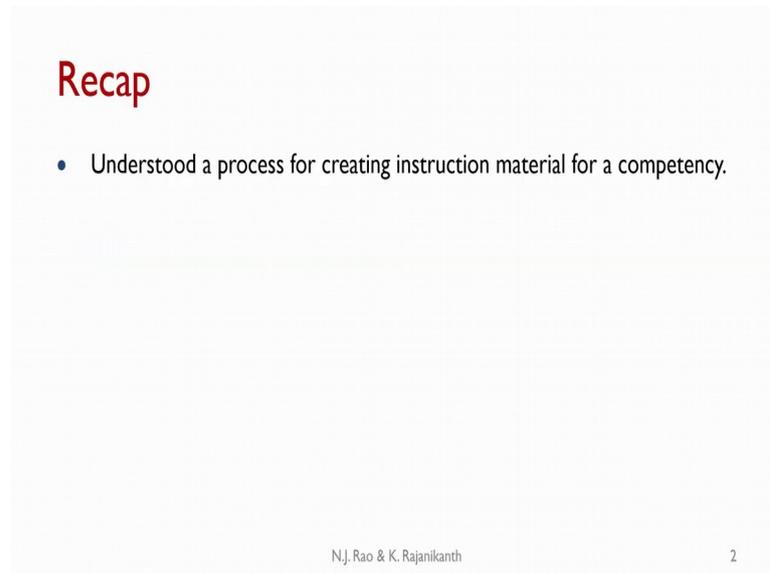**TALE - 2 Course Design and Instruction of Engineering Courses**
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Lecture - 12
Implement Phase 1

Greetings and welcome to TALE Module 2 Unit 12 on the Implement Phase.

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In the previous unit we understood a process for creating instruction material for a competency was related to development phase of course design. Course design is to be done within a certain instructional system design framework. There are several frameworks, but we are following ADDIE. ADDIE is Analysis, Design, Development, Implement and Evaluate - 5 phases of ADDIE model.

Till now we have seen the analysis phase in which we created the course outcomes and also elaborated them into competencies. In design phase we addressed the issue of assessment and how to plan assessment in alignment with that of competencies and course outcomes. In the development phase we looked at how to create instructional material for a competency and we proposed 'script and dialogue' phase of material. If this is followed then one can develop the instructional material while the learning material is only one of selectional, occasionally the teacher preparing some material which is not readily available in a textbook.
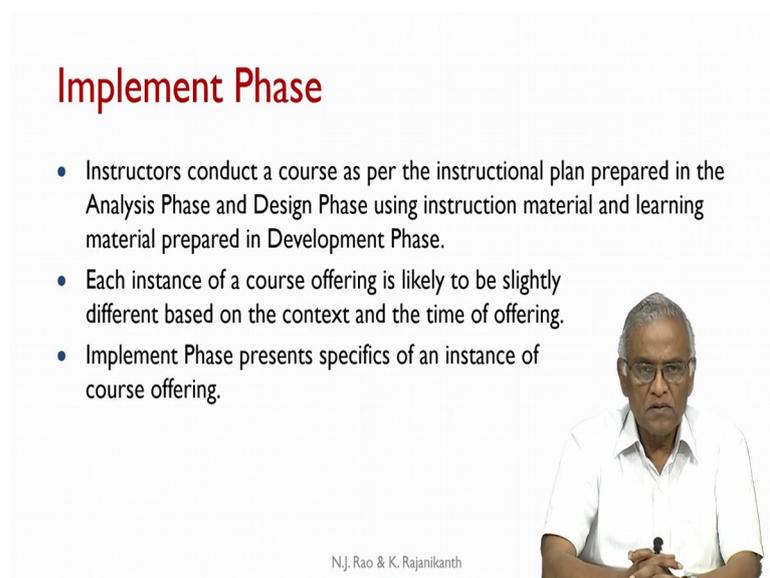
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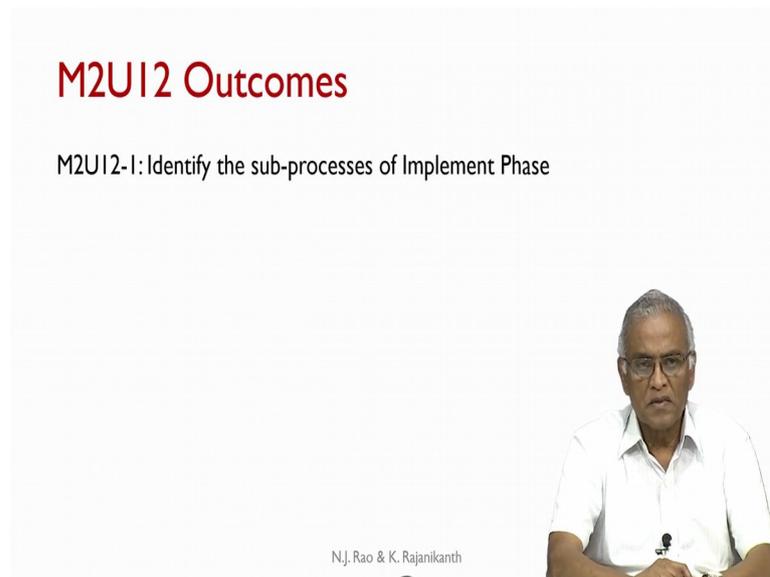
Implement phase: the intended outcome is identification of sub-processes of implement phase. Every phase will have some sub-processes and though the sub-processes and their sequence is not anything unique, but some set of sub-processes we have to identify and also sequence them. One set of sub-processes is presented here which we found the advantageous and useful.

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Actual implement phase follows the development phase, but whenever you are implementing each one is an instance of a course offering. When I offered a course in 1

semester it is one instance of offering a course. But, every time I offer this course the context slightly becomes different. First of all the students who come to my course are now different compared to the previous one and there could be minor changes with regard to organization in the institute where I am offering or some new material might have come and I myself may want to make slight alterations to the content of the course so on. Therefore each instance of course, offering is likely to be slightly different based on the contexts and the time of offering.

Implement phase when you are writing it should present the specifics of an instance of course offering. That means, if I am planning to offer a course in the coming semester from August 1st, I should write for myself all the specifics of the offering of that course the way I want to do from the August term. There is some specificity. Content of the implement phase will differ from one offering to the other slightly not significantly unless the curriculum is overhauled and completely different material is brought in. In that case you have to start all over again from analysis phase and go through all the other phases as well.

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Processes for the Elements of Implement Phase

- Syllabus
- Planning for resources
- Instructor's perception of students with regard to their abilities and motivation
- Instruction Schedule
- Observations on Instruction
- Additional sessions conducted by the instructor beyond the scheduled hour/s

- Assessment Instruments
- Feedback to students after every assessment
- Observations on Assessment Instruments and Student Performance
- Student feedback during the session
- Tracking students

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The processes for the elements of implement phase: there are different elements and processes that we go. Writing a syllabus (will elaborate that presently,) planning for resources, that is you require some resources for conducting a course so, how do we plan for that. students change from one year to the other, then I need to have a feel for what

kind of students do I have. I cannot typecast/stereotype them. Each batch is slightly different and we go through trying to find out instructor's perception of students with regard to their abilities and motivation.

Instruction schedule which all of you will be familiar, that is every teacher will have to prepare a lecture scheduler/lecture plan. Observations and instruction - that is after I conduct a class session, at the end of that session, I want to come back and record my observations (how it happened, what difficulties were there or what successes were there) in 2 or 3 sentences. Sometimes we conduct additional sessions for various reasons that also should be recorded.

Create assessment instrument specifically for that semester, whether it is quizzes or class tests or end semester exam (if it is an autonomous institution or otherwise if it is a affiliated college the controller of exam ill arrange for design of assessment instrument for SEE) Feedback to students after every assessment, observations on assessment instruments and student performance, student feedback during the session. Can the students give us some feedback? Also tracking the students - we want to keep track of performance of the students so that a little advanced action can be taken rather than waiting until the end of the semester.

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Syllabus

- A well written **syllabus** guides faculty and students alike.
- It provides students with information about the broad aim of the course, the specific course outcomes the student is expected to demonstrate at the end of the course, the instructional plan, work expected of the students, how performance will be evaluated and several other issues.
- By distributing a written syllabus at the beginning of the course, the instructor can minimize student misunderstandings about expectations for the class.
- Syllabus can also keep faculty on track throughout the semester and help to ensure that the course does not stall at any one point (Joyce and Marilyn 2004).

First element of implement phase syllabus. The way syllabus word understood in India and elsewhere are somewhat different. The moment the word syllabus is uttered a list of

topics organized in some fashion, sometimes as units or sometimes based on the topic you divide them into some paragraphs and list the topics, and maybe you indicate the number of credits for it and give the textbooks and references are listed.

Any syllabus book from any of the universities will only have this material. More or less teachers will take it for granted the syllabus is already known to the students. In some cases the teachers would give (one sheet of paper maybe is a printed or now these days you can put it on the website) something about the description of the course to the students. In all good institutions especially autonomous institutions there is a practice the teacher will write something about broadly the aims of the course and what is he expecting, but if you survey any of these documents nobody follows any particular format for that.

Whereas internationally each university will prescribe a format for submitting the syllabus (slightly different format from the other.) All faculty members will have to submit the syllabus in the format given by the university or college from all programs. We will now try to define syllabus in this sense. There is even a book written on this by Joyce and Marilyn about writing the syllabus.

A well written syllabus guides faculty and students alike. Especially it makes very clear to the students what they need to, what they are expected to do and so on and also it will serve as a guide to the faculty. There is a tendency with some faculty to spend more time on the topics of their favorite choice and less time on some other things, sometimes even drop the topics. The syllabus should guide the faculty. Faculty member himself will write the syllabus. Only thing after writing the syllabus and presenting it to the students, during the semester he is expected to follow that.

Syllabus itself provides students with information about the broad aim of the course, specific course outcomes (COs), the student is expected to demonstrate at the end of the course, instructional plan, work expected of the students, how performance will be evaluated and several other issues. First time when you write to the syllabus in this format it may look very imposing and unnecessarily detail, but once you do that from year to year you are likely to slightly tweak the elements of that (not very much.) So, it is not a big burden on the teacher to keep upgrading or modifying the syllabus from one semester to the other.

By distributing a written syllabus at the beginning of the course, the instructor can minimize student misunderstandings about expectation for the class. It may be clear to the teacher, but it may not be clear to the student. If it is not communicated; if he misunderstands and does not cross check he pays a very heavy price towards the end of the semester.

To eliminate this misunderstanding a well written syllabus will play a very important role. Syllabus can also keep faculty on track throughout the semester and help ensure the course does not stall at any one point. You have to move on and you have some goals to reach. The main goal is really to facilitate the students to attain the stated course outcomes.

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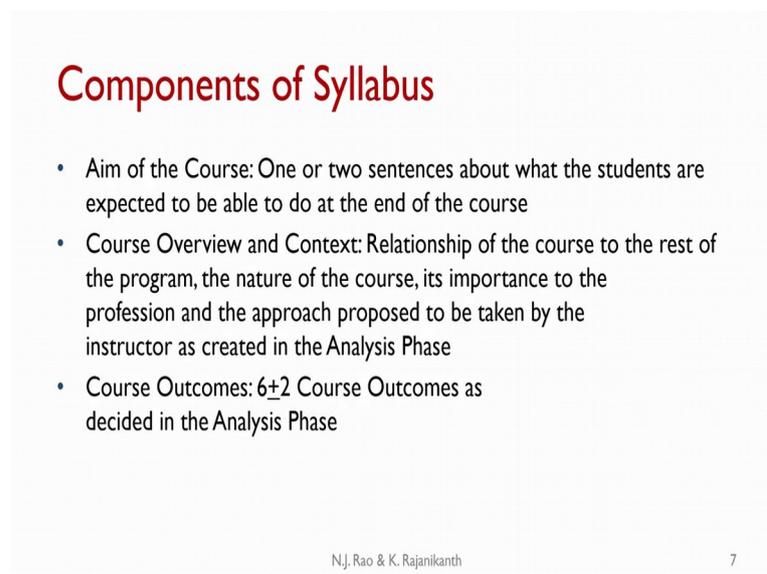
Components of Syllabus

- Aim of the Course: One or two sentences about what the students are expected to be able to do at the end of the course
- Course Overview and Context: Relationship of the course to the rest of the program, the nature of the course, its importance to the profession and the approach proposed to be taken by the instructor as created in the Analysis Phase
- Course Outcomes: 6±2 Course Outcomes as decided in the Analysis Phase

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Components of the syllabus are several. Aim of the course - one or two sentences about the students are expected to be able to do at the end of the course. It is always good to write one or two sentences saying what the course is all about what is aim of this. Course overview and context - contains relationship of the course with the rest of the program, the nature of the course, its importance to the profession and they approach proposed to be taken by the instructor.

This has been created this in the analysis phase. Course context and overview the way it is written in analysis phase has to just be brought here. Write the course outcomes (these were also prepared in the analysis phase bring them here.)

Further the course competencies (elaborations of course outcomes) if you are writing 6 plus 2 course outcomes, the number of competencies may maybe around 15 plus or minus 5, but never really more than 20 very rarely it will reach 20. With each competency we associate one instructional unit (that is what we have explained in the previous unit.) Content of the course is the list of topics which everybody is familiar with, a syllabus only means list of topics also presented.

Learning resources - textbooks, references and annotated the internet links constitute the learning resources. If some academic management systems are being used, some curetted material both from books and internet can also be prepared by teacher and made available.

Assessment pattern as decided in the design phase has to be mentioned. Assessment pattern would also talk about how much percentage for CIE what are the components of that, how much weightage is given to that, how much percentage for the SEE and what restrictions you have from the institution or the university. Whatever has been done in the design phase needs to be put here.

Attendance policy - the minimum attendance required as per the college/university norms and the stipulations of the instructor. In autonomous college an instructor can also additionally stipulate, but in an affiliated college it is a college or university decides the

norms (like minimum 75 percent attendance or 88 percent attendance and so on.) If you fall short of that what are the necessary steps followed are also part of attendance policy.

Instruction schedule - classroom and laboratory schedules giving specific dates. Every time the course is offered the dates will change so lecture plan with the dates (instructions schedule) need to be included.

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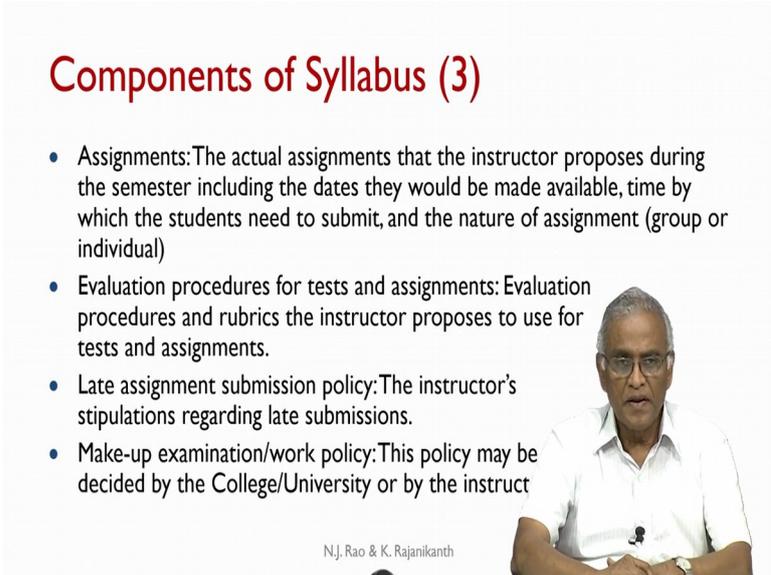
Assignments – if 2 assignments are planned then the teacher is expected to prepare these assignments in advance and at what time they would be made available to the students and by what time the students need to submit and the nature of assignment, whether it is group or individual assignments and so on. Whether it is 2 or 3 assignments all the details need to be a put very much together including the dates.

Evaluation procedures for tests and assignments and if any rubrics are being used, all the structure of the assessment or the tests and assignment should be very clearly mentioned. For example, an assignment may have only 2 problems to be solved, but assignments having more number of questions partly from understand and partly from apply category. So, whatever marks you are allocating the rubrics you are following, if you want the student to write a report all that should be part of evaluation procedure.

Late assignment submission policy what is that policy? If there is a learning management system that is involved for submission of assignments, it will reject anything that the

student submits after the stipulated time. What is the rule, what should the student do in such case - that late assignment submission policy should be written. Sometimes you have make up examination or work policy. That is something has not been done for some reason and under what reasons - what do you want to do and sometimes this is decided by the college or by the instructor.

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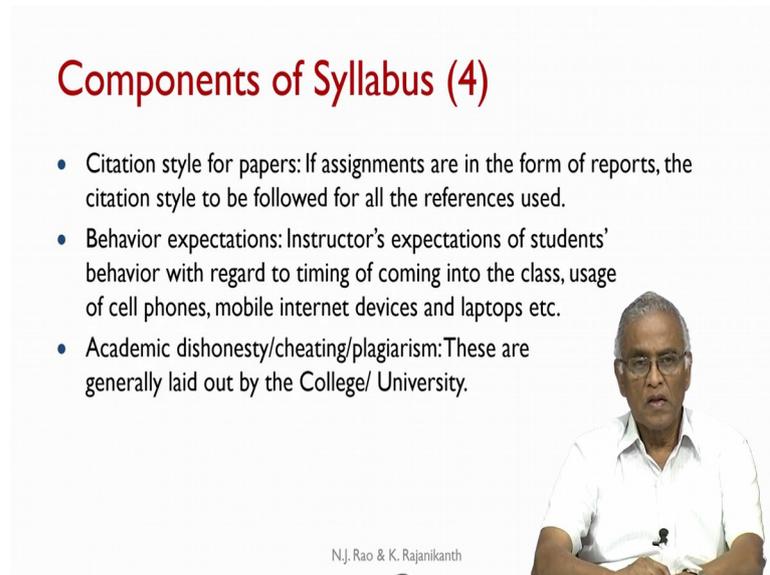
If assignments include some reports you maybe citing some journal papers then in that case what is the citation style to be followed for all the references to be used. As an engineering student he is training himself to a professional he should follow the norms that need to be followed when he is citing a paper. Samples can be given to show how the citation should submit.

Behavior expectations, instructors expectations of students behavior, with regard to the timing of coming into the class, usage of cell phone, mobile internet devices, laptops etcetera. Academic dishonesty, cheating or plagiarism these are generally laid out by college or university itself. That information also should be appended here.

The students want to find out when they can meet the teacher regarding that course. If they have any doubts should it be arbitrary? If the instructor may say such and such hour in a week he is available and anyone can come in and meet him with regard to that course only. Occasionally in Indian context if you have some teaching assistants how should they be contacted that information should also be made available.

These days colleges/institutions are encouraged to enroll differently abled students. called Divyangs. Specific support system that is available if there are Divyang students should also be clearly mentioned. Both NAAC and NBA clearly seeks information from colleges/institutions about the arrangements for Divyangs.

As it is seen there are about 17- 18 items in Components of Syllabus, and if you consider any of these items are not relevant in your context or for your course delete that, but write all these information. These days as everybody is accessible on internet devices, you can put this up and share with the students in WhatsApp right on the first day of the class. Or before the course starts this can be shared with the students who were registered for your course. What is the expected from the students is made very clear, so that there are no misunderstandings and any consequences because of that.

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Planning for Resources

- Depending on the number of students and delivery technology chosen the resources needed to conduct the course are to be planned.
- If group discussions constitute a significant classroom activity, the furniture should permit such an activity.
- If students are expected to work with their laptops/ tablets in the classroom, the furniture, power supply connections and Wi-Fi modems should be available.
- If an LCD projector is proposed to be used, it is necessary to specify how the input to the projector is proposed to be handled.

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Because of the technology is varying you need to plan for resources. Of course, you may want to something, but it may or may not be available in the institute. So, you have to take a little advance action before the semester starts with regard to the resources. For example, depending on the number of students and delivery technology chosen, the resources needed to conduct the course are to be planned. That is the purpose of planning.

If group discussions constitute a significant classroom activity the furniture should permit such an activity. You cannot have rigid benches and chairs and expect group discussions. Slowly this will further increase it may not be very significant now, if the students are expected to work with the laptops or tablet us in the classroom, the furniture, power supply connections and Wi-Fi modem should be made available.

If an LCD projector is proposed to be used, it is necessary to specify how the input to the projector is proposed to be handled, does the teacher has to bring his laptop? For example, I may have an invited lecture from someone, he may bring only a pen drive. Can someone put the pen drive in and the present a lecture?

On top of that if you are operating using a learning management system and the necessary connectivity to the LMS has to be made. If it is not made it is there is nothing you can do really with learning management system. If you are using MOODLE and if you expect student to answer a small quiz (while quiz can be created using LMS,) unless you have Wi-Fi connectivity in the class students' responses cannot be collected.

Some instructors may wish to use big things like flipchart, show large maps, show artifacts, demonstrate a device or conduct an experiment. Many of these arrangements require a little longer term planning, you cannot just walk in to the first class of the expect all these things to happen. For example, Professor Andy Pausch of Carnegie Mellon University used to prove a point (to whatever purpose you consider) he used to do a strange thing in his class to talk about product design. He would bring a working CD player and bring a large sledge hammer and break it that is a first act that he will do it in the class.

Of course, we are not we are not going to recommend to any of you that you should start bringing something and break it in the class, but he had his way of doing things. So, anything a teacher wants to do it has to be planned in advance.

Generally the instructor should also have a kind of a view of the students. What kind of students are coming to me? You cannot make it stereotype and say any way all students are bad with the exception of a few students. (so, that is the kind of pattern, it is not good idea to stay with that kind of stereotype image.) In India somehow engineering education was considered "anybody can do" and that is a way to get into some meaningful employment.

There had been a lot of social pressure. The parents who would want their wards to do engineering and this started in early 1990's and there was an unprecedented growth of engineering institutions. It is also privatized, you have to fill in the seats and once you have to fill in the seats there is once again both political and other social pressure to keep reducing the entry level capability of the students, anyone who just pass let us say with 40 percent marks is eligible to do that.

If you look it even CET (Karnataka –Common Entrance Test) you can have 50,000 rank in that, but you need to have a rank a 50000 rank person also can come and join an engineering program. When you have such a situation that is you want equity, equity would mean people belonging to all social strata, all economic strata, should have chance to study engineering and irrespective of their cognitive abilities. Also you should have access, it should not be very difficult to get into that in terms of either fees or distance from home town and so on. These two have resulted in a tremendous growth of

engineering institutions and in the class room, (you have to acknowledge that) you have students with widely varying abilities in your class and you cannot complain about that otherwise is a even as teachers we do not have any reason to exist.

There is a college, it is giving you employment, you are a teacher and these are the students that are with you. So, you have to do the best job with the students and with the curriculum that you have. You will have to adjust your instruction to suit your class with the kind composition of your class. The ability and motivation profile of a class will have great influence on teaching and learning. This profile of students can vary from year to year or from section to section, if there are multiple sections for a course.

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So, what we suggest is an approximate profile of the students, this can be created after consulting a psychologist. From the data about the student where he came from, what kind of performance he had earlier based on that you can create a profile like cognitive abilities and motivation. For example, this motivation issue many of you teachers would have experienced because students with absolutely 0 motivation engineering are pushed by the parents to do engineering and; obviously, those students sometimes they rebel and do not want to perform, sometimes they struggle hard to bring themselves into this stream so, you have all kinds of situations.

I will divide into some 5 levels and the number of students, (if I have 60 students) how are they distributed with respect to their abilities and motivation. If I can have that, it is a

background that serves for me to plan my instruction, it is not that I can create a formula with respect to this. A teacher will have to say at what level do I actually plan my instruction and actually conduct the course, that is a instructors' perception of students.

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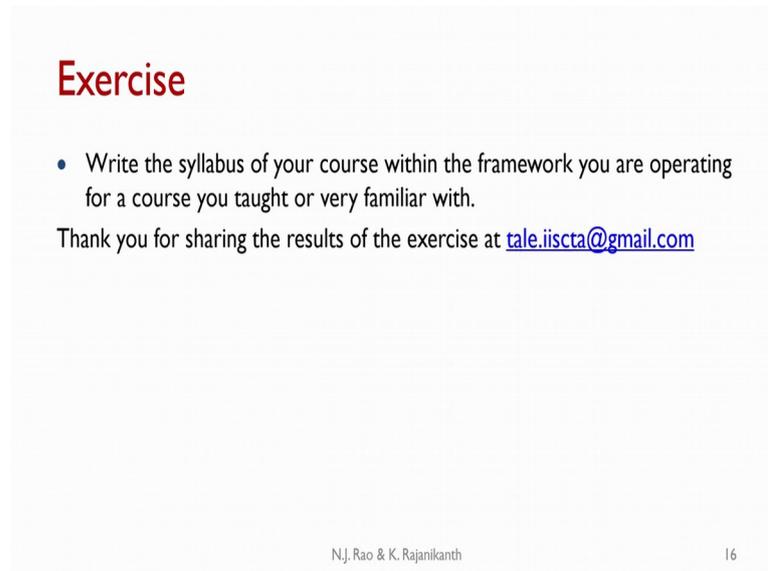
We would like you to write the syllabus of your course within the framework you are operating for a course you taught are familiar with. What you can do is look at the 17-18 items that we talked about and most of the things that you have already done in this, but you arrange them in this sequence and if you can share with us, we will appreciate that.

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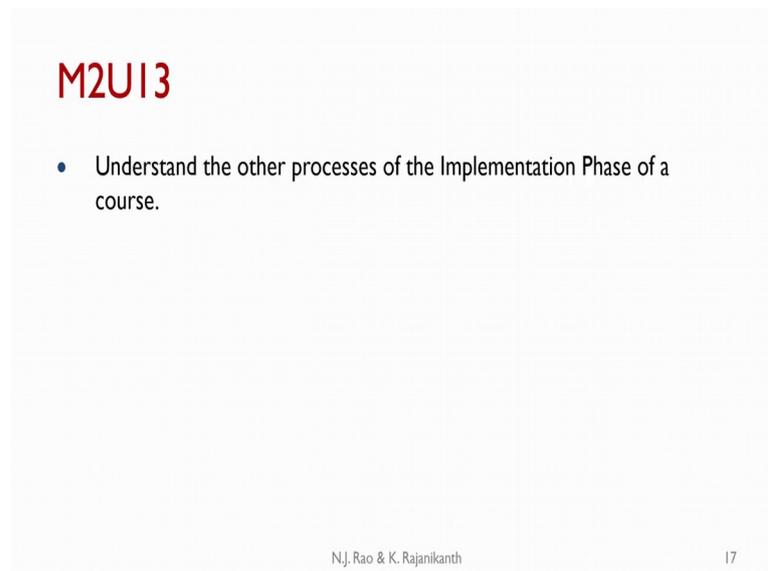
In the next unit which is implementation phase 2 we will look at the remaining process of implementation phase.

Thank you for your attention.