



NBA Course Outcome Based System

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ABSTRACT

In the new Outcome Based Education model as prescribed by National Board of Accreditation (NBA), one of the most important criteria is the Attainment of Course Outcomes and Programme Outcomes (POs). The process involves measuring the attainment of program objectives in terms of Program Outcome attainment and course outcome attainment levels. In this paper we describe the methodology for computation of Course Outcome and Program Outcome attainment levels. The example of how the method is shown for the course in Diploma Engineering.

Keywords: Course Outcome, Attainment, Program outcome, Assessment, etc.

I. INTRODUCTION

India has a large, complex and multi layered system of technical and higher education. It has the third largest higher education system in the world, behind China and the United States comprising of 903 universities. The National Board of Accreditation (NBA) was set-up in September 1994 by the AICTE to assess the qualitative competence of the programs offered by technical educational institutions from diploma level to post-graduate level in engineering and technology, management, pharmacy, architecture and related disciplines, which are approved by AICTE and the regulatory bodies. The movement towards Outcome-Based Education (OBE) has been one of the most important trends in engineering education in recent years and has been adopted in USA and Australia for many years. For the last few years, Indian education system has already adopted Outcome-Based Education (OBE), with the local accreditation body, National Board of Accreditation (NBA). A formal definition of OBE can be stated as “a comprehensive approach to organizing and operating an education system that is focused on and defined by the successful demonstrations of learning sought from each student”. Thus for OBE implementation, initially it is necessary that the desired or defined outcomes are determined and then according to defined outcomes, programme curriculum, teaching and learning methodology and supporting facilities are designed. During the course of the programme, various measurement methods are used to measure the attainment of outcomes. The assessment of CO attainment largely depends on the student’s performance output or marks obtained in final theory and practical examination, test, and submission of assignments which indicates students learning achievements.

II. OBE AND NBA

Outcome-based education is an approach to education in which decisions about the curriculum are driven by the exit learning outcomes that the students should display at the end of the course. The National Board of Accreditation (NBA) has adopted OBE approach and has laid out guidelines for institutions to pursue excellence in order to get accreditation. Those guidelines are followed to define the programme outcomes and the course outcomes.



1.1 Programme Outcomes

Programme Outcomes are narrower statements that describe what students are expected to know and be able to do upon the graduation. These relate to the skills, knowledge, and behaviour that students acquire in their matriculation through the programme.

1.2 Course Outcomes

Course Outcomes are narrower statements that describe what students are expected to know and be able to do at the end of each course. These relate to the skills, knowledge, and behaviour that students acquire in their matriculation through the course.

1.3 Assessment

Assessment is one or more processes, carried out by the institution that identifies, collect, and prepare data to evaluate the achievement of programme educational objectives and programme outcomes.

1.4. Attainment

Attainment is the action or fact of achieving a standard result towards the accomplishment of desired goals. Primarily attainment is the standard of academic attainment as observed by test or examination result.

III. METHODOLOGY

1. A Course Outcome and Program Outcome Articulation Matrix

1.1 CO-PO Matrices of courses

Course Name	Course Outcome	Program Outcome									
		A	b	c	d	e	f	g	h	i	j
	C101.1..										
	C101.2..										
	C101.3..										
	...										
	...										
	Avg										

1.2 CO-PSO Matrices of Courses

Course Name	Course Outcome	Program Specific Outcome				
		a	b	c	d	e
	C101.1..					
	C101.2..					
	C101.3..					
	...					
	...					
	...					



2. Assign Weightage –Internal and External

Assessment Method	Course assessment & Evaluation Method	Explanation	Frequency
Direct	Regular Practical Work		
	Assignments		
	Group Work		
	Seminars / Presentations		
	Weekly Tests (on Saturday)		
	ETBS Extra Teaching for Backlog Students		
	MSBTE Board Examination		
	Project		
Indirect	Placement		
	Higher Studies		
	Alumni Survey		
	Course Exit feedback		
	Co-curricular Activities		
	Industrial visit		
	Expert Lectures		
	Workshops		
	Paper presentation/Quiz Competition		

3. Measuring Course Outcome using Direct Method

CO Attainment Direct

Year & Subject: Database Management System				NBA Course Code: C401	
	Direct				Direct Co Attainment
	Institute		University		
CO	% Att	Wt	% Att	Wt	
C401.1..	82.86	50%	79.71	50%	81.29
C401.2..	81.86	50%	79.71	50%	80.78
C401.3..	85.68	50%	79.71	50%	82.69



C401.4.	87.38	50%	79.71	50%	83.55
C401.5..	80.00	50%	79.71	50%	79.86
C401.6..	85.00	50%	79.71	50%	82.36

CO Attainment Direct+Indirect

Year & Subject: Database Management System				NBA Course Code: C401	
CO	Direct CO Attainment	CO	CO	CO-Target	CO
		Attainment	Attainment		Attainment
		In-direct	Average		Gap In %
C401.1..	81.29	71.93	76.61	75	-1.61
C401.2..	80.78	93.86	87.32	75	-12.32
C401.3..	82.69	85.96	84.33	75	-9.33
C401.4.	83.55	73.68	78.61	75	-3.61
C401.5..	79.86	72.81	76.33	75	-1.33
C401.6..	82.36	72.81	77.58	75	-2.58

1.1 Measuring Course Outcome through Internal Assessment

Name of Sub: Database Management System(22319)				Year & Sem:CO3I						
MSBTE Exam Evaluation				Th (100)	PR (25)	OR	Online	TW (25)	Total	Wt [#] (in %)
If YES:			At what attainment Level							Set
2018-2019	No. of Students(69)	c. On Roll [#]	70	70	--	--	70	70	50%	
		d. Appeared	69	69	--	--	69	69		
		e. Above b (Avg. Marks)-No of students	50	55	--	--	60	55		
		f. % Above b =[(e*100)/d]	72.46	79.71	--	--	86.96	79.71		
		Scoring of- f	72.46	79.71	--	--	86.96	79.71		
	Level-1 [#]	Below 60%	3	3	--	--	3	3		
	Level-2 [#]	60-69%			--	--				



Level-3 [#]	Above70%			--	--			
Average		3						
Attainment: Direct		= Set. Wt [#] * Identified Avg.						
		1.5						

1.2 Measuring Course Outcome through Internal Assessment

Measuring CO attainment through Cumulative Internal Examinations (CIE)

Year & Subject: Database Management System				NBA Course Code: C401		
	CT-I	CT-II	Assignment	Practical Evaluation	Total	Average
C401.1..	82.17		84.29	82.14	248.59	82.86
C401.2..	81.29		77.62	86.67	245.58	81.86
C401.3..	85.57	70	93.57	93.57	342.71	85.68
C401.4.		65	100.00	97.14	262.14	87.38
C401.5..		80			80.00	80.00
C401.6..		85			85.00	85.00
Sum	145.31	300.00	400.00	516.00	1264.02	340.33
Avg=	83.01	75.00	88.87	89.88		
	84.19					
Enter correlation levels 1, 2 or 3 as defined : 1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)						

4. Measuring Course Outcome through Indirect Method

Course Articulation Matrix

Year & Subject: Database Management System						NBA Course Code: C401				
	PO1	PO2	---	---	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
C401.1..	2		3		3			2		
C401.2..	3	1		2					2	
C401.3..	3	2			3			1		
C401.4.	3	2				2				2
C401.5..	2								3	
C401.6..	2	1				2		2	3	
Avg=	2.50	1.00	3.00	2.00	3.00	2.00	0.00	1.66	2.50	2.00



Year & Subject: Database Management System						NBA Course Code: C401					
	CO Attainment	PO1	PO2	---	---	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
C401.1..	76.61	2		3		3			2		
C401.2..	87.32	3	1		2					2	
C401.3..	84.33	3	2			3			1		
C401.4.	78.61	3	2				2				2
C401.5..	76.33	2								3	
C401.6..	77.58	2	1				2		2	3	
Avg=	80.13	2.50	1.00	3.00	2.00	3.00	2.00	0.00	1.66	2.50	2.00

4. Program Outcome Attainment

Programme: CO										
	PO1	PO2	---	---	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
C101										
...										
C201										
..										
C301										
...										
C401	2.00	0.80	2.40	1.60	2.40	1.60	0.00	1.33	2.00	1.60
...										
Sum										
Deptt:										
Avg										
Enter correlation levels 1, 2 or 3 as defined :										
1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)										

IV.CONCLUSION

In this software we maintain the staff with manual working like fill every marks of each subject, classtest, test average and final year result,etc.and when our software develop successfully then we directly upload the Excel Sheet of student marks by calculating the marks of term work and final theory result and after calculating the overall calculations it will analysis the course outcome is matches with program outcome and if they are matched then it will achieve the program outcome of student attainment level.

So the existing system is NBA for all Outcome-based education is an approach to education in which decisions about the curriculum are driven by the exit learning outcomes that the students should display at the end of the course and the most challenging task is to find the CO attainment level by comparing CO's with PO's.

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