

NBA Accreditation and Teaching – Learning in Engineering (NATE)
Professor N. J. Rao
Department of Electronics and Systems Engineering
Indian Institute of Science, Bengaluru
Lecture 53
NBA Criterion 3 1 COs and POs

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M3 UI3: NBA Criterion 3:
Course Outcomes and
Program Outcomes - I

N J Rao and K Rajanikanth

Greetings, and welcome to NATE module three unit thirteen related to NBA criterion three. NBA criterion three is related to course outcomes and program outcomes. We will be looking at the first part of that.

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Recap

- We understood the teaching-learning processes and the initiatives taken for improving the quality of assessment and learning to meet the requirements of Criterion 2 of SAR.

M3 UI3 Outcome

- Understand how to establish the correlation between the courses and the POs & PSOs as per NBA Criterion 3.1 for Tier II and Tier I institutions.



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And in the earlier unit, we understood the teaching-learning processes and the initiatives taken for improving the quality of assessment and learning to meet the requirements of criterion two of SAR.

And in the current unit, we will try to understand how to establish correlation between the courses and the POs and PSOs as per NBA criterion 3.1 for tier two and tier one institutions.

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Criterion 3: COs, POs and PSOs

- Criterion 3 is concerned with the attainment of
 - Course Outcomes
 - Program Outcomes and Program Specific Outcomes
- This criterion, its sub-criteria, and the exhibits differ between the Tier II and Tier I institutes, beside the difference in the allocation of marks.

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The criterion three is concerned with the attainment of the course outcomes initially and through course outcomes how do you compute the attainment of program outcomes and program specific outcomes.

This criterion and its sub-criteria and the exhibits related to each criterion, differ between tier two and tier one institutes besides the difference in the allocation of marks. The difference between the two is a little bit of terminology, we will explain but the allocation of marks for the sub-criteria somewhat different.

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Weightages to Sub-Criteria of C3

	NBA Criterion	TIER 1 Marks	TIER 2 Marks
3.	Course Outcomes and Program Outcomes	175	120
3.1	Correlation between COs and POs-PSOs	25	20
3.2	Attainment of COs	75	50
3.3	Attainment of POs and PSOs	75	50



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Let us first get a picture of the difference between tier one and tier two institutions. Tier one institutions you know they design their own curricular, they write their own COs they have to write the correlation between COs and POs and so on. So, the marks given for tier one is little more than the rough tier two, so as you can see overall, this criterion three has 175 marks for tier one institutions and 120 marks for tier two institution.

3.1 is related to correlation between COs and POs and PSOs, so here my small difference 25 and 20 and attainment of COs is the 3.2 and it has 75 marks for tier one and 50 marks for tier two and attainment of POs and PSOs you have 75 marks for tier one and 50 marks for tier two.

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Evaluation Guidelines for 3.1

Tier II

- 3.1.1 Evidence of COs being defined for every course (5)
- 3.1.2 Explanation of CO-PO/PSO tables to be ascertained (5)
- 3.1.3 Explanation of program level Course-PO/PSO tables to be ascertained (10)

Tier I

- A. Evidence of COs being defined for every course (5)
- B. Availability of COs embedded in the syllabi (5)
- C. Explanation of Course Articulation Matrix table to be ascertained (5)
- D. Explanation of Program Articulation Matrix tables to be ascertained (10)

Now, let us try to understand what do we mean by correlation between COs and POs and PSOs. So here, the difference between the two comes here. In tier two institutions, evidence of COs being defined for every course, so COs have to be defined for all courses and the visiting team will inspect whether the program has written COs for all courses or not. So, one has to demonstrate the evidence of this.

In 3.1.2 is related to explanation of CO, PO, PSO tables, and that means you have to relate COs to POs and PSOs and those tables and how they have been build that explanation will ascertain by the visiting comity. And similarly, explanation of program level course PO, PSO tables also to be ascertained. That means, at program level you have large number of courses on large number of common activities, these will all have to be integrated together to create a program level course it is course not CO.

Course a PO PSO tables. As you can see in tier one, they labelled as ABCD and A C and D are the same as the rough tier two, except the B is related to availability of COs embedded in the syllabi. Because syllabus itself is written by the institute the COs are do they actually represent the syllabus.

They strictly speaking, when you are designing the curriculum COs have to be written first, from there you have to talk about what we presently call as syllabi the list of topic should emerged from that. Though in practice people first write the list of topics and then write try to write COs.

When they when you start with COs and write syllabi, the criterion B is automatically met.

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Sub-Criterion 3.1.1-Tier II

3.1.1. Course Outcomes (5)

Guideline: Evidence of COs being defined for every course

- While COs of three courses from 2nd, 3rd and final year of study need to be included in the SAR, COs for all the courses need to be prepared by the Department.
- The Department should make available COs of any course as demanded by the visiting committee.

Exhibits/Context to be Observed/Assessed:

- Appropriateness of the statements shall be seen for at least one course each from 2nd, 3rd and final year of study
Subjective evaluation by the visiting team.

Now let us come to the structure of how NBA expects. For each sub-criterion, some guidelines are given and there are exhibits or the context to be observed assessed these are the ones that will be looked by the visiting comity, either they will look at the exhibit or inspect the context to be observed or what is to be assessed they will be looking at this. So these are the elements you have a sub-criterion, then you have guidelines, then you have exhibits to be looked at and the department has to write the SAR with respect to these elements.

3.1.1 is related to course outcomes. Guideline is evidence of COs being defined for every course, how does the department create this evidence? The in presenting COs you will be presenting only for three courses from second, third and final year of study are prepared and presented as part or included in SAR.

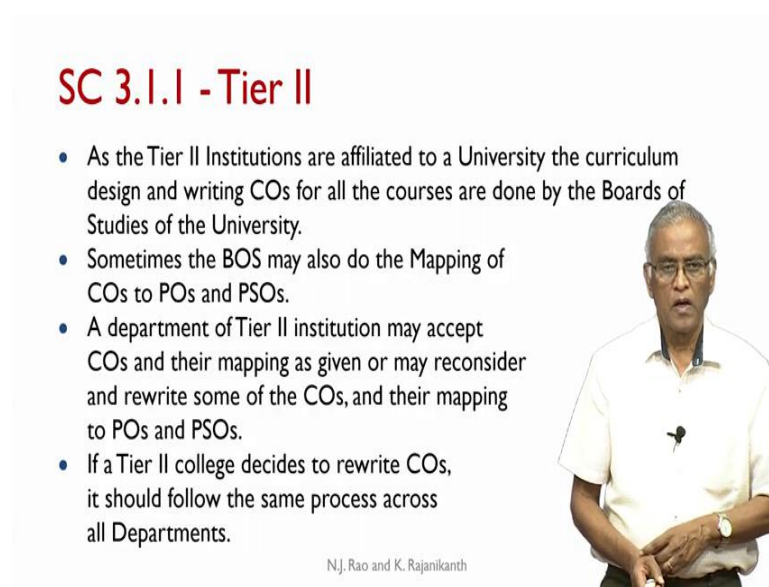
That means, you are only presenting three courses who's COs are one from each second, third and final year or to be included physical into the SAR document. But COs for all courses need to be prepared by the department and the visiting comity may orbital ask any course to be shown to them whether the COs have been written or not. So, the documents related to writing COs of all the courses will have to readily available either in a printed form or in electronic form.

If the visiting comity ask the department they should be able to immediately locate that document and present it to comity. Now, what is the exhibit? What do they assess actually in

this case? The appropriateness of the statements shall be seen for at least one course each from second, third and final year of study. While the department has presented already second third and final year one from each year. A visiting comity may ask some other course from one of these years and inspect. So what happens after getting whatever courses they want to inspect, it is a subjective evaluation by the visiting comity whether the statements are appropriate or not.

So, if they find a statements are appropriate for the samples that they have seen, they will award maximum of five marks. For 3.1.1.


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SC 3.1.1 - Tier II

- As the Tier II Institutions are affiliated to a University the curriculum design and writing COs for all the courses are done by the Boards of Studies of the University.
- Sometimes the BOS may also do the Mapping of COs to POs and PSOs.
- A department of Tier II institution may accept COs and their mapping as given or may reconsider and rewrite some of the COs, and their mapping to POs and PSOs.
- If a Tier II college decides to rewrite COs, it should follow the same process across all Departments.

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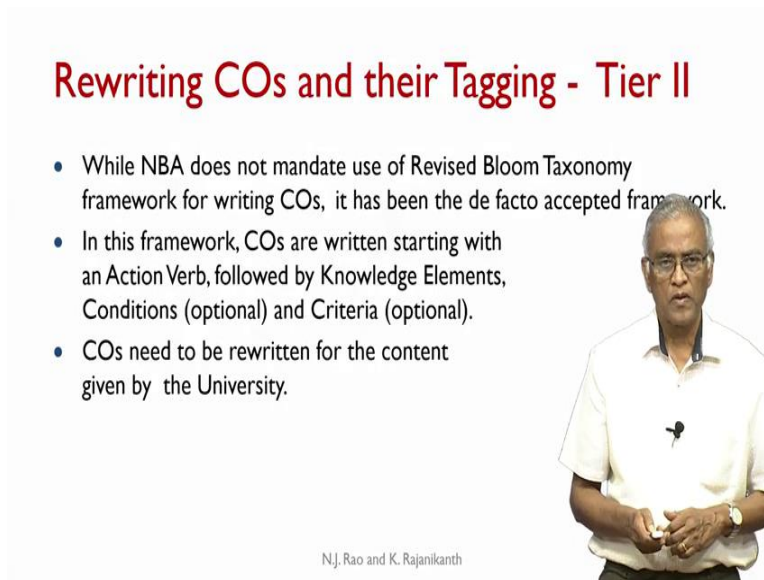
And here, what happens as the tier two institutions are affiliated to the university, the curriculum designing and writing COs for all courses are done by the boards of studies of the university. And sometimes the BOS of the university will also do the mapping of COs to POs and PSOs.

But they may or may not do, whereas, a department integrate to institution may accept the COs in into to as given by the university or if one is not very happy the way they are presented to them, the department may rewrite some or all the COs and their mapping to POs and PSO.

This part maybe undertaken by the department, but if you do that the only rule is that the same procedure of writing this should be followed across all the departments of the institutions. That means, each department in a institutions cannot define for itself a particular

process for this, like for example what should be the structure of the CO statements? There should be some structure. So at the institute level it should be accepted, similarly what is the procedure of mapping COs to POs and PSOs should also be identified at the institute level and implemented. So, that decision is to be done by if you have IQSE or at the institute level you must have some group which will decide this.

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Rewriting COs and their Tagging - Tier II

- While NBA does not mandate use of Revised Bloom Taxonomy framework for writing COs, it has been the de facto accepted framework.
- In this framework, COs are written starting with an Action Verb, followed by Knowledge Elements, Conditions (optional) and Criteria (optional).
- COs need to be rewritten for the content given by the University.

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The slide features a speaker overlay of a man in a white shirt and glasses, standing with his hands clasped in front of him. The background is a light blue gradient.

And here, while NBA directly does not mandate the use of Revised Bloom Taxonomy framework for writing COs but if you look at across the country it has been the de facto accepted framework because when you are writing CO you are starting with each CO belong to some cognitive level of bloom and to that extent the Revised Bloom Taxonomy is de facto accepted framework.


In this framework, COs are written starting with an Action Verb which belong Action verb that belongs to one of the cognitive levels, followed by knowledge elements and followed by conditions which are optional and criteria which are also optional. If you have spent considerable time in module one, how to write COs course following this particular framework but the COs need to be written for the content given by the university.

Technically it is required to start with COs and write the syllabus but it happens the other way, so the content is already given by the university, so you cannot write your own CO or you cannot redesign the course, so you have to write COs if you are rewriting the COs the content given by the university is your starting point that is what it means,

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Format for Writing COs

	Course Outcome
Course Code.1	< CO Statement >
Course Code.2	< CO Statement >
Course Code.3	< CO Statement >
Course Code.4	< CO Statement >
Course Code.5	< CO Statement >
Course Code.6	< CO Statement >



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And this is the format of writing COs you have a course code, course code will be you can say a some 2302, that means third semester second course something like that each institute may follow a certain course code or university may give you the course code you have to use that course code put dot and 1, 2,3, 4, 5, 6 or you can have more number of COs and you have to write the statements in this particular table. So first thing is you have to write your course outcomes in this form.

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Sample: COs of a Course

Course: Analog Circuits and Systems Credits: 3:0:1
Year of Offering: 2020-2021

	Course Outcome
C202.1	Understand the characteristics of linear one-port and two-port signal processing networks
C202.2	Model one-port devices including R, L, C and diodes, two-port networks, and active devices including amplifiers, Op Amps, comparators, multipliers, BJTs and FETs
C202.3	Understand how negative and positive feedback influence the behaviour of analog circuits
C202.4	Design VCVS, CCVS, VCCS, CCCS, and DC and SMPS voltage regulators
C202.5	Design analog filters
C203.6	Design waveform generators, and frequency followers

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So, this is an example of a course the course is Analog Circuits and Systems and credits are 3 is to 0 is to 1 and you have to also give it Year of Offering you may change from one year to

the other, so to the extent say you are offering this course in 2020-2021. So, the course outcome as you can see C202.1 is the C202 is the course code and 1 is the CO 1 you can say. And this is an example how we have written there happened to be only six course outcomes for this.

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SC 3.1.2 - Tier II

3.1.2. CO-PO/PSOs matrices of courses selected in 3.1.1 (six matrices) (5)

Guidelines

- A. Explanation of table to be ascertained

Exhibits/Context to be Observed/Assessed:

- Mapping to be verified for at least two matrices
Subjective evaluation by the visiting team.



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First thing that you have to do is you have to write your course outcomes in the format that has been shown for all the courses for all the semesters and you present it to the in the SAR only for three courses one course taken from second third and final year. Now, let us look at sub-criterion 3.1.2 for tier two colleges and the criterion is sub-criterion states that CO, PO, PSO matrices of courses selected in 3.1.1.

So, you have to present six matrices in this and it carries 5 marks and when you are creating matrix for this you have to have an explanation of the table. How you are creating the table? What are the rules that you follow for the table? For preparing the table? And assessment is done for mapping to be verified for at least two matrices that the comity will pick out of the six some two matrices and finds that whether that mapping is satisfactory as per the requirements of NBA, so this becomes a subjective valuation by the visiting team.

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Explanation: Mapping COs to POs and PSOs

- Tag COs with POs, PSOs, Cognitive Level, Knowledge Categories and number of sessions/hours
- The action verb used in a CO and its match with action verbs found, explicitly or implicitly, in POs and PSOs forms the basis of mapping of COs to those POs/PSOs.
- If PSOs are written well COs of a course map generally to a single PSO.
- It is desirable to map a CO to one or two of the first five POs (disciplinary) and one of the professional POs (PO6-PO12).
- If a CO is mapped to too many POs, it can become difficult to conduct instruction and to demonstrate the attainment of selected POs.

Now let us look at how the explanation needs to be written or prepared. First thing is tag COs with POs, PSOs, Cognitive level, Knowledge categories and number of sessions or hours. This has been presented already in detail in module one, so we are just repeating that this is the process one goes through and the action verb used in CO and its match with action verbs found explicitly or implicitly in POs and PSOs forms the bases of mapping COs to those POs and PSOs.

How do you say how do you tag a CO with PO? You look at your CO statement, look at the action verb used and then look at the action verbs that are already existed in POs or PSOs. For example, in a PO you must like take PO two for example, it says identify, formulate, research literature and so on it has it uses some of this action verbs, formulate is an action verb.

So what you have to see the way CO has been written by you the action verb does it match explicitly or implicitly. Sometimes PO statements are little bit indirect to that extinct implicitly and if they are there, then you can say that CO is mapped to that particular PO or PSO.

If PSOs are written well, COs of a course map generally to a single PSO generally they get mapped into so a particular course if you take, you are likely to say same PSO for every CO of that course. And now this are desirable, it is desirable a CO to map a CO to one or two of the first five POs which are disciplinary in nature.

First five POs as we have explained in module one extensively and at least one of the professional POs that is from PO six to PO twelve, if we can do that then it is possible that we are likely to achieve right kind of balance between all the courses and the POs. And there is also a danger if a CO is mapped to many POs, it can become difficult to conduct the instruction and also say also to convince anybody that I am actually conducting my instruction to meet all the POs that I have selected and also it becomes difficult to demonstrate the attainment of selected POs.

Demonstration is through what? The way I have conducted my assessment and if somebody inspects your assessment items and then say whose assessment item is going to meet your particular selected PO that department should be able to explain. So to the other extent, the if there are too many POs it becomes very difficult to demonstrate the attainment of selected POs, so these are the points or these are the issues that you have to keep in mind when you write your explanation.

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Sample: Analog Circuits and Systems - Credits: 3:0:1

	Course Outcome	POs/ PSOs	CL	KC	Class Sessions	Lab Sessions (Hrs)
CO1	Understand the characteristics of linear one-port and two-port signal processing networks	PO1, PO10, PSO1	U	F, C	3	
CO2	Model one-port devices including R, L, C and diodes, two-port networks, and active devices including amplifiers, Op Amps, comparators, multipliers, BJTs and FETs	PO1, PO10, PSO1	U	C	9	4
CO3	Understand how negative and positive feedback influence the behaviour of analog circuits	PO1, PSO1	U	C	4	4
CO4	Design VCVS, CCVS, VCCS, CCCS, and DC and SMPS voltage regulators	PO3, PO4, PO5, PSO1	Ap	C, P, C&S, PC	10	4
CO5	Design analog filters	PO3, PO4, PO5, PSO1	Ap	C, P, C&S, PC	8	8
CO6	Design waveform generators, phase followers and frequency followers	PO3, PO4, PO5, PSO1	Ap	C, P, C&S, PC	6	8
Total Hours of Instruction					40	28

So, this is how we presented earlier also these are the COs of this particular course and we created a table like this, like first POs and PSOs and then cognitive level cases knowledge categories number of class sessions and number of lab hours that you have and it works out to be three is to zero is to one kind of thing.

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CO-PO/PSO Matrix of a Course

- CO-PO matrices of courses selected in 3.1.1 (six matrices to be mentioned; one per semester from 3rd to 8th semester) (5)

Note: Enter correlation levels 1, 2 or 3 as defined below:

- 1: Slight (Low)
- 2: Moderate (Medium)
- 3: Substantial (High)
- "-": If there is no correlation

- Similar table is to be prepared for PSOs
- Explanation of CO-PO/PSO tables to be ascertained (5)



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Because our goal is to write prepare a matrix of a course that CO PO matrix of a course. How do we do that? Just because we wrote this particular PO is addressed by CO you also have to talk about to what extent does it address? Does it address it very strongly or substantially or it just slightly?

So, you have to find a method of the strength of mapping of a CO to a PO. So, this correlation levels are converted into three level quantised into three levels one, two or three like one is slightly or very low correlation, two is moderate or medium and three is substantial.


And if you say there is no correlation with respect to one particular CO and a PO, you just put a dash because that is required by NBA you have to make entries only as one, two, three or dash and you have to prepare similar table for PSO also and the you have to give an explanation this explanation will be again will be subjectively evaluated by the visiting comity.

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The Structure of CO-PO Matrix for a Course

Course	PO												
	1	2	3	4	5	6	7	8	9	10	11	12	
C302													
C302.1													
C302.2													
C302.3													
C302.4													
C302.5													
C302.6													
C302													

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So, this is how the structure of CO-PO matrix will be, so you have all the six COs written there and the last row is only as you see it is not a CO, it is a only course code only. So based on the entries in the six column six rows there you compute an average in some way and put it into the last row. So, essentially CO-PO matrix convert into a single row with respect to the course code.

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Making Entries in CO-PO Matrix

- The last row is important and it indicates the strength to which each PO is addressed by the entire course.
- It is expected to make entries into all the cells of matrix other than the last row, and software tool at NBA computes the average of the entries in the column.
- There can be several ways of making entries in the cells

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Now, the last row that we have created is important and it indicates the strength to which each PO is addressed by the entire course not by a single CO. It is expected to make entries into all the cells of matrix other than the last row and the software of the software tool NBA

computes the average of the entries in the column. Now, how do I select the strength to which you have to make only entries one, two, three and a dash, but how do you arrive at that?

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Making Entries in CO-PO Matrix (2)

- Each entry can be made intuitively taking the features of CO statement and the cognitive activities implied by the POs. As the entries in any column are likely to differ the average of a column will not be an integer. It is difficult to get uniformity across all teachers of the institutions using intuitive judgement.
- A justifiable objective method was proposed in MI U20. That method will directly give you the last row of the matrix. Entry in each column of the last row is repeated in all the relevant rows of the same column. The entries in the last row of the matrix will become integers '-', 1, 2, or 3 by the software tool.

We have also given this explanation, in a the module one, for example each entry can be made intuitively taking the features of CO statement and the cognitive activities implied by the POs. But what happens in this, any two faculty members who are concerned with the course are likely to differ with this when you are doing it intuitively, depending on what kind of information he has in mind with respect to the CO and PO.

So, what happens they are likely to differ, that means the if you take a particular CO and PO, each one may be of they may put one or two or three or dash kind of thing. In that case, when you take the average of the column, it will be a non-integer value. We personally recommend that you do not stick to an intuitive approach which may look very easy and simple but if you take across all departments or even across a department different people are likely to come to different conclusions when you do it intuitively.

So, some kind of an objective method should be used. We proposed one justifiable objective method in MI U 20, so what happens that method will directly give you the last row of the matrix the way we present it, and that means instead of computing the last row you already got the last row and you make the same entry in each one of the relevant rows. And then what happens you when you take the average it becomes an integer.

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Sample CO-PO Matrix

Course	PO											
	1	2	3	4	5	6	7	8	9	10	11	12
C302	1	1	3	3	3	-	-	-	-	1	-	-
C302.1	1	1	3	3	3	-	-	-	-	1	-	-
C302.2	-	-	-	-	-	-	-	-	-	-	-	-
C302.3	1	1	3	3	3	-	-	-	-	1	-	-
C302.4	1	1	3	3	3	-	-	-	-	1	-	-
C302.5	1	1	3	3	3	-	-	-	-	1	-	-
C302.6	1	1	3	3	3	-	-	-	-	1	-	-
C302												

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CO-PSO Matrix

A separate matrix needs to be prepared for the correlation of CO and PSOs

Sample	Course C302	PSO			
		1	2	3	4
C302.1	3	-	-	-	
C302.2	3	-	-	-	
C302.3	3	-	-	-	
C302.4	3	-	-	-	
C302.5	3	-	-	-	
C302.6	3	-	-	-	
C302					

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Let us take a look at this, that means have first computed C 302 that last row, the same that one is copied into all the COs. That is what it means and when the software tool at the NBA will compute the average of this and you similarly do it for PSO and then it will produce the final row that is what we require one row for one course is required.

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Criterion 3.1.3 – Tier II

3.1.3 Program level Course-PO/PSOs matrix of ALL courses including first year courses

Guidelines:

A. Explanation of tables to be ascertained (10)

Exhibits/Context to be Observed/Assessed:

A. Mapping to be verified for at least one course per year of study: outcomes and program specific outcomes getting mapped with courses are also to be verified

Subjective evaluation by the visiting team.

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Now, we come to criterion 3.1.3 of tier two institution. Now, this the criterion itself says program level course PO/PSO matrix all courses including first year courses, so you may have you have to create a matrix with maybe 30 to 40 rows in that and you have 12 POs, so to other extent this 12 columns and then you may have what 40 rows that is the kind of table that one has to create. And you need to write an explanation of the tables how you are creating how you are computing the average from that.

See that explanation itself carries about 10 marks and what is the exhibit or what is to be document that will be assessed mapping to be verified for at least one course per year of sturdy. Program outcomes program specific outcomes getting mapped with the core courses are also to be verified and this will be subject to evaluation by the visiting team.

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Program-POs Articulation Matrix

Course	POs											
	1	2	3	4	5	6	7	8	9	10	11	12
C101	2	-	1	1	-	-	-	-	-	-	-	-
.....												
C302	1	1	3	3	3	-	-	-	-	1	-	-
.....												
C806 (Project)	-	2	-	1	-	2	2	1	-	3	1	3

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And how do we have this? So, as I already mentioned this is called Program-PO Articulation Matrix. And if you have C101 is one entire course C101 and we talked about the entries into this table as you can see two PO one is to the strength two PO two is not addressed at all that is why put a dash and so on. We create like that for all the activities which are core activities.

That means, including the project or any other kind of core activity that you have you can add row for that, so from this you have to compute the average.

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Program – PSOs Articulation Matrix

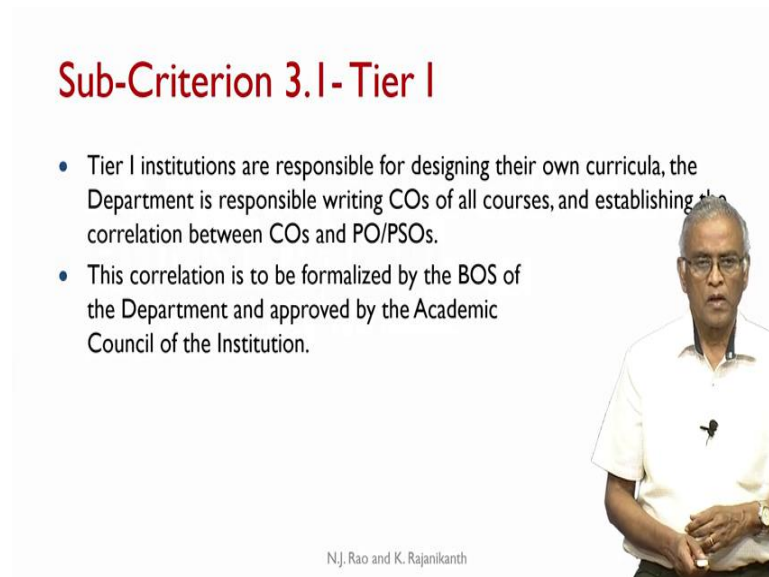
Course	PSOs			
	1	2	3	4
C101	1	1	1	1
.....				
C302	3	-	-	-
.....				
C806 (Project)	2	2	2	1

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Similarly, for PSO you try to add rather fill this particular table it is called Program-PSO Articulation Matrix, So, the PO and Program PO and Program PSO Articulation matrices have to be shown separately.

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Sub-Criterion 3.1 - Tier I

- Tier I institutions are responsible for designing their own curricula, the Department is responsible writing COs of all courses, and establishing the correlation between COs and PO/PSOs.
- This correlation is to be formalized by the BOS of the Department and approved by the Academic Council of the Institution.

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The slide features a photograph of a man with glasses, wearing a white short-sleeved shirt, standing with his hands clasped in front of him.

And all the detailed computation all detailed presentation were made in the module one itself that is why we are not again repeating that here. Now, we come to the difference of all this activities with respect to tier one institution. Tier one institutions are responsible for designing their own curricular and the department is responsible for writing the COs of all courses and establishing the correlation between COs and PSOs.

So, that is the responsibility of the department and this correlation between the COs and POs and PSOs is to be formulized by board of studies of the department and possibly approved by the academic council of the institution.

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Criterion 3.1 - Tier I

3.1 Establish the correlation between the courses and the POs & PSO's (25)

Guidelines

- A. Evidence of COs being defined for every course (5)
 - B. Availability of COs embedded in the syllabi (5)
 - C. Explanation of Course Articulation Matrix table to be ascertained (5)
 - D. Explanation of Program Articulation Matrix tables to be ascertained (10)
- Besides slight change in the terminology, Guidelines A, C and D are the same as applicable to Tier II institutions.

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And here, instead of talking about 3.1.1 1.1.2 so on, here in tier one intuition the guidelines there is only one set of guidelines that are given there are no sub criteria for this, but if you look at the guidelines A C D are practically the same as 3.1.1, 1.2, 1.3 kind of thing. So, guidelines are evidence of COs being defined for every course, so you have to show the evidence that you are written COs for all courses and the additional thing mainly availability of COs embedded in syllabi that is the additional sub-criterion under this and C and D are the same as that of three point one point two and one point three.

(Refer Slide Time: 29:01)

C3.1 Tier I: Exhibit A.....

- A. Evidence of COs being defined for every course (5)
 - COs need to be written for all courses of the program
 - While NBA does not mandate use of Revised Bloom Taxonomy framework for writing COs, it has been the de facto accepted framework.
 - In this framework, COs are written starting with an Action Verb, followed by Knowledge Elements, Conditions (optional) and Criteria (optional).

Exhibit

CO statements for at least one course each from
2nd, 3rd and final year of study
Subjective evaluation of the appropriateness of
CO statements by the visiting team.

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Now, just quickly A is related to evidence of COs being defined for every course carries 5 marks. COs need to be written for all courses of the program well NBA does not mandate use of revised Bloom Taxonomy of framework for writing COs it has been the de facto accepted framework. In this frameworks, COs are written starting with an Action verb followed by Knowledge Elements and conditions and criteria.

So, what is the exhibit that we look at? CO statement for at least one course each from second third and final year of study. If those are presented, then the comity will have a subjective evaluation of the appropriateness of CO statements that is what the evaluation would be.

(Refer Slide Time: 29:53)

C3.I Tier I: Exhibit B.....

B. Availability of COs embedded in the syllabi (5)

- Normally syllabus is presented as a list of topics.
- There should be complete correspondence between CO and the list of topics besides COs indicating the depth to which is topic is addressed.

Exhibit

- A brief explanation for each course on how CO are embedded in the syllabus.
- Subjective evaluation by the visiting team.

B is availability of COs embedded in syllabi that carries 5 marks. Normally syllabus is presented as list of topics there should be complete correspondence between CO and the list of topics besides COs indicating the depth to which topic is addressed that is where one has to take care and that is where the role of writing good COs comes in. Does the CO really represents the depth to which a particular topic is addressed and exhibit is the brief explanation for each course and how COs are embedded in the syllabus, this is again subjective evaluation by the visiting team.

(Refer Slide Time: 30:42)

C3.I Tier I: Exhibit C.....

C. Explanation of Course Articulation Matrix table to be ascertained (5)

- Explain the basis for considering a CO to be addressing a PO or a PSO.
- The course articulation matrix is to be prepared as indicated in Slides 19 and 20

Exhibit

CO-PO and CO-PSO matrices of at least two courses

Subjective evaluation by the visiting team.

The C is explanation of course Articulation Matrix table be ascertained which is carries 5 marks the explain the basis for considering a CO to be addressing a PO or a PSO. The course articulation matrix is to be prepared as indicated in the slides 19 and 20 of the this particular unit. And the exhibit the matrices that are prepared for at least two courses will be evaluated subjectively by the visiting team.

(Refer Slide Time: 31:18)

C3.I Tier I: Exhibit D.....

D. Explanation of Program Articulation Matrix tables to be ascertained (10)

- Explain the basis of determining the strength to which a CO addresses a given PO/PSO.
- Explain the basis of determining the Course-PO articulation row was worked out.

Exhibits

Mapping for at least one course per year of study; program outcomes and program specific outcomes getting mapped with the core courses (Slides 21 and 22)

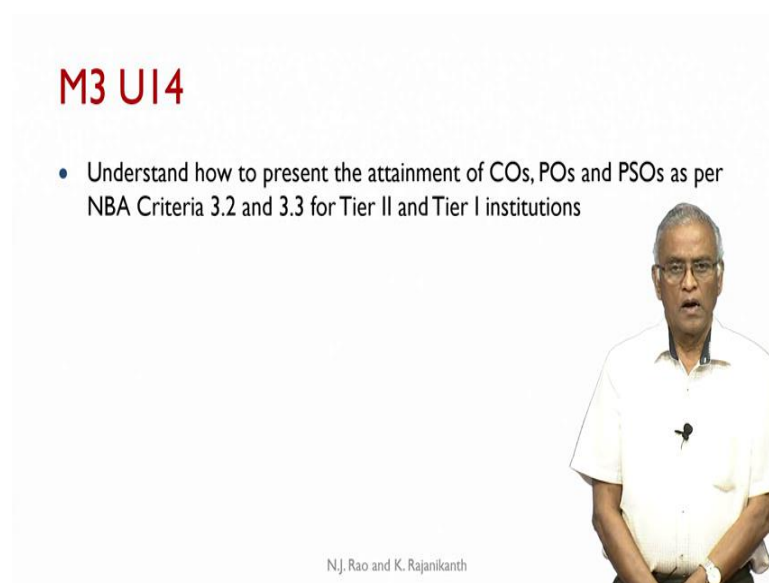
Subjective evaluation by the visiting team.

And D is explanation of program Articulation Matrix tables to be ascertained it carries 10 marks. And you have to explain the basis for determining the strength to which a PO addresses a given PO or PSO. We have explained we have given one method of objective

method of doing it, if the if you differ if your department differs with that, you have to write what is the criterion that you are using to determine the strength to which CO addresses a given PO.

Explain the basis for determining the course PO matrix PO articulation row is to be worked out and mapping for at least one course per year of study program outcomes and program specific outcomes getting mapped with the core courses as explained in the same unit slides 21 and 22 will be subjectively evaluated by a visiting team.

(Refer Slide Time: 32:24)



M3 U14

- Understand how to present the attainment of COs, POs and PSOs as per NBA Criteria 3.2 and 3.3 for Tier II and Tier I institutions

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The slide features a video inset of a man with glasses and a white shirt speaking. The text on the slide is in a clean, sans-serif font.

And in the next unit, we will look at we will try to understand how to present the attainment of COs, POs and PSOs as per NBA criteria 3.2 and 3.3 for tier two and tier one institutions. Thank you very much.