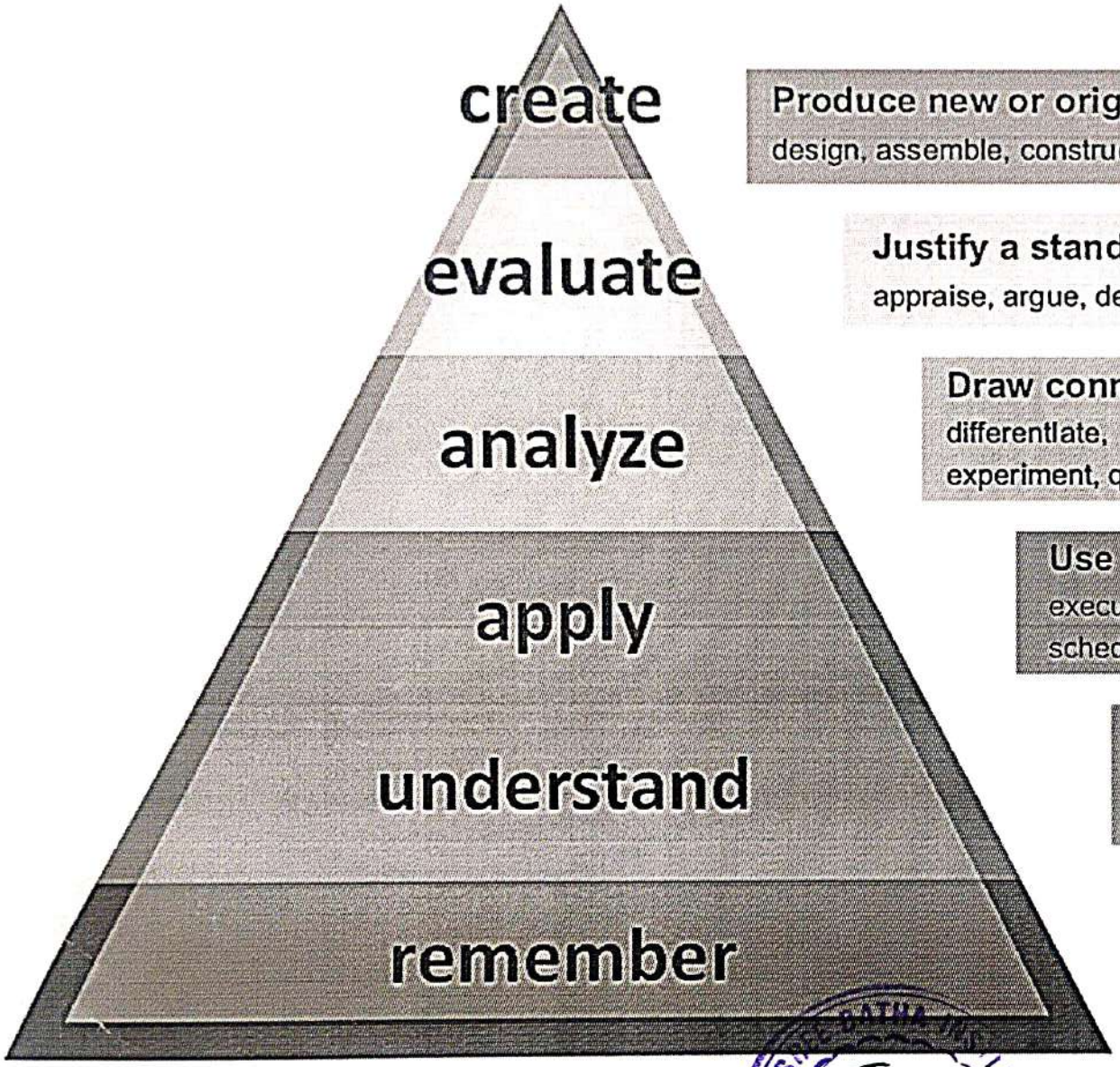
OBE Framework of the Institute





Produce new or original work
design, assemble, construct, conjectur, develop, formulate author, investigate

Justify a stand or decision
appraise, argue, defend, judge, select, support, value, critique, weigh

Draw connections among ideas
differentlate, organize, relate, compare, contrast, distinguish, examine, experiment, question, test

Use information in new situations
execute, implement, solve. use, demonstrate, interpret, operate, schedule, sketch

Explain ideas or concepts
dessity, describe, discuss, explain, identity, locate, recognize, report, select, translate

Recall facts and basic concepts
define, duplicate, list, memorize, repeat, state

The cognitive process dimensions- categories					
Lower Order of Thinking (LOT)			Higher Order of Thinking (HOT)		
Remember	**Understand**	**Apply**	**Analyse**	**Evaluate**	**Create**
Recognizing (identifying) Recalling (retrieving)	Interpreting Illustrating Classifying Summarizing Inferring (concluding) Comparing Explaining	Executing Implementing	Differentiating Organizing Attributing	Checking (coordinating, detecting, testing, monitoring) Critiquing (judging)	Planning Generating Producing (constructing)

The Knowledge Dimension			
Concrete Knowledge → Abstract knowledge			
Factual	**Conceptual**	**Procedural**	**Metacognitive**
• Knowledge of terminologies • Knowledge of specific details & elements	• Knowledge of classifications and categories • Knowledge of principles & generalizations • Knowledge of theories, models & structures	• Knowledge of subject specific skills and algorithms • Knowledge of subject specific techniques and methods • Knowledge of criteria for determining when to use appropriate procedures	• Strategic Knowledge • Knowledge about cognitive task, including appropriate contextual and conditional Knowledge • Self- Knowledge

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Action Verbs for Course Outcomes

Sample Action verbs:

Lower Order of Thinking (LOT)			Higher Order of Thinking (HOT)		
Remember	**Understand**	**Apply**	**Analyse**	**Evaluate**	**Create**
Define	Explain	Solve	Analyse	Reframe	Design
Describe	Describe	Apply	Compare	Criticize	Create
List	Interpret	Illustrate	Classify	Judge	Plan
State	Summarise	Calculate	Distinguish	Recommend	Formulate
Match	Compare	Sketch	Explain	Grade	Invent
Tabulate	Discuss	Prepare	Differentiate	Measure	Develop
Record	Estimate	Chart	Appraise	Test	Organize
Label	Express	Choose	Conclude	Evaluate	Produce

Illustration (use of action verb w.r.t knowledge dimension and order of thinking):

Use of action verbs	Factual	Conceptual	Procedural	Metacognitive
Remember	**List** properties of soil	**Recognize** characteristic of material	**Explain** working of pump	**Identify** strategies for report writing
Understand	**Summarize** features of a new product.	**Classify** adhesives by toxicity.	**Explain** assembly instructions.	**Predict** the behavior of member
Apply	**Respond** to frequently asked questions.	**Provide** advice to team members	**Carry out** pH tests of water samples.	**Use** modern techniques to get solution
Analyse	**Explain** the selection of tool/ activity.	**Differentiate** LOT and HOT	**Integrate** compliance with regulations.	**Assess** the project work
Evaluate	**Select** the appropriate tool	**Determine** relevance of results	**Judge** efficiency of sampling techniques.	**Reflect** on one's progress.
Create	**Generate** a log of daily activities.	**Assemble** a team of experts	**Design** efficient project workflow.	**Create** a learning portfolio.

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Guidelines for writing Course Outcome Statements

Well-written course outcomes involve the following parts:

1. Action verb
2. Subject content
3. Level of achievement as per BTL
4. Modes of performing task (if applicable)

Illustration:

Students are able to

1) Design column splices and bases. → Action verb (underlined)
2) Determine the losses in a flow system. → Subject content
3) Use structural analysis software to a competent Level. → level of achievement
4) Present seminar on real life problems. → Modes of performing task with action verb (underlined)

While writing COs the following questions/points must be addressed properly.

Specific	Is there a description of precise behavior and the situation it will be performed in ? Is it concrete, detailed, focused and defined ?
Measurable	Can the performance of the outcome be observed and measured ?
Achievable	With a reasonable amount of efforts and application can the outcome be achieved ? Are you attempting too much ?
Relevant	Is the outcome important or worthwhile to the learner or stakeholder ? Is it possible to achieve this outcome ?
Time-Bound	Is there a time limit, rate, number, percentage or frequency clearly stated ? When will this outcome be accomplished ?

Note: If Laboratory is given as separate course (with course code) then there should be separate course outcomes for Laboratory.

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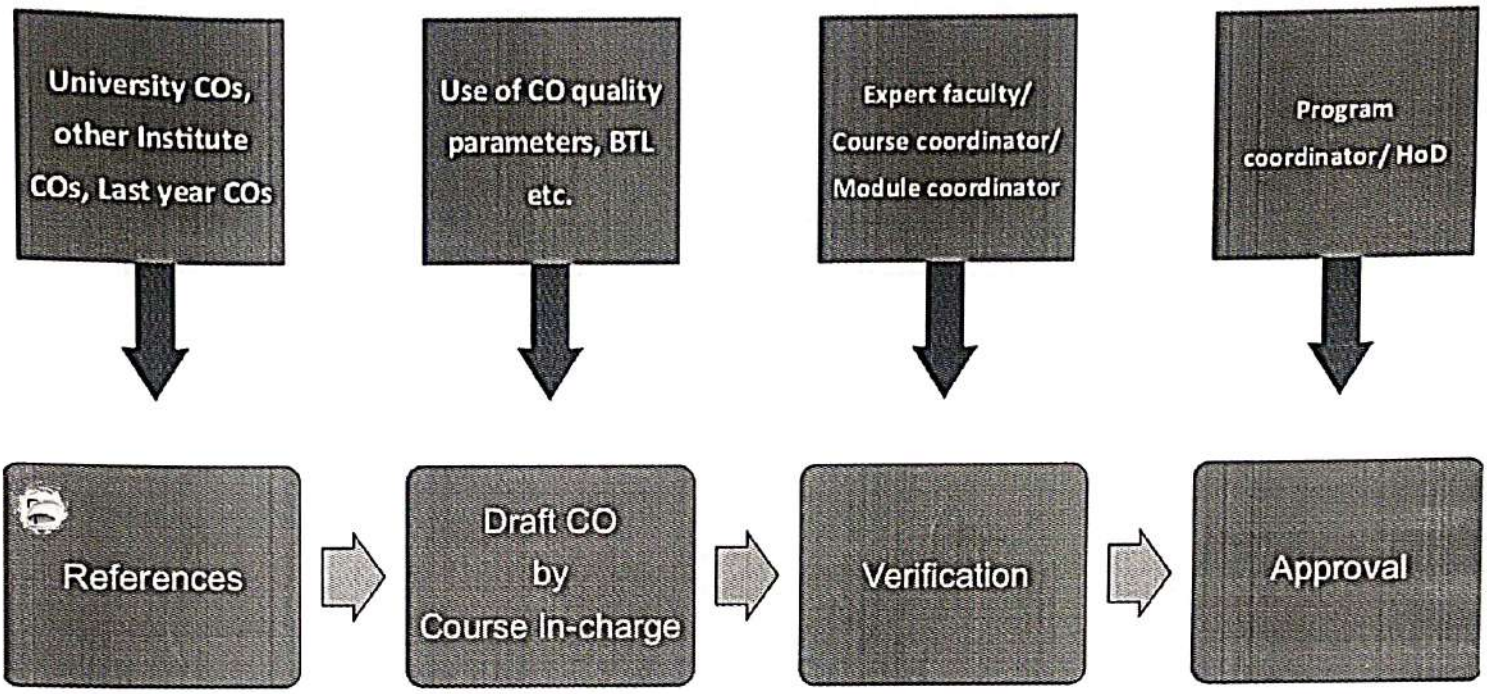
Quality of Course Outcome

ıss at department level to maintain quality of CO



elines/Checklist for COs:

Number of COs	2 to 4
CO essentials	Action Verb, Subject Content, Level of Achievement, Modes of Performing task (If Applicable)
Based on BTL	Understand, Remember, Apply, Analyse, Evaluate, Create
Number of BTL Considered in one course	Minimum 3
Technical Content/ point of curriculum	All curriculum contents are covered
Curriculum gap	Additional CO for gap identified/filling. Adds more weightage

CO-PO Mapping Guidelines

CONSIDER ANY TWO MINIMUM CRITERIA FOR CO-PO MAPPING JUSTIFICATION

A] Contact Hours: Lecture, Tutorial and Practical

Level	Contact Hours in Percentage (including Lecture, Tutorial & Practical)
No mapping (-)	< 5%
Low (1)	5- 15%
Medium (2)	15- 25%
High (3)	>25%

Description

Number of Lectures = 3per week x 12 weeks = 36 Hours
Tutorial = 1Hr x 12 Weeks = 12 Hours
Practical = 2Hr x 12 Week = 24 Hours
Total Hrs = 36+12+24 = 72 Hrs
Example: Let, CO1 related points are engaged in 10 lectures + 1 Tutorial and 2 practical Hours
Then contact hours = 10+1+2x2 = 15 hours
Therefore, contact hours in percentage = (15/72) x 100 = 20.8 %. Medium mapping (2)

B] Number of Assessment Tools used

Level	Assessment tools used to assess the CO
No mapping (-)	0
Low (1)	1 or 2
Medium (2)	3
High (3)	4 or more

Description

CO assessment tools: Mid-term test, end term test, class test, surprise test, oral, continuous internal assessment (Assignment, Lab practical assessment), course exit survey, University theory exam, oral exam/ practical oral exam, external feedback, Activities (Survey, guest lecture, workshop, seminar, case studies, mini/minor projects etc.)
Every CO must be correlated with each PO and appropriate mapping may be selected.

C] Key words

Most of the times, appropriate keyword is sufficient for mapping.

Level	Keywords Used in writing COs
No mapping (-)	Key words related with LOT and not related with course or any outcomes
Low (1)	Part of PO is reflected through keywords/action verbs
Medium (2)	Major part of PO is reflected through keywords/action verbs. + moderate level performance is expected from student to achieve PO
High (3)	Exact action verb of PO + critical performance expected from student to achieve PO

D] Critical Assessment Record for PO5 to PO12

Level	Assessment Depth
No mapping (-)	No rubric used for assessment
Low (1)	Single rubric category used for assessment
Medium (2)	Two rubric category used for assessment
High (3)	Three or more rubric category used for assessment

Illustration

Category No.	Rubric Category	Level of Performance			
		4	3	2	1
1	Group Leader	Seeks opportunities to lead; while leading is attentive to each member	Will take lead if group insists; not good at being attentive to each member	Resists taking on leadership role; while leading allows uneven contributions	Never shows up
2	Contribution	Always contributes; quality of contributions is exceptional	Sometimes contributes; quality of contributions is fair	Rarely contributes; contributions are often peripheral or irrelevant; frequently misses team sessions	Never shows up and never contributes.
3	Cooperation	Always cooperative with all members, support good initiatives	cooperative with members,but sometimes argue	cooperative with few members, and argue most of time	Non-cooperative

E] Assessment Type

Level	Assessment Depth
No mapping (-)	Test items (1) OR Nil
Low (1)	Test items (2) OR Assessment item (1)
Medium (2)	Test items (2) + Assessment item (1) OR Assessment item (2)
High (3)	Test items (2) + Assessment item (2) and More

Test Item:
Mid-term, End term, class test, surprise test, University theory exam (Questions + additional information)
Assessment items:
Quizzes, Assignment problems, simulation, laboratory experiments, project, field work, report presentation, tutorials, activities, etc.

F] Any other criteria with proper justifiable document is acceptable.

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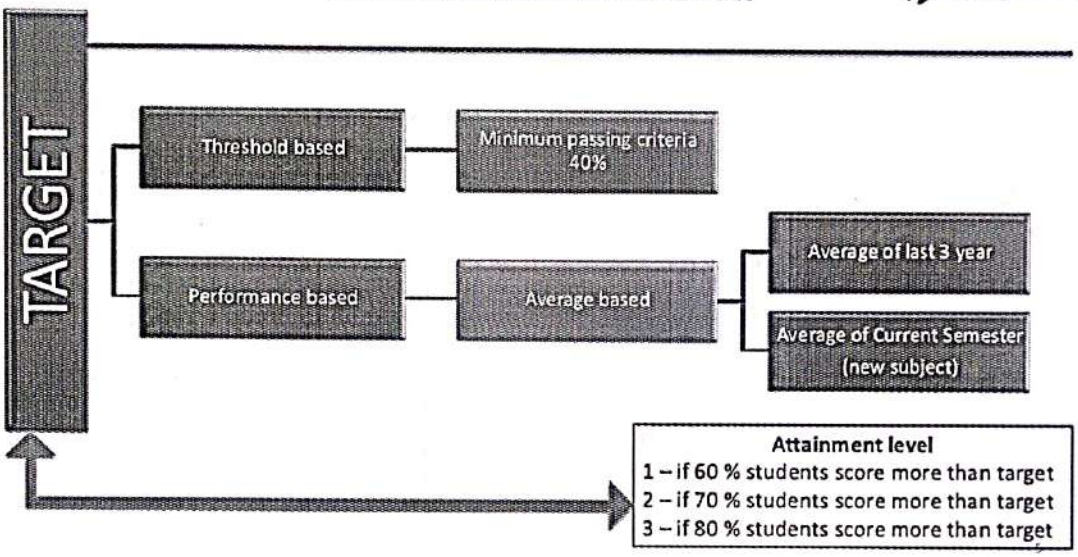
Targets/ Attainment Levels

DY PATIL COLLEGE of ENGINEERING & TECHNOLOGY

SETTING TARGETS FOR ATTAINMENT



Illustration

Case of Course	Avg % result in last year/ 3 years	Clue for keeping target	Attainment 1 if	Attainment 2 if	Attainment 3 if
Course 1	<40 %	Threshold	40 % cross target	50% cross target	60% cross target
Course 2	Above 40% but less than 50%	Threshold with high attainment level	60 % cross target	70% cross target	80% cross target
Course 3	Above 50 %	Average based	40 % cross target	50% cross target	60% cross target
Course 4	Above 80 %	Average based with high attainment level	60 % cross target	70% cross target	80% cross target

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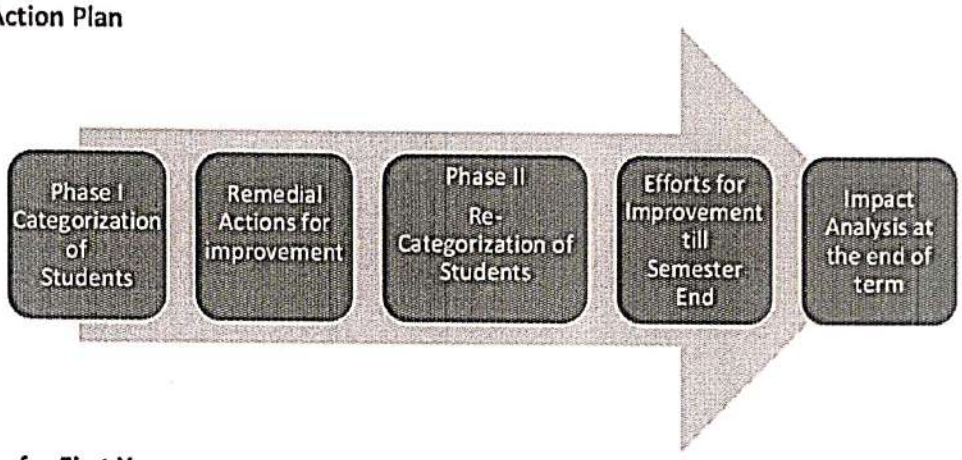
Student Competency

Chart of Action Plan



Guidelines for First Year

Phase I- Categorization (After 15 Days of start of semester)	Phase II- Re-categorization (After Mid Term Result)
12th Marks	Mid Term Result
Prerequisite Test	Timely Completion of work
Surprise Test after 15 days	Lab Performance
Attendance & Behaviour	Attendance & Behaviour
	Previous Semester University Result (Applicable for Sem-II)

Guidelines for Higher Classes [SY, TY & BE]

Phase I- Categorization (After 15 Days of start of semester)	Phase II- Re-categorization (After Mid Term Result)
Previous semester University Result whichever is available	Mid Term Result
Prerequisite Test	Timely Completion of work
Surprise Test after 15 days	Lab Performance
Attendance & Behaviour	Attendance & Behaviour
	Previous semester University Result

Base Score for student category

<50% -Slow Learner

50% to 65% - Average Learner

>65%-Advanced Learner

Strategies for Slow, Average and Advanced Learners

For Slow learners

- Document/record of remedial classes with timetable & attendance
- Specially designed assignment/ task
- Student study group for peer to peer learning
- Individual Counseling
- Student help desk

Note: Remedial sessions should be conducted once every week.

For Average Learners

- Additional assignment/ task
- Encouraging for timely and effective completion of work
- Conduction of quiz, orals etc.
- Solving previous year University question papers and test papers
- Presentation on technical topics/ case studies/mini projects

Note: Activities should be on continuous basis.

For Advanced Learners

- Encouraging to present & publish papers in journals/conferences/competitions
- Guidance for GATE/ competitive Examination
- Encouraging to participate in professional activities.
- Specially designed activities to improve the portfolio of students.
- Individual guidance for career building

Note: Activities should be on continuous basis.

Rubrics for Assessment

What is Rubric?

- A scoring guide with criteria for evaluating students' work in direct relation to one or more of the PO's and a rating scale indicating differing levels of performance.

Rubrics are:

- Used to examine how well students have met CO or PO rather than how well they perform compared to their peers.
- Typically include measurable descriptors that define expectations at each level of performance for each criterion.

Sample Rubrics for CO assessment in Laboratory: (10 Marks)

Category	Level of Performance		
	3 marks	**2 marks**	**1 marks**
Performance in Lab (3)	• Able to perform experiment independently within prescribed time • The result is close or to standard value.	• Able to perform experiment within prescribed time • Large deviation of result from standard value	• Able to perform the experiment partially with no results.
Level of Understanding / Q&A (3)	• Able to show strong theoretical background of experiment • Able to interpret proper data to reach conclusion	• Partially show strong theoretical background of experiment • Partially able to interpret data to reach conclusion.	• Lack of theoretical background of experiment or lack of interpretation of data
	Documentation Level		
	4 marks	**3 marks**	**2 marks**
Quality of Submission (4)	• Graphs, table, contents are well constructed. • All-important calculations and result have been clearly made. • Conclusions/ observations/ comments done clearly	• Shortfalls found in any of the contents of the report viz. graphs, tables, calculations, results, conclusions/ Comments, etc.	• Report submitted but not written properly.

Rubric maximum score = 4+3+3 (high marks) = 10 (100%)

Rubric minimum score = 1+1+2 (low marks) = 4 (40%)

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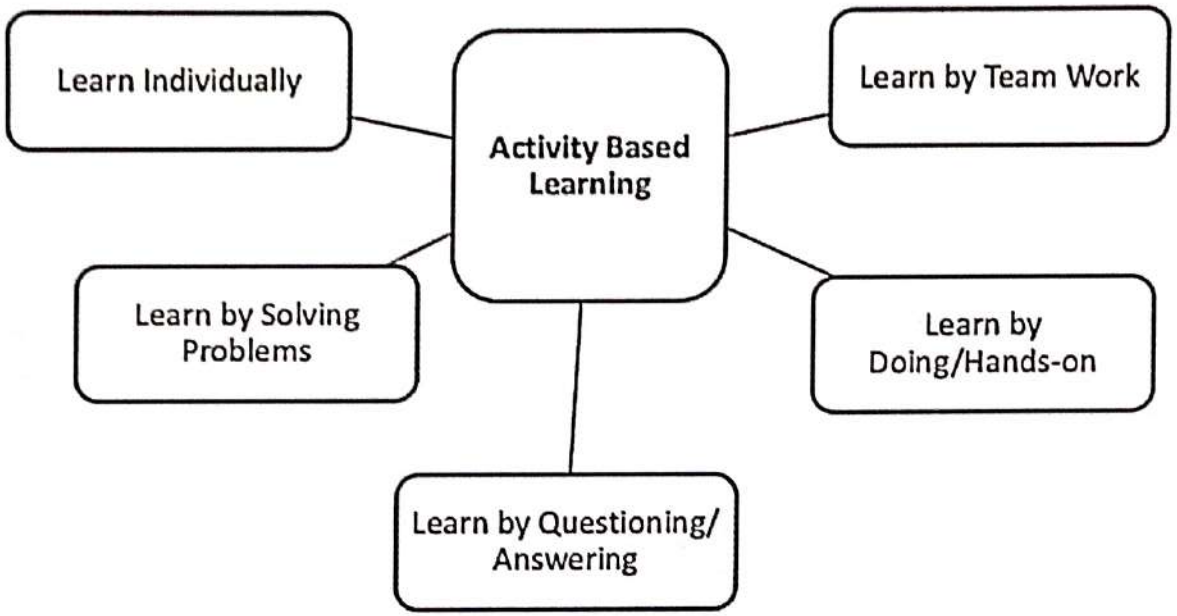
Activity Based Learning



Examples:

MOOC, Flipped Classroom, Think Pair Share, Think Pair Solo, Four Corners, Round Robin, Collaborative Learning, Jig-Saw Puzzle, Matrix Method, Peer Learning, Work-Based Learning, Problem-Based Learning, Personalized Learning, Group Discussion, Debate, Case Studies, Fish Bowl, Reciprocal Teaching, etc.

List of Assessment Tools

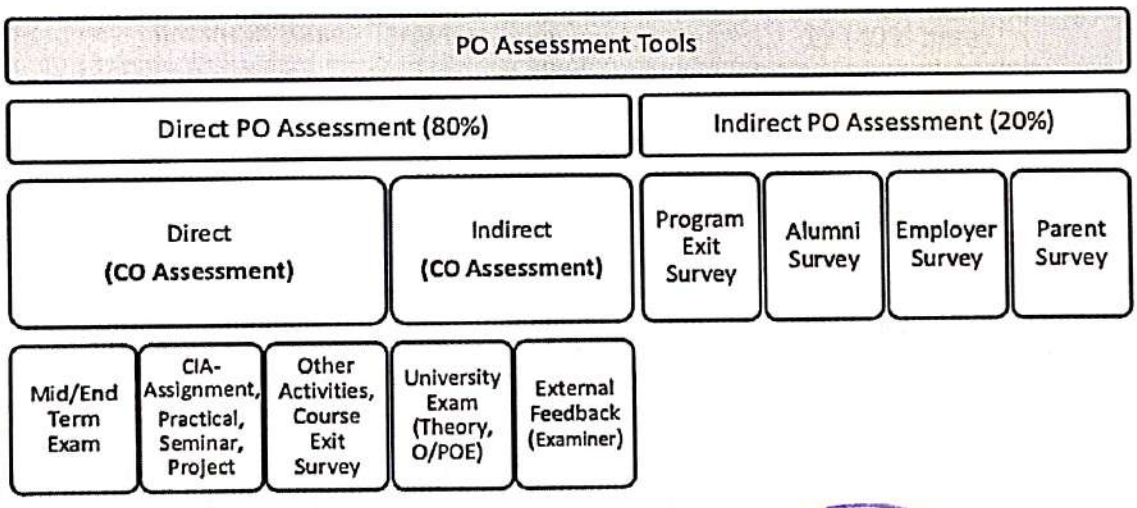
All (Direct + Indirect) CO Assessment Tools = PO Direct Assessment Tools

Sample CO Assessment Tools

- Mid Term Test
- End Term Test
- Quiz
- Assignment
- Practical/ Lab work
- Industrial Visit, Workshop
- Other Task/Activity
- University Exam
- Oral/POE
- Course Exit Survey
- External Feedback (External Examiner/Trainer, Campus Placement Technical Expert)

Direct Tools: (Measurable in terms of marks and w.r.t. CO) Assessment done by faculty at Institute level

Indirect Tools: (Non measurable in terms of marks and w.r.t. CO) Assessment done at University Level



Sample Indirect PO assessment Tools

- Program Exit Survey
- Alumni Survey
- Employer Survey of Alumni
- Parent Feedback

CO Attainment Calculations

Attainment Weightage:

Consider following weightage for PO Assessment Tools

PO Assessment Tools	
Direct PO Assessment (80%)	Indirect PO Assessment (20%)

Consider following weightage for CO Assessment Tools

PO Direct Assessment Tools = CO Assessment Tools		
Direct CO Assessment	**Indirect CO Assessment**	
20	80	University BE Curriculum
60	40	University CBCS (from 2018 FY batch)

Illustration of Internal Test Examination Attainment:

Course	Engg. Mathematics
Maximum Marks	30
Number of Students Appeared	60
Passing Level (Threshold Based Target)	12 (40% here)

Now, we need target (mentioned above in table) and marks of all students to calculate attainment. The table below shows marks of all students

5	23	5	11	21	0
0	12	5	2	7	4
0	22	3	3	10	7
5	18	9	20	17	24
23	8	25	16	9	10
12	2	8	11	22	4
26	13	2	1	30	19
24	22	16	10	1	2
12	21	8	25	11	4
24	9	22	20	20	17

Now

Number of student achieving 12 or more marks	28
% of students achieving 12 or more marks	(28/60)*100 = 46.6%

1 – if 40 % students score more than target
2 – if 50 % students score more than target
3 – if 60 % students score more than target

Then Attainment is = 1 (from 46.6%)

Illustration of Feedback/Rubric Based Assessment & Attainment

Course	SOM
Maximum Marks	5
Number of Students Appeared	60
Passing Level (Threshold Based Target)	3 (>50% here)

Now, we need target (mentioned above in table) and response/feedback of all students to calculate attainment. The table below shows score/response of all students

4	3	3	1	2	5
3	3	2	1	2	4
4	2	5	5	1	5
1	1	5	2	2	4
2	2	5	3	5	1
2	4	2	5	2	1
3	4	4	2	4	3
5	2	4	3	2	5
5	5	4	4	4	2
5	4	4	2	3	5

Now

Number of student giving 3 or more score	37
% of students with 3 or more marks	(37/60)*100 = 61.7%

1 – if 40 % students score more than target

2 – if 50 % students score more than target

3 – if 60 % students score more than target

Then attainment is = 3 (from 61.7%)

***

Overall Attainment of CO

Let's assume CO1 is assessed using any 2 direct + 2 Indirect CO assessment tools, then

A. Overall CO Attainment = (Weightage x Direct CO attainment) + (Weightage x Indirect CO attainment)

For University regular BE Curriculum and

B. Overall CO Attainment = (20 % x Direct CO attainment) + (80% x Indirect CO attainment)

For University CBCS Pattern,

C. Overall CO Attainment = (60 % x Direct CO attainment) + (40% x Indirect CO attainment) for Autonomous Pattern

 # Note: Appropriate % weightage distribution may be considered for any number of direct/indirect assessment tools with proper justification at department/faculty level.

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Illustration

Course CO	PO											PSO			BTL
	1	2	3	4	5	6	8	9	10	11	12	1	2	3	
C202.1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	Remember
C202.2	3	3	-	-	-	-	-	-	-	-	-	-	-	-	Understand
C202.3	-	3	-	-	-	-	-	-	-	-	-	-	-	-	Apply
C202.4	-	3	-	-	-	-	-	-	-	-	-	-	-	-	Apply
C202.5	-	-	3	-	2	-	-	-	-	-	2	-	-	-	Analyse
C202.6	-	-	-	-	3	2	-	-	-	-	-	3	-	-	Analyse

So we finalize this assessment tools and then weightages

CO1 to CO4: Midterm & or end term + Continuous assessment (Assignment) + UE (PO1, 2)

CO5: Mid & or End term + Assignments + **Activity (rubric for PO5, 12)** + UE (PO3)

CO6: Mid & or End term + Assignments + **Activity (rubric for PO5, 6)** + UE (PSO1)

Direct Tools (60%) (with justified/appropriate weightage)	Indirect Tool (40%)

Sample List of Activities with BTL

Activities	Possible BTL	PO Mapping
Tutorial- Write-ups	Understand, Apply	Any relevant PO from 1 to 4
Practical-Experiments	Understand, Apply, Analyse, Evaluate, Create	Any Relevant PO
Test/Quiz	Understand, Apply, Analyse	Any relevant PO from 1 to 4
Students' Seminar	Understand, Apply, Analyse	Any PO from 1, 2, 8, 10
Case Study	Understand, Apply, Analyse	Any Relevant PO
Presentation/Oral	Understand	
Guest Lecture	Understand	
Visits	Understand	
Survey & Analysis	Apply & Analyse	
Workshop/Hands-on Training	Apply, Analyse, Evaluate	
Task	Evaluate, Create	
Minor Project	Create	

Note: Faculty/ department can conduct other than the mentioned activities with BTL, PO and proper justification.

Activity Planning Guidelines (PO5 to PO12)

Sr. No.	Activity	Contact Hours	Minimum Assessment Tool	Mapping Level
1	Seminar Presentation	1 to 6 hrs	Feedback or Quiz or Rubric Based Assessment	1
	Case Study			
	Guest Lecture			
	Visits			
	Survey & Analysis			
2	Visits	7 to 20 Hrs	i) Feedback or Quiz	2
	Survey & Analysis		ii) Rubric Based Assessment for Report, Presentation etc.	
	Workshop / Hands -on Training			
	Task			
3	Workshop/Hands - on Training	More than 20 Hrs	i) Feedback or Quiz	3
	Task		ii) Rubric Based Assessment for each PO	
	Minor Project		iii) Impact analysis	

Note: Department may use other additional criteria and justify the mapping level.

Contribution of Course Attainment in PO Attainment

Illustration

Let us assume CO-PO mapping of a course

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	2	1	-	-	-	-	-	-	-	-	-	3	-	-
3	-	3	1	-	-	-	-	-	-	-	-	-	3	-	-
4	-	3	-	2	-	-	-	-	-	-	-	1	3	-	-
Average	3	3	1	2	-	-	-	-	-	-	-	1	3	-	-

Overall Attainment of CO is as below

CO	Direct Tool Attainment (A)	Indirect Tool Attainment (B)	Overall CO Attainment = 0.2x A + 0.8 x B
1	2	3	2.8
2	3	3	3
3	2	3	2.8
4	1	3	2.6

Hence, final contribution of CO attainment in PO attainment can be done using the below formula,
CO Contribution = Overall CO attainment X (CO-PO Mapping weightage / 3)

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	2.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	2.00	1.00	-	-	-	-	-	-	-	-	-	3.00	-	-
3	-	2.80	0.93	-	-	-	-	-	-	-	-	-	2.80	-	-
4	-	2.60	-	1.73	-	-	-	-	-	-	-	0.86	2.60	-	-
Average	2.80	2.50	0.96	1.73	-	-	-	-	-	-	-	0.86	2.80	-	-

Sample calculations:

CO1- PO1 mapping attainment 2.8 x 3/3 = 2.80 (up to 2 decimal places)
CO2- PO2 mapping attainment 3 x 2/3 = 2.00
CO2- PO3 mapping attainment 3 x 1/3 = 1.00
CO3- PO3 mapping attainment 2.8 x 1/3 = 0.93
CO4- PO12 mapping attainment 2.6 x 1/3 = 0.86

Continuous Improvement

A) Contribution of CO in PO attainment and Continuous Improvement (Faculty Level)

Outcome	Action to be taken by faculty
High attainment of all CO-PO (>2.5 out of 3)	Set new higher targets or attainment levels for next Academic Year (A.Y.).
Moderate attainment of all CO-PO (1.8 to 2.49 out of 3)	Record observations, Continue action plan of last A.Y. with plan for improvements.
Low attainment of all CO-PO (0.9 to 1.79 out of 3)	Record observations, assess the target set, revise/improve action plan of last A.Y. to achieve the attainment with plan for improvements.
CO-PO not attained, poor performance(<0.9 out of 3)	Record observations, Critical assessment of target with Program Assessment Committee (PAC), Revise action plan of last A.Y. at faculty/department level.

B) PO attainment and Continuous Improvement (PC and HoD Level)

Category	Outcome	Action by PC andHoD
Course related	PO attained highly	Include activities with HOT.
	PO not attained highly	Identify concerned courses, plan for immediate improvements, guide, support and monitor its execution.
Activity related	Activities Conducted	Critical assessment, impact analysis to be done and revise as per the need for improvements.

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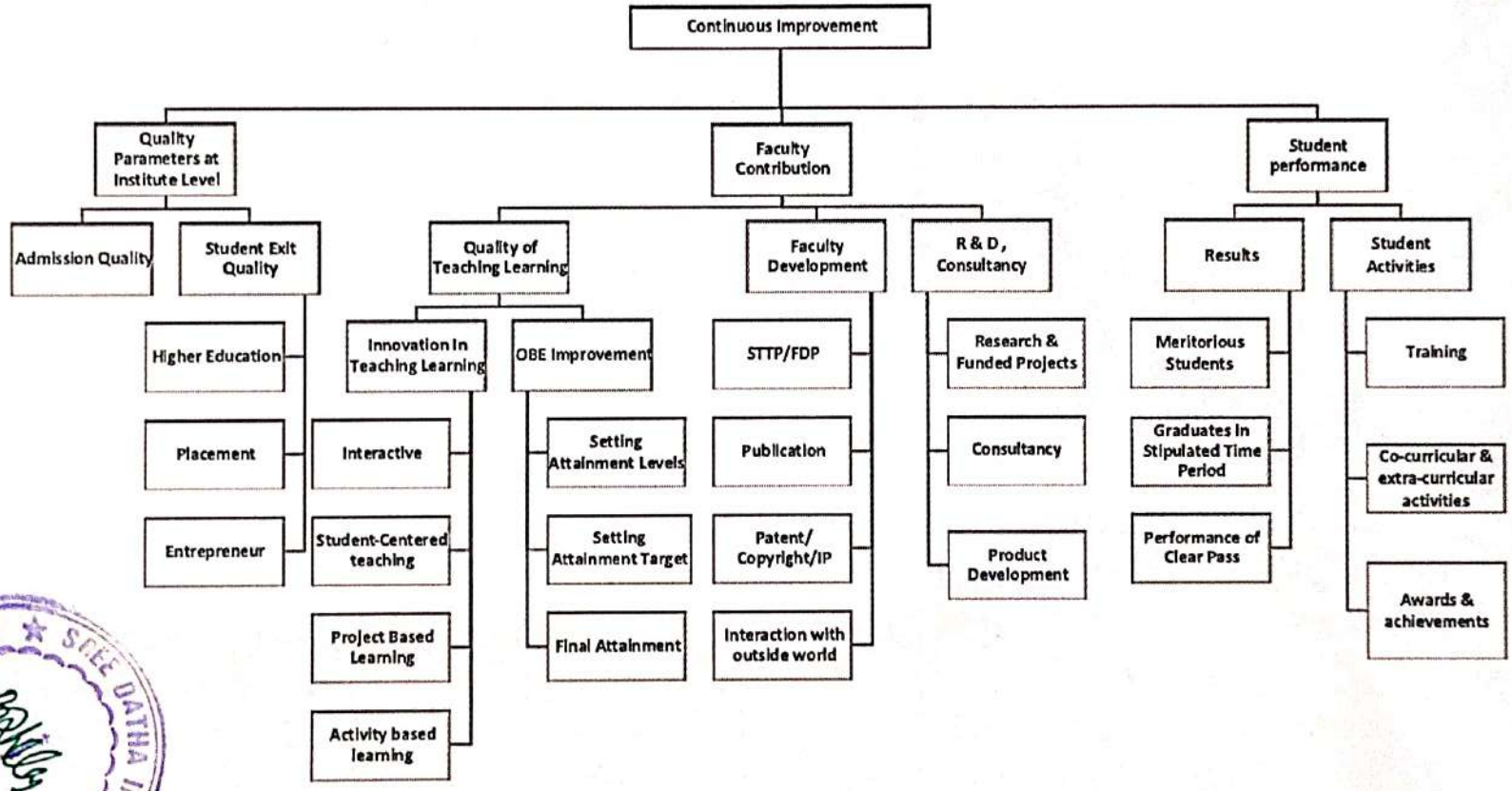
Continuous Improvement
Quality Parameters at Institute Level
Faculty Contribution
Student performance
Admission Quality
Student Exit Quality
Quality of Teaching Learning
Faculty Development
R & D, Consultancy
Results
Student Activities
Higher Education
Placement
Entrepreneur
Interactive
Student-Centered teaching
Project Based Learning
Activity based learning
Innovation in Teaching Learning
OBE Improvement
Setting Attainment Levels
Setting Attainment Target
Final Attainment
STTP/FDP
Publication
Patent/ Copyright/IP
Interaction with outside world
Research & Funded Projects
Consultancy
Product Development
Meritorious Students
Graduates in Stipulated Time Period
Performance of Clear Pass
Training
Co-curricular & extra-curricular activities
Awards & achievements