NBA Accreditation and Teaching – Learning in Engineering (NATE)
Professor K. Rajanikanth
Retired Principal –MSRIT
Indian Institute of Science, Bengaluru
Lecture 52
NBA Criterion 2 Teaching Learning Processes 2

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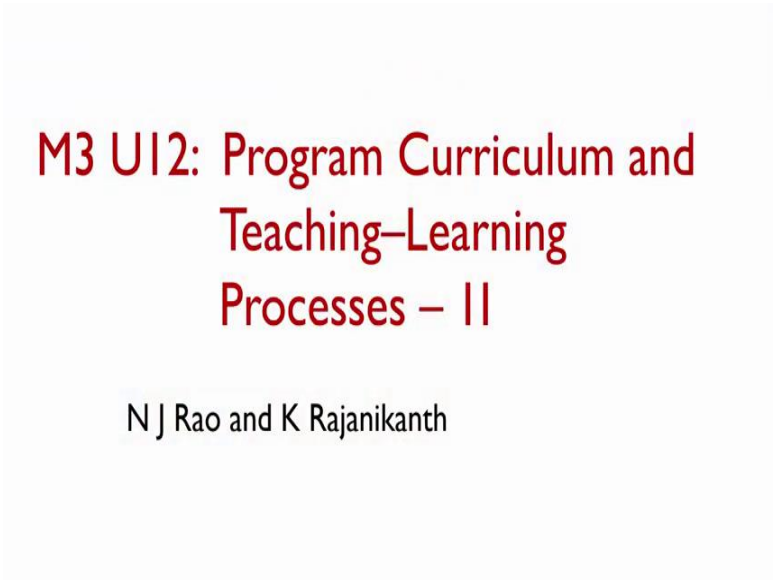

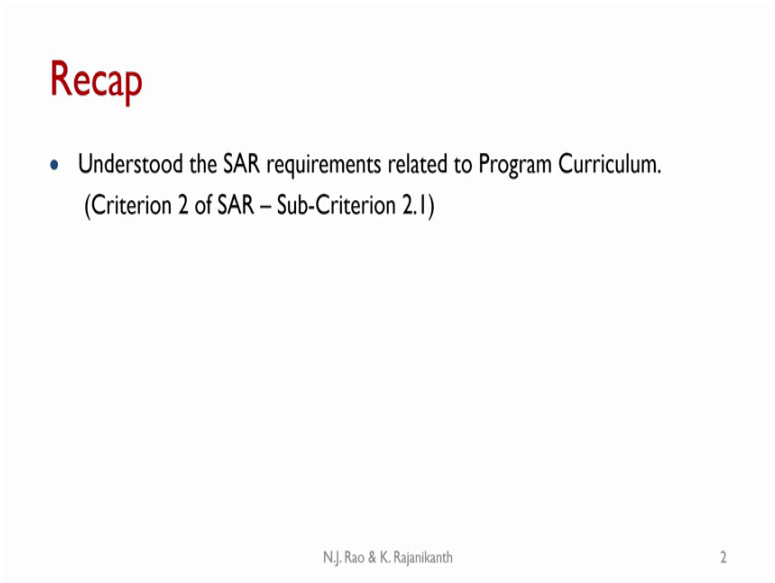

Greetings, welcome to module three unit twelve Program Curriculum and Teaching-Learning processes part 2. In the last unit, we understood the SAR requirements related to program curriculum which was sub-criterion 2.1 of the criterion 2. In this unit, we will look at the sub-

criterion2.2, so the outcome for this unit is understand the SAR requirements related to the Teaching-Learning Processes.

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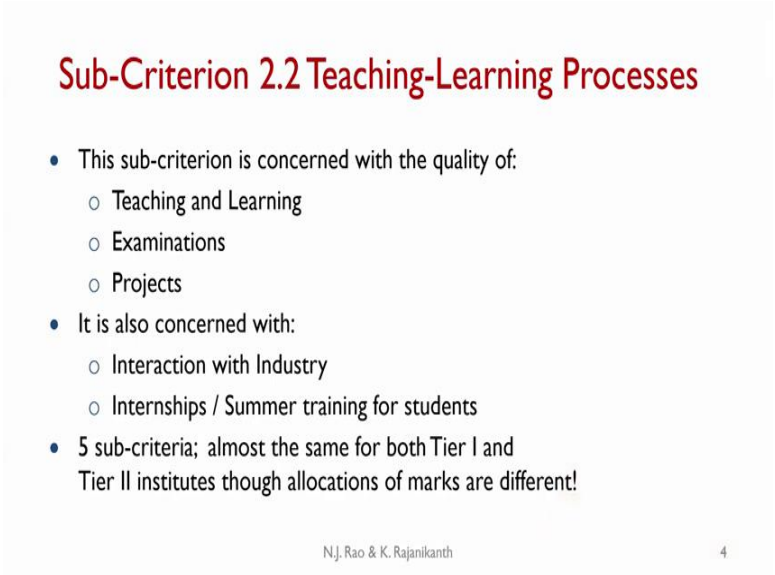

This sub-criterion is concerned with the quality of teaching and learning, examination and projects. It is also concerned with interaction with industry, internships, summer training for the students. In this sub-criterion the department is expected to provide substantial details regarding all this academic activity.

There are five sub-criteria, they are almost similar same for both tier one and tier two institutes though allocations of marks are different.

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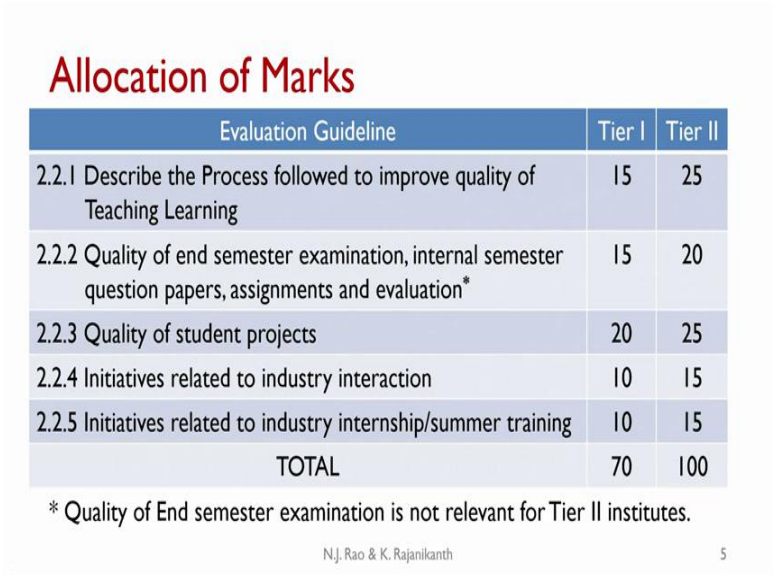

These are the allocations of marks between tier one and tier two institutes for the five sub-criteria. The first sub-criterion is describe the process followed to improve quality of teaching learning. This is an extremely important sub-criterion requiring fairly large amount of detail to be provided by the department. The marks allocation is 15 for tier one institute and 25 for tier two institute.

2.2.2 is concerned with the Quality of end semester examination, internal semester question papers, assignments and evaluation. 15 and 20 marks, but note that the end-semester examination has no relevance for a tier two institute. For a tier two institute the end semester examination is the responsibility of affiliated university.

2.2.3 is concerned with Quality of student projects 20 marks and 25 marks for tier one and tier two respectively. 2.2.4 is concerned with the initiatives related to industry interaction and finally 2.2.5 is about the initiatives related to industry internship/summer training for a tier one institute the total marks comes to 70 while it is 100 for a tier two institute.

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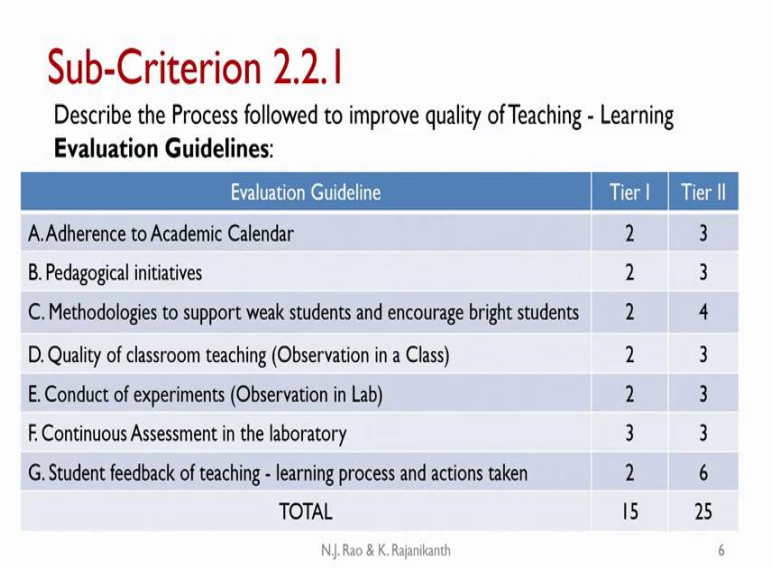

Let us look at the first sub-criterion 2.2.1 which is related to the process followed to improve the quality of Teaching-Learning. There several aspects of the Teaching-Learning process which are examined by visiting comity to understand the initiatives of the department to improve the quality of Teaching-Learning.

The first guideline is Adherence to Academic Calendar. Then, Pedagogical initiatives need to be described, then the department must indicate the Methodologies to support weak students

and encourage bright students. The next aspect is the quality of classroom teaching the next aspect is conduct of experiments in laboratories. The next aspect is continues assessment in the laboratory then finally the visiting team looks at what the department is doing with the student feedback of Teaching-Learning processes.

So, the total marks for the tier one institute would be 15 and while it would be 25 for a tier two institute. Each of this guidelines would require substantial amount of documentary evidence to prove the initiatives taken by the department. In fact, any claim made under this sub-criterion must be backed-up by documentary evidence.

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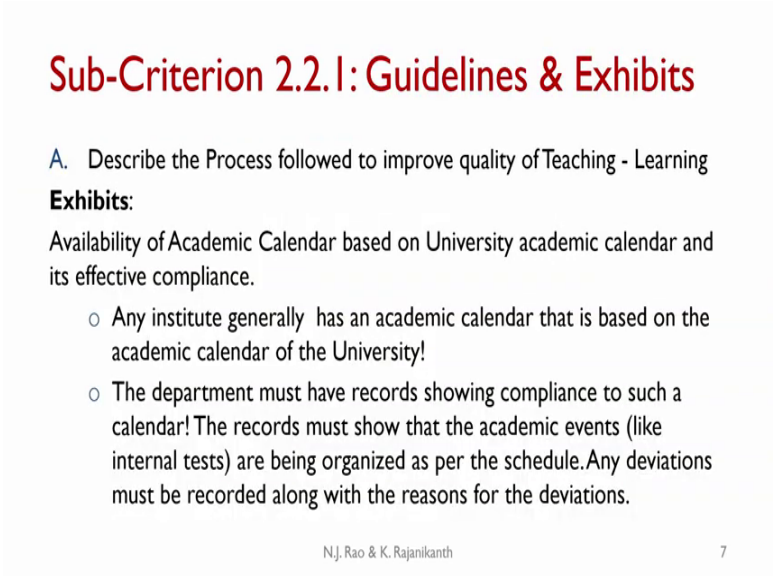

Describe the process followed to improve the quality of Teaching-Learning, the first exhibits would be the availability of the academic calendar based on the university academic calendar and its effective compliance. Any institute generally has an academic calendar that is based on the academic calendar of university. However, it is also required that the department demonstrate that the department is compiling with this academic calendar.

The department must have records showing compliance to such a calendar. The records must show that the academic events like internal test are being organized as per the schedule. Any deviations must be recorded along with the reasons for such deviations. Quite often the departments only have academic calendar but no record demonstrating the compliance to that calendar. It is necessary that the department maintains record showing complains to the academic calendar.

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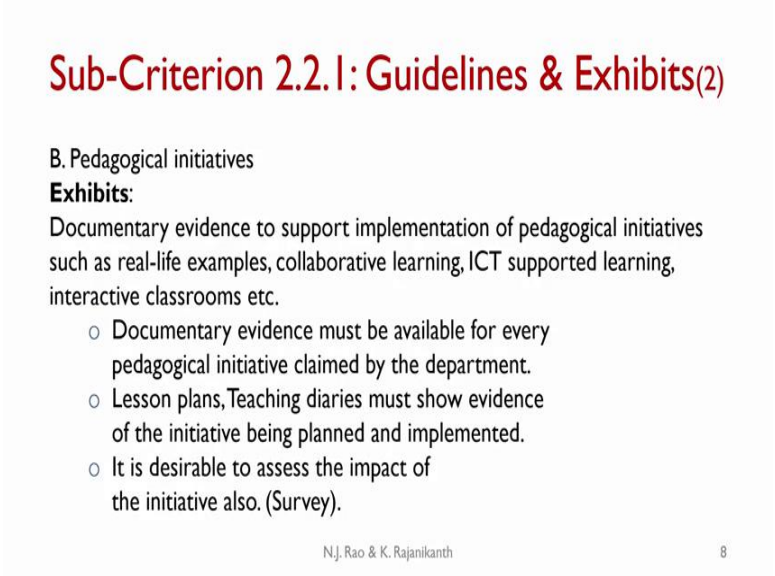

The next aspect is pedagogical initiatives documentary evidence to support implementation of pedagogical initiatives, such as real-life examples, collaborative learning, ICT supported learning, interactive classrooms, etc. Any pedagogical initiative claimed by the department must be backed-up by appropriate documentary evidence. Thus, document evidence must be available for every pedagogical initiatives claimed by the department.

Lesson plans, teaching diaries must show evidence of the initiative been planned and implemented. If the department claims that it has implemented a particular initiative like collaborative learning, then it must demonstrate the course in which that activity was implemented, when that activity was planned and it must back-up this claims with appropriate documentary evidence including the lesson plan or teaching diary or the equivalent implementation records that the department maintains.

It is also desirable to assess the impact of the initiative. The department could conduct a survey for example, to determine the extent to which the initiative is found to be effective thus, the most important aspect of this particular activity of improving the quality of Teaching-Learning is that every initiative has appropriate documentary evidence.

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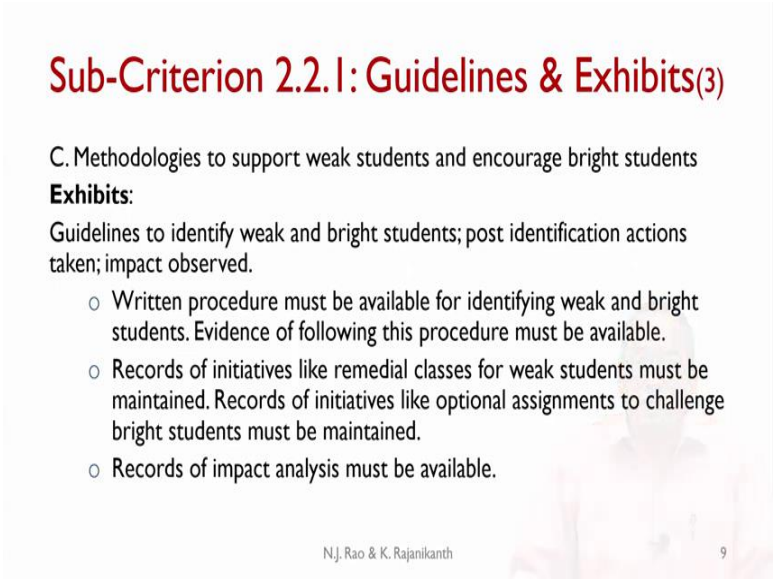

Methodologies to support weak students and encourage bright students. Many of the colleges do provide remedial teaching to help weak students some institutes do initiate certain activities to encourage bright students also but often the departments may not have a written procedure for identifying the weak students and the bright students. Informal guidelines are followed to identify the weak students and bright students but NBA requires that all these guidelines must be based on well documented process.

Guidelines to identify weak and bright students must exist after identification the actions initiated by the departments must be recorded. The department must also note the impact of these activities, so a written procedure must be available for identifying weak and bright students. Often the identification of weak and bright student is based on their performance in the first internal test or the first quiz. However, many departments do not have a clear written procedure striating the guidelines for identifying the weak and bright student. The department must have such a written procedure.

Evidence of following this procedure must also be available. Records of initiatives like remedial classes for weak student must be maintained. When were the classes held? Who were the students who attained those classes? Which faculty members handled those classes? All this details must be available with the department.

Records of initiatives like optional assignments to challenge bright students must also be maintained. It is a good practice to determine the impact of such initiatives, so records of impact analysis must also be available.

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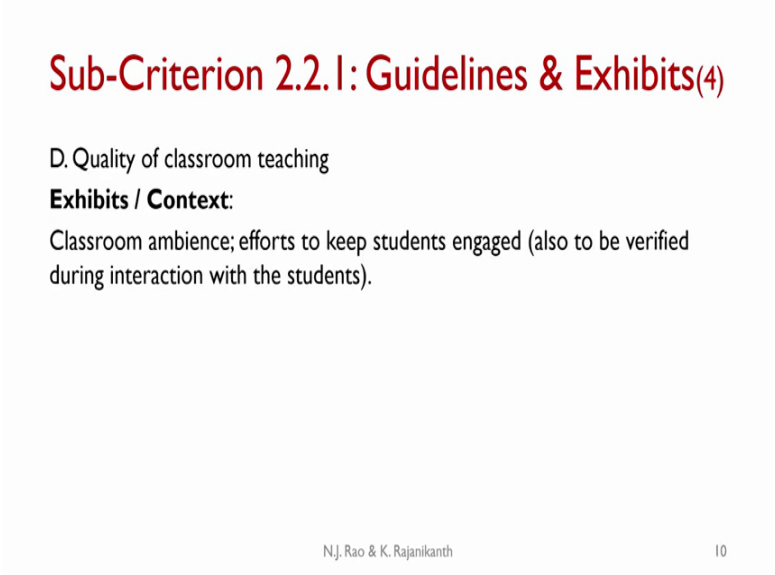

The next aspect is the quality of classroom teaching, usually the visiting committee will determine the quality of the classroom teaching by their subject to perception of this aspect through attending certain select classes. They also look at the classroom ambiance, the efforts made by the faculty to keep the students engaged. Further, the visiting comity will determine the quality of classroom teaching during their interaction with the students also.

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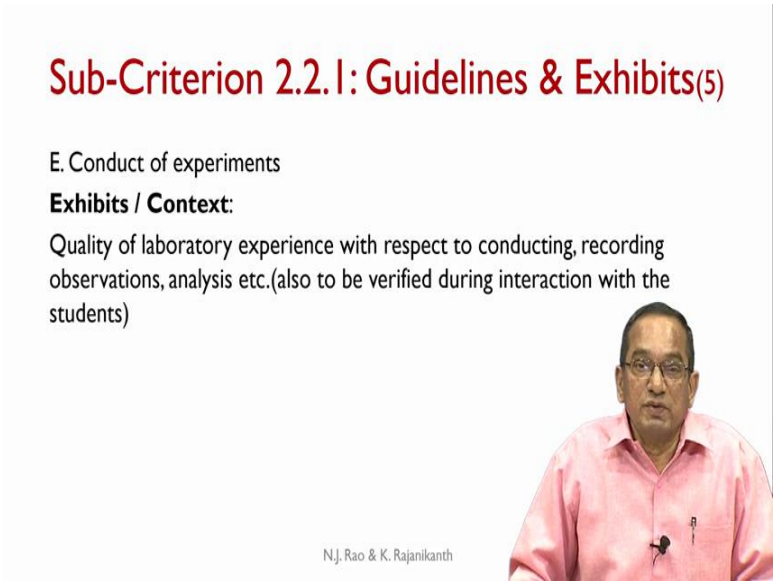

So, this aspect is more or less the subject to perception of the visiting team. Conduct of experiments the Quality of laboratory experience with respect to conducting the experiments, recording observations, analysis of the data etc. This aspect is also verified by the visiting team during their interaction with the students, they may also visit the laboratory and watch while the students are conducting the experiments. So, this aspect is also based on subjective assessment by the visiting team.

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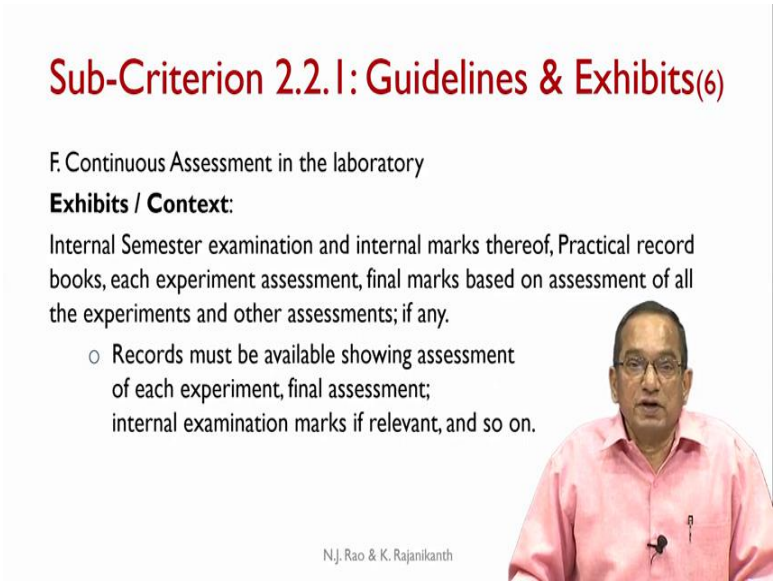

Continuous Assessment in the laboratory. Internal Semester examination and internal marks thereof, Practical record books, each experiment assessment, final marks based on assessment of all the experiments and other assessments if any. This is what is expected from the department records must be available showing assessment of each experiment, final assessment; internal examination marks if relevant, and so on. The department must have clear records indicating the continues assessments and evaluation during the laboratory work.

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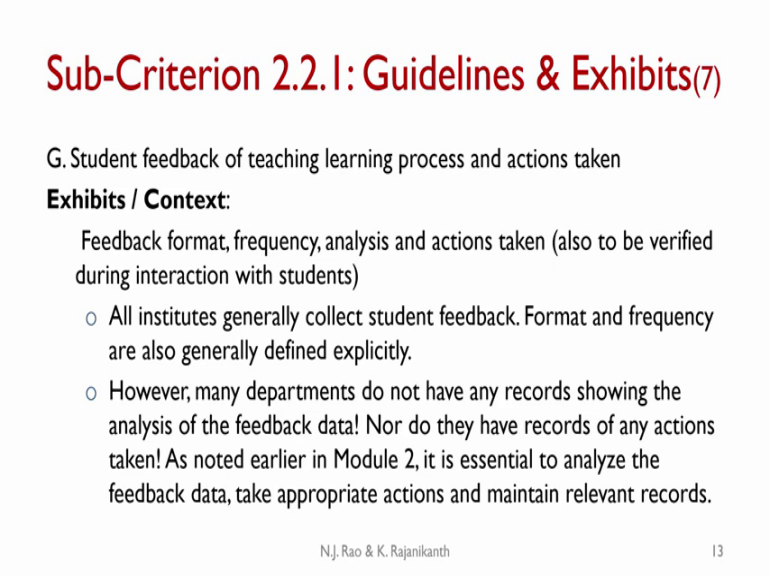

Student feedback of Teaching-Learning process and actions taken, the department is expected to provide the feedback format used, the frequency with which the feedback is collected, analysis and action taken and the visiting team verifies these statements during their interaction with the students also.

All institutes generally do collect student feedback. Format and frequency are also generally defined explicitly. However, many departments do not have any records showing the analysis of the feedback data, nor do they have records of any actions taken. As noted earlier in module two, it is essential to analyse the feedback data, take appropriate actions and maintain relevant records.

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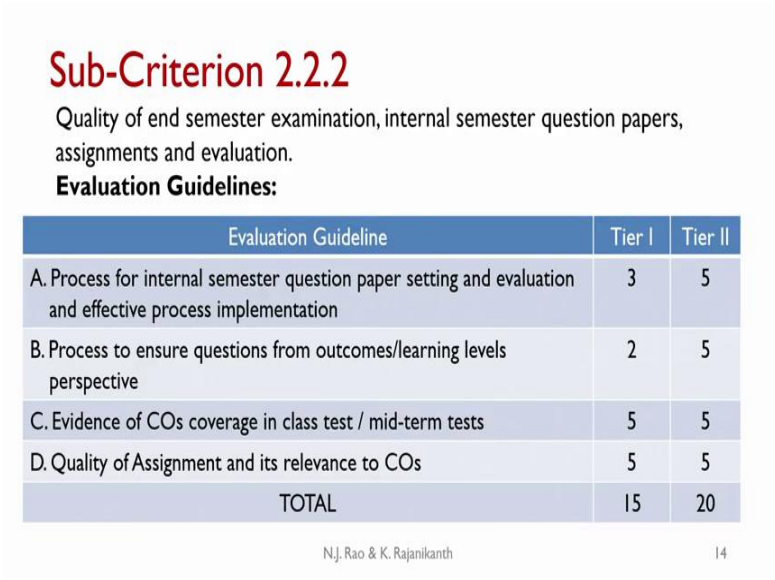

Sub-Criterion 2.2.2 is concerned with quality of assessment. The quality of end semester examination, internal semester question papers, assignments and evaluation. There are four aspects which are looked into by the visiting team Process for internal semester question paper setting and evaluation and effective process implementation. Process to ensure questions from outcomes/learning levels perspective learning level is same as the cognitive level of outcome. Evidence of COs coverage in class test and mid-term tests. Quality of Assignment and its relevance to the COs.

The allocation of the marks are different for tier one and tier two institute but the expectations are quite similar. Tier one institute has total marks of 15 while tier two institute has total marks of 20.

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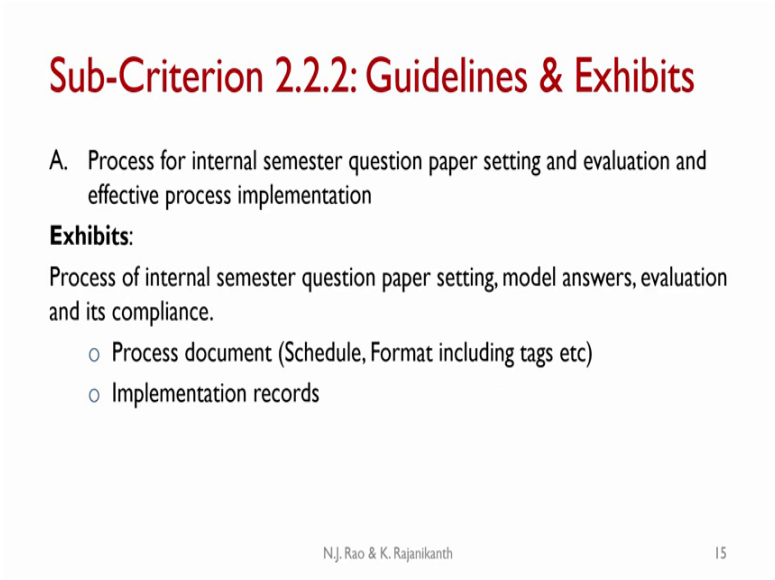

We must have a process for internal semester question paper setting and evaluation and effective process implementation also must be demonstrated. Process of internal semester question paper setting must be available. The process must include the requirement that the teacher must provide model answers, evaluation guideline and the department must show that the particular process is been implemented properly, so the records required would be the process documents and the implementation records. The process document would include the schedule of the internal examination, the format including the tags to be provided along with the questions.

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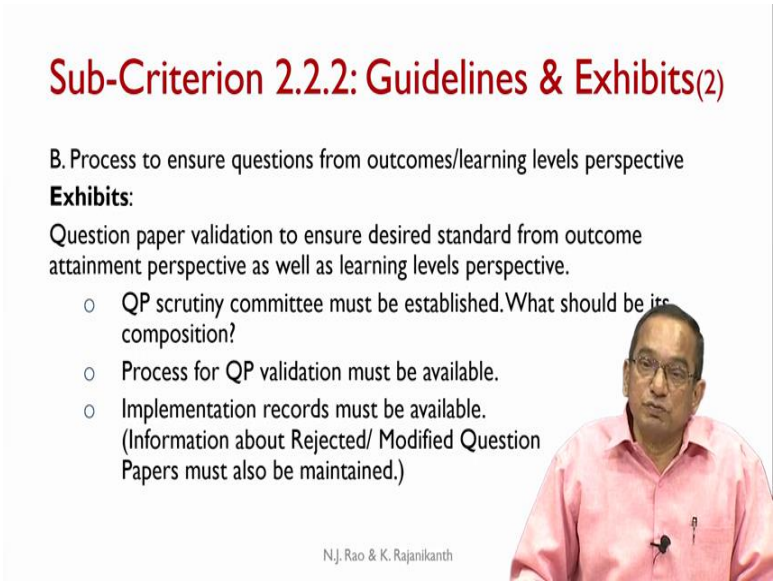

Then we need a process to ensure questions from the outcomes learning levels perspective. Question paper validation is required to ensure desired standards from the outcome attainment perspective as well as learning levels perspective. In other words, the questions related to a CO must be at appropriate cognitive levels and the questions must address all the COs in the balance fashion. That means, the question papers must be of certain quality to ensure that the cognitive levels are proper and the coverage of the COs is also proper. So, question papers need to be validated there is a necessity to setup a scrutiny comity for this purpose.

So, question paper scrutiny committee must be established. What should be the composition of such a scrutiny committee? Different department serve, different perspectives regarding composition of such a comity but generally it is a good practice to have a small committee from the requirements of confidentiality and integrity but the committee must be able to scrutinize all the internal examination question papers belonging to all the courses.

Process for question paper validation must be available. Implementation records must be available and they must also include information about any rejected question paper or modified question paper. If the validation committee or the scrutiny committee finds that certain question papers are of inferior quality the comity may reject them but the records of such rejections also must be maintained. This would demonstrate complaints to the proper units true spirit.

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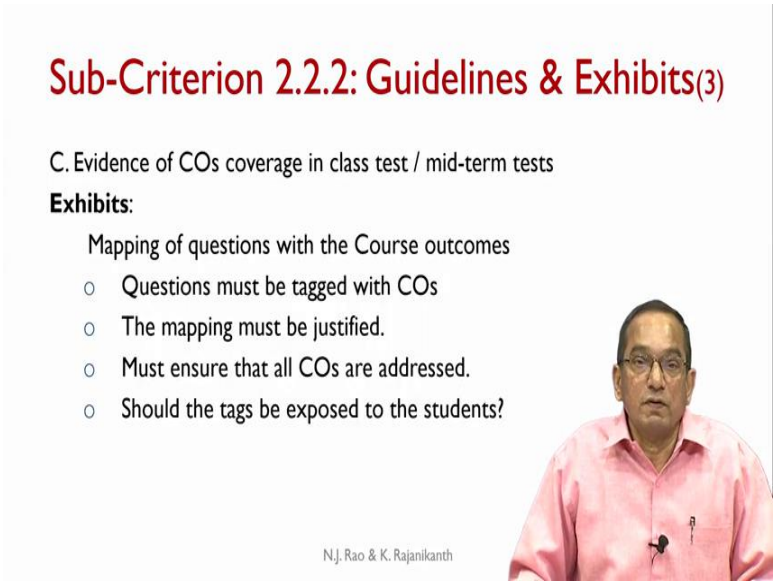

Evidence of COs coverage in class test / mid-term tests mapping of questions with the course outcomes. Questions must be tagged with COs the mappings must be justified and the department must ensure that all COs are addressed through the total number of internal assessments mechanisms used. Should the tags be exposed to the students? Departments have different perspectives but we see no harm in students seeing the mapping between questions and the COs.

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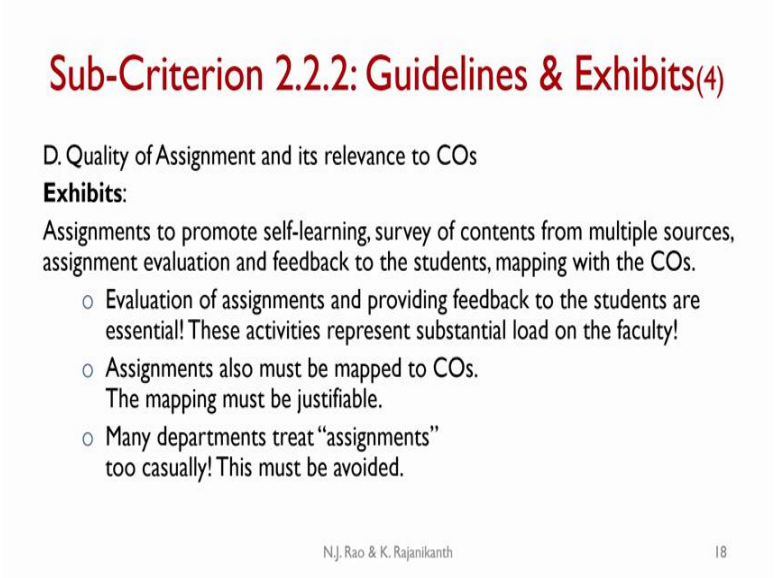

Quality of Assignment and its relevance to COs. Assignments must be in such a way that they promote the self-learning by the students, and they require the students to gather data

from multiple sources. The quality of assignments is extremely important assignment evaluation and feedback to the students is also examined by the visiting comity. Further the mapping between the assignments and COs is also examined by the visiting comity.

Evaluation of the assignments and providing feedback to the students are essential. These activities represent substantial load on the faculty and because of this heavy load it may sometimes happen that the evaluation of the assignment is done in a causal fashion and practically no feedback is provided to the students.

If such is the case, the assignments will not really serve any useful academic purpose, so though it represent heavy load, faculty must evaluate the assignments and provide feedback to the students and the departments must maintain a records of these activities. Assignments also must be mapped to COs. The mapping must be justifiable. As I have mentioned just now that many departments treat "assignments" too casually! This must be avoided.

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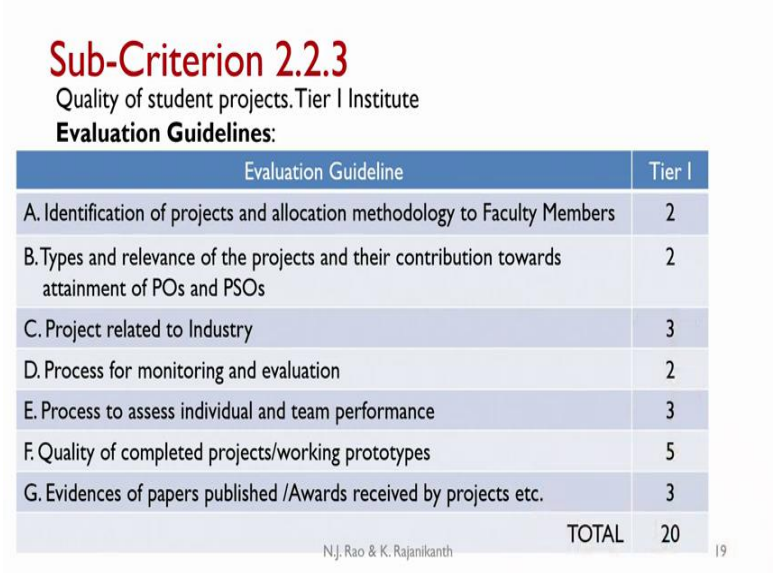

Then sub-criterion 2.2.3 is concerned with quality of student projects. The evaluations guidelines are somewhat different between a tier one institute and a tire two institute. They are similar in spirit but differ in details there are several aspects related to the projects which are examined by the visiting team.

Identification of projects and allocation methodology to Faculty Members, Types and relevance of the projects and their contribution towards attainment of POs and PSOs, Projects related to Industry, Process for monitoring and evaluation of the projects, process to assess

individual and team performance, Quality of completed projects availability of working prototypes Evidences of papers published Awards received by projects etc.

So, one can see that there is fairly detailed list of the evaluation guidelines provided for this particular sub-criterion.

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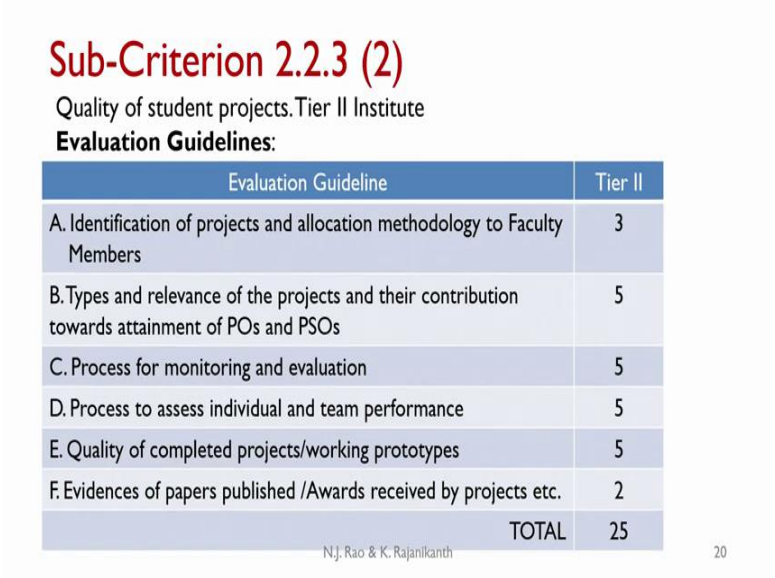

For tier two institute, the evaluation guidelines are quite similar but the allocation of marks are different. In fact, but for one particular aspect which is the Project related to Industry the criteria are quite similar. The total marks will be for 25.

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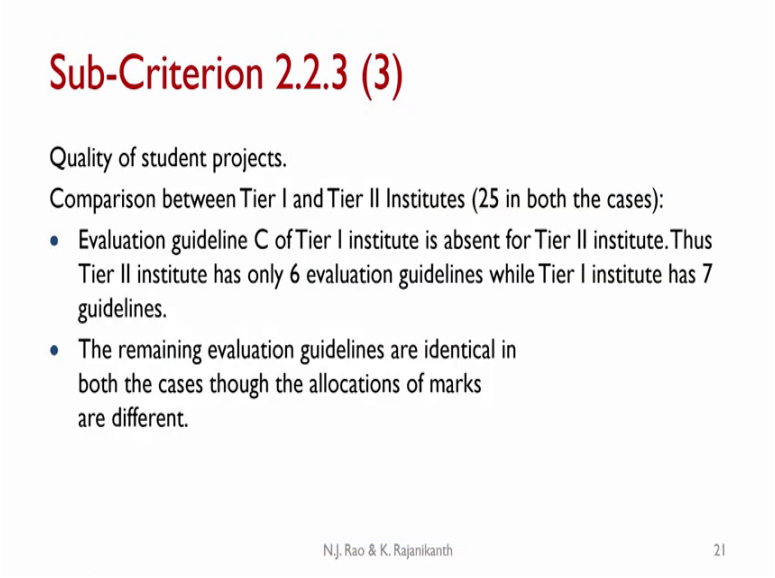

If you look at the tier one and tier two institutes in relation to this sub-criterion, we see that the Evaluation guideline C of Tier one institute is absent for tier two institute. That is what I mentioned just now, Projects related to Industry has no relevance to tier two institute thus tier two institute has only six evaluation guidelines while tier one institute has seven guidelines. The remaining evaluation guidelines are identical in both the cases though the allocations of marks are different.

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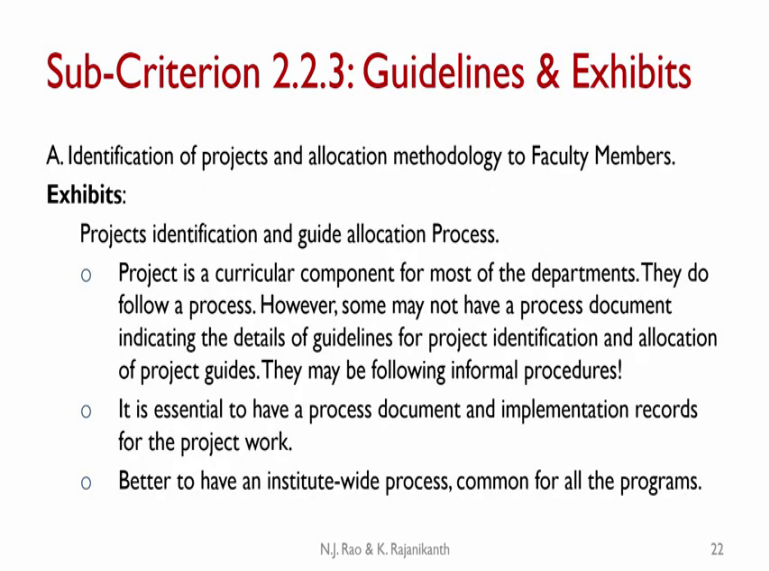

Identification of projects and allocation methodology to Faculty Members is extremely important aspect of implementing the projects. Project is a curricular component for most of the departments. They do follow a process. However, some may not have a process document a written process document indicating the details of guidelines for project identification and allocation of project guides. They may be following informal procedures.

It is essential to have a written, well defined process document and also maintain implementation records better to have an institute wide process common all programs. If the institute has an IQSC Internal quality assurance cell, that cell can be involved with this process formulation activity.

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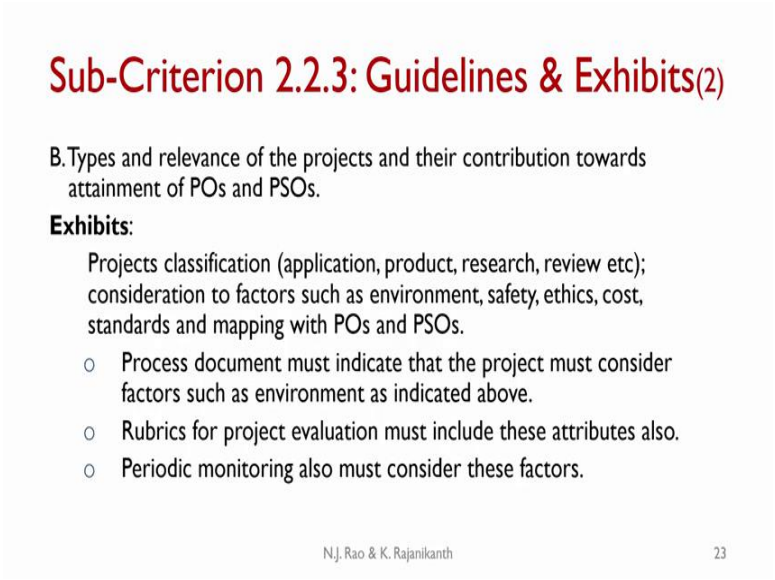

Projects can be classified in to application type or product type or research type or review type etc. But it is important that the projects check into account factors such as, environment, safety, ethics, cost, standards and mapping with POs and PSOS. These are related to some of the PO's specified by NBA which are otherwise not that well addressed.

Process document must indicate that the project must consider factors such as environment as indicated above. The department must also have Rubrics for the project evaluation which include these attributes. Periodic monitoring also must consider these factors. The parodic monitoring must assist the extent to which the project aims or taking into account factors like environment, safety, ethics, cost, etc.

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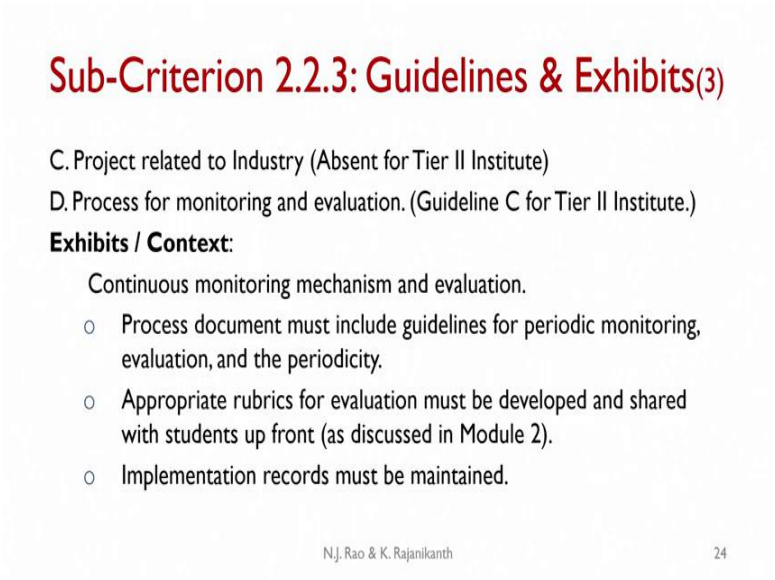

Whether the project is related to industry, this aspects is examined only for a tier one institute. Then, we need to have a process for regular monitoring and evaluation, this is called as guideline C for tier two institute but other than this change in the name of the guideline the spirit is same.

Continues monitoring mechanism and evaluation must follow a well-documented process, so the process document must include the guidelines for periodic monitoring, evaluation and also the periodicity. Appropriate rubrics for evaluation musty be developed and shared with students upfront. These aspects are discussed earlier in module two also. Implementation records must be maintained.

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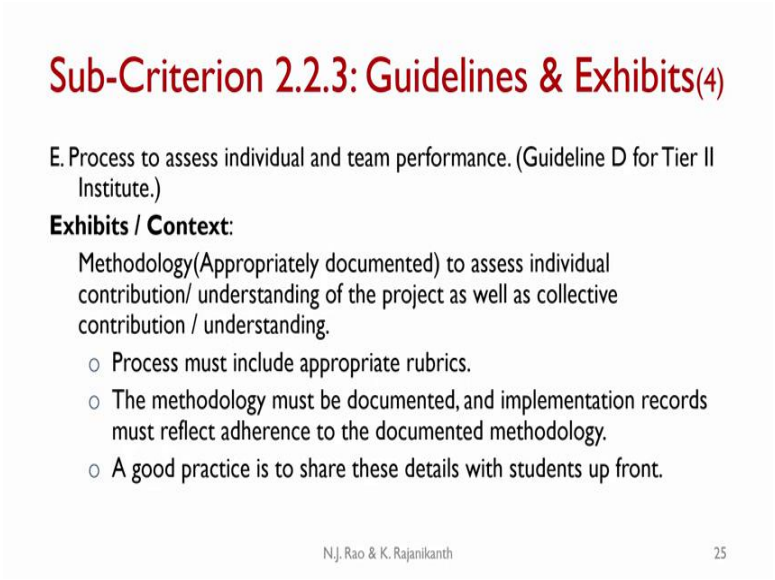

Process to assess individual and team performance. A project generally is implemented by a team of four to five students, thus there is contribution individually as well as contribution as a group, these two aspects must be properly assessed and evaluated, so we must have a methodology which is appropriately documented to assess individual contribution and understanding of the project as well as collective understanding and contribution.

Process must include appropriate rubrics. The methodology must be documented and implementation record must reflect adherence to the documented methodology. A good practice is to share these details with students up front.

What are the rubrics based on which the individual performance is assessed and how the group performance is separated from individual performance.

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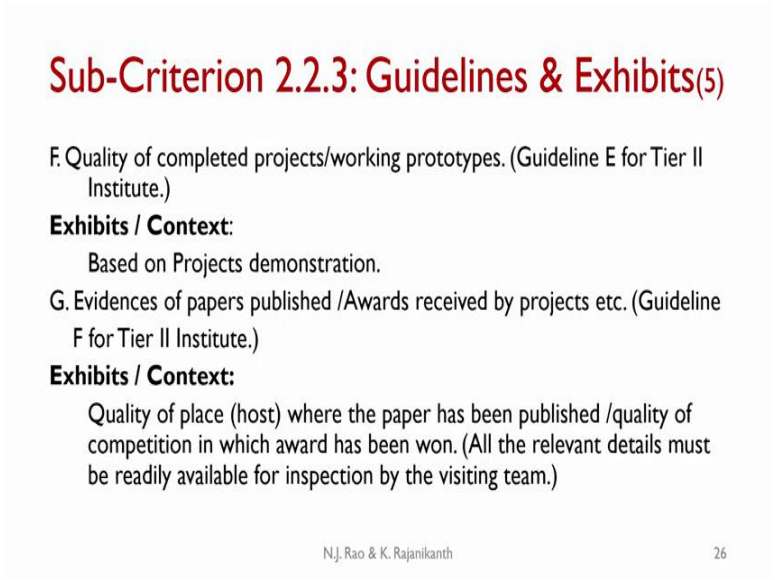

Quality of completed projects working prototypes is also examined by the visiting team, so the department can have certain projects which in their opinion are of good quality available for inspection by the visiting team. Generally, the visiting team may expect certain projects of high quality, certain projects of average quality and certain projects of relatively low quality to be available for inspection. They may wish to have a demonstration of the project also. The next aspect is evidence of the papers published, awards received by the projects.

Quality of the place where the papers are published and quality of the competition in which the award has been won would be the bases on which the visiting committee would assist the value of the paper published or the award received. The department must maintain all the relevant details for the inspection by the visiting comity.

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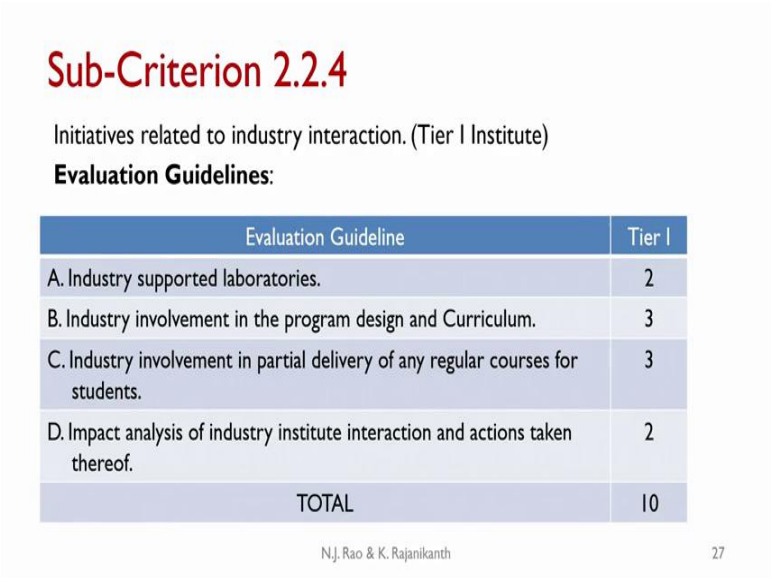

Then Sub-Criterion 2.2.4 is concerned with the initiatives related to industry interaction the guidelines for tier one institute are more or less similar to the guidelines for tier two institute. However, there are very minor differences both in terms of naming the guidelines as well as the marks allocated to them.

For a tier one institute, there are four aspects which are examined by the visiting teams. Industry supported laboratories for 2 marks, industry involvement in the program design and Curriculum 3 marks, industry involvement in partial delivery of any regular courses for the students 3 marks, impact analysis of industry institute interaction and action taken thereof 2 marks.

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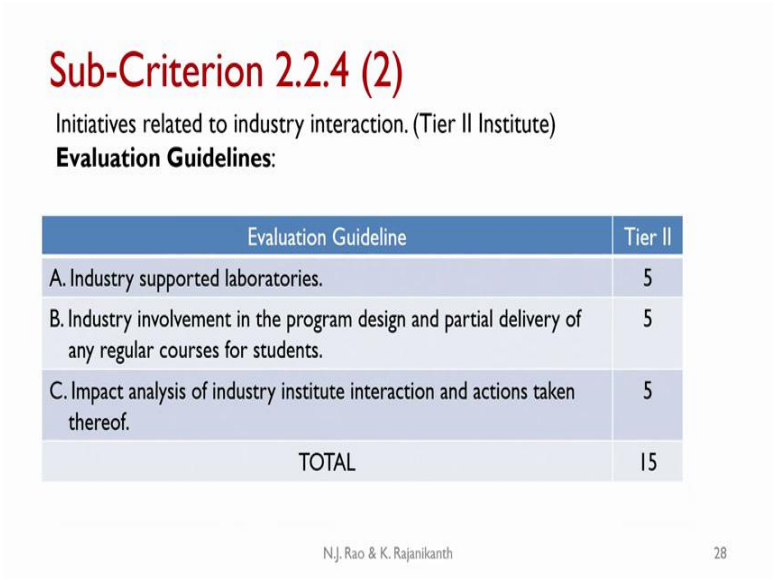

For a tier two institute, the evaluation guidelines are quite similar but they are only three in number and the total marks are 15.

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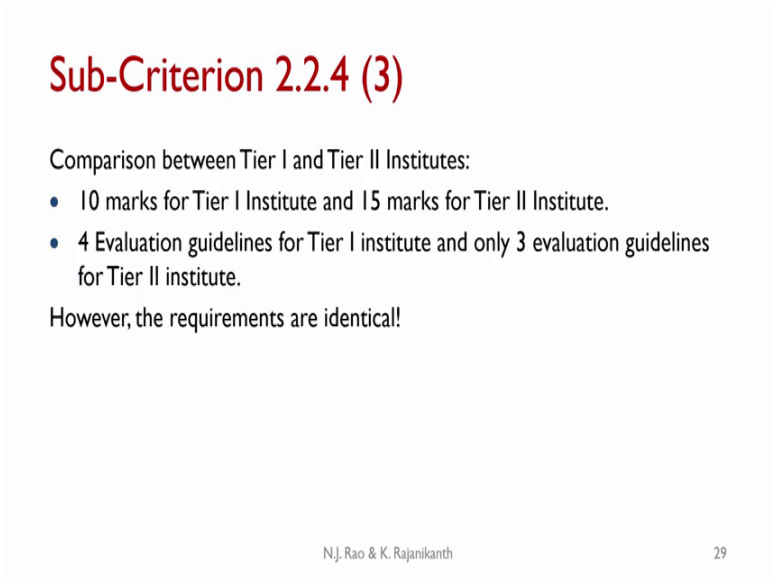

If you compare tier one institute with tier two institute with respect to this Sub-Criterion, we notice that there are 10 marks for tier one institute while there are 15 marks for a tier two institutes. Four evaluation guidelines are there for tier one institutes but there are only three evaluation guidelines for tier two institutes. However, the requirements are identical.

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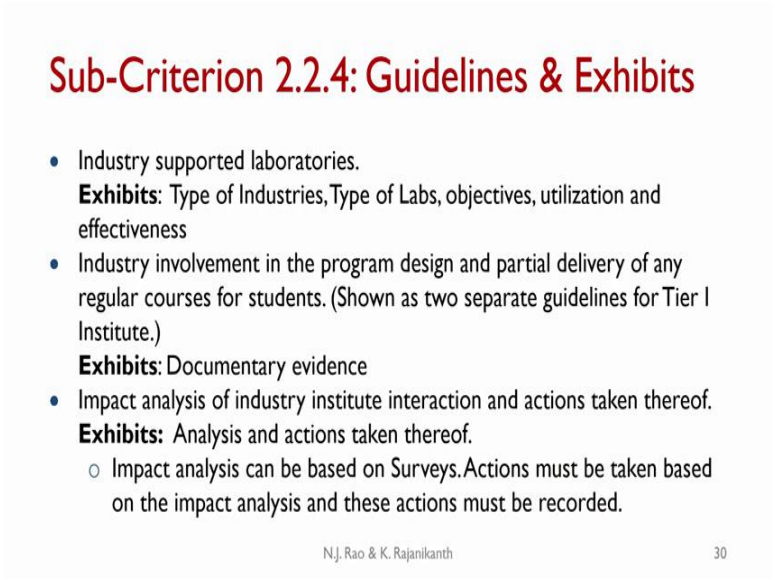

The first aspect that is examined by the team is, are there any industry supported laboratories, types of industries, types of labs, the objectives with which this labs were established, what are the extent where the labs are getting utilized, and what is the effectiveness of making these labs operational.

These are all the aspects which are examined by the visiting team. It is necessary that both for tier one and tier two institutes the laboratories which are setup with assistance of the industries are properly operated to ensure their effectiveness, records must be available to show the industry help in setting up this laboratories and utilization of this laboratories.

The next aspect is industry involvement in the program design and partial delivery of any regular courses for the students. This are shown as two separate guidelines for tier one institute but they are combined into a single guideline for a tier two institutes but essentially the department must have documentary evidence to show the participation of the industry in the design of the program and if any industry experts are participating in the delivery of regular course for students the departments must have such records.

So, documentary evidence must show the involvement of industry both in the reason of the program as well as in the delivery of any regular courses for students. The third aspect is missed by many departments often. The department needs to analyse the impact of industry institute interaction and initiate appropriate actions based on that analysis. Impact analysis

can be based on surveys also .Actions must be taken on based of impact analysis and these actions must be recorded.

Often departments miss this aspect of the industry institute interactions. There are no records of impact analysis or records of actions taken there of. Department must take care to see that they collect appropriate data regarding the impact of these initiatives and they further record the actions taken by them based on this data and the analysis.

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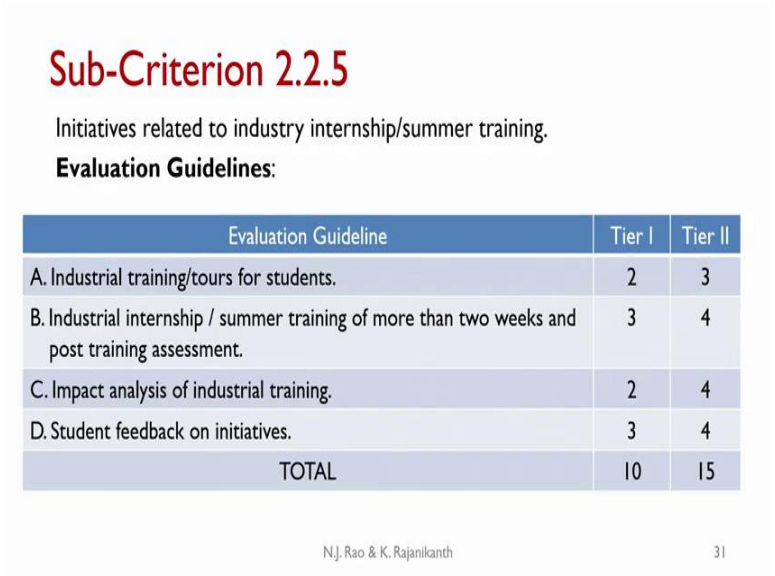

The Sub-Criterion 2.2.5 which is the last one is concerned with the initiatives related to industry internship and summer training. There are four evaluation guidelines industrial training tours for students, industrial internships summer trainings of more than two weeks and post training assessments, impact analysis of industrial training student feedback on this initiatives.

There are 10 marks for tier one institutes and there are 15 marks for tier two institute. Now that AICT has made it mandatory for institutes to provide internship for its students meeting the this particular Sub-Criterion has become relatively simpler.

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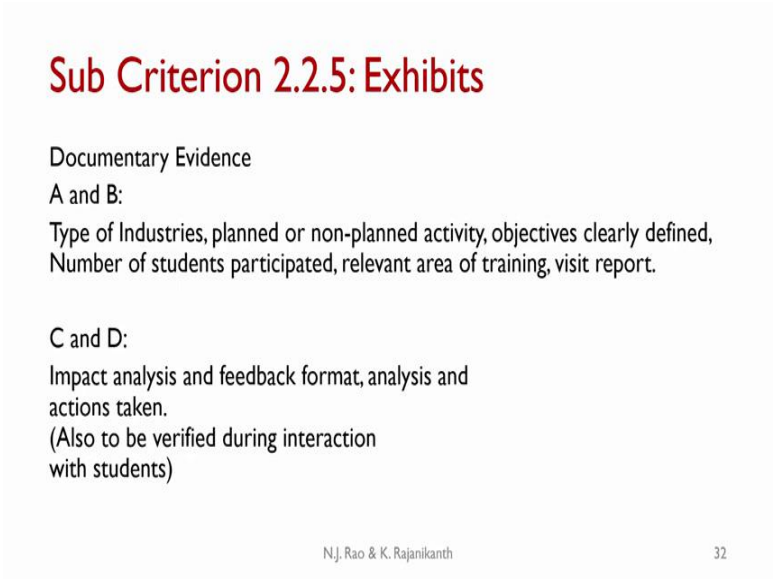

We must have documentary evidence regarding the types of industries were internships is being provided, whether all the activities are result of plans, or some non-planned activities also happening, the department must also clearly list the objectives for which the particular internship with particular industry is being provided, it must have records of the number of students who have gone through the internship, it must also record the relevant area of training students must be asked to submit reports of their internships or industrial visits or summer training whatever activity they undertake they must produce a report of that.

And for the aspect C and D the department must have impact analyses and it must indicate what is the format of the feedback that they are using to collect data from the students.They must also record the analysis of the feedback data as well as the actions taken based on that analysis. Here again, as with the earlier Sub-Criterion many departments do provide internship opportunity for the students as well as summer training opportunities for their students.

They do collect some form of feedback from the students, however they sometime miss to analyse this feedback data and they miss to record any action initiated based on an informal analysis but NBA requires that the departments formally record the analysis of feedback data and the actions taken based on that analysis.

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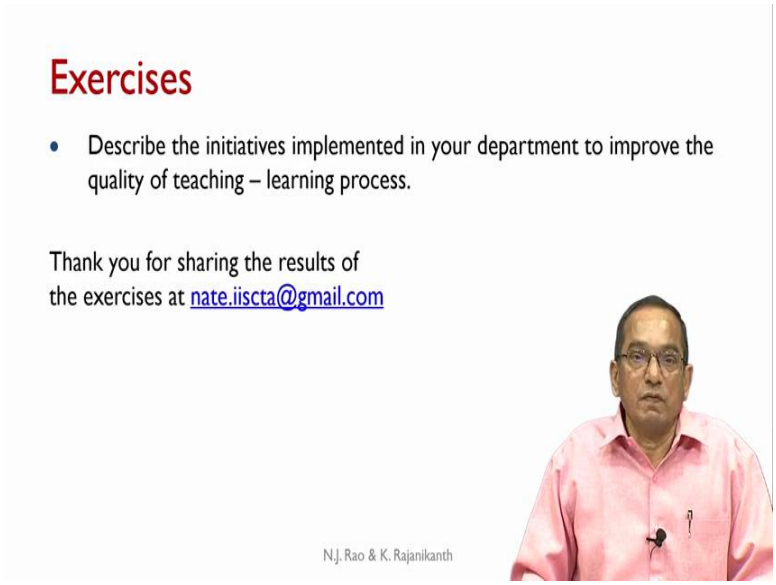

An Exercise for you, describe the initiatives implemented in your department to improve the quality of Teaching-Learning process. Thank you for sharing the results of the exercises at nate.iiscta@gmail.com.

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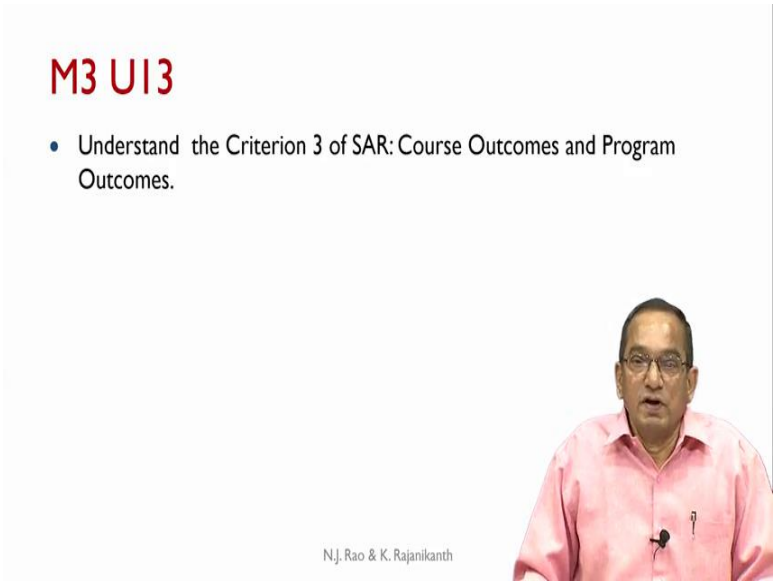

In the next unit, we will start looking at criterion three of SAR which is concern with course outcomes and program outcomes. Thank you.