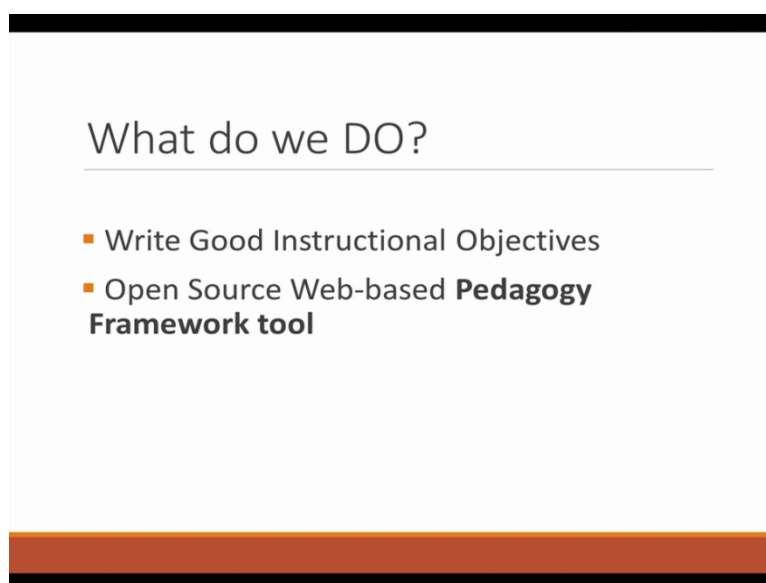


Course on Outcome based Pedagogic Principles for Effective Teaching
Professor Shyamal Kumar Das Mandal
Centre for Educational Technology
Indian Institute of Technology Kharagpur
Module 03
Lecture No 13
Taxonomy (Contd)

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Good afternoon, taxonomies and instructional objectives. Here, mainly I cover the how to write the good instructional objectives and the open source web-based pedagogy framework tool, professor Dasmandal will explain how to use the pedagogic tool but before that some example I want to give for instructional objectives. The student will demonstrate metric measurement of length is better if you write in such a way that given a metric ruler the students will measure the length of common linear objects to the nearest millimeter, so, given the metric rule, so it will be very clear right.

So, the students will learn suppose about objectives if you if the instructional objectives if we write it, the students will construct well-defined instructional objectives. If you write in that way this is really proper anybody can understand it, right. So, there is some example of performance outcome and the instructional objectives, suppose performance outcome, the students will add double digit numbers, okay but when the instructional objectives I will write if we write in that way that given two double digit numbers written in an equation form the students will add them together, if you write it the instructional objectives given this things the condition component and what you have to the you have to add the number, so that is the performance component, okay.

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So, in that just see here, initiate in that if you just go to the www.ide.iitkgp.ernet.in, it is an open sourced a web-based pedagogy framework tool where you can develop your own course for the designing reviewing, monitoring the outcome based curriculum you can develop your own course in your own subject. So, what is the vision of this framework? Why we develop this framework because we want that the make engineering education system more learner centric.

So, in the framework only if you mention what is the objectives, the students the learner can know okay, this is the objective, so we will we will learn in my own way in such a way so that we can get that objectives. So, it is the open source so the learner can see the tool and the thing is that take care of individual differences amongst learners in their own time, they as the learning styles, learning approaches are different. So, the learner if know the objective so in their own style they can learn on their own and it ensure the mastery over not only the domain knowledge, but also over knowledge, skills and attitude that needed to the 21st century we are focusing there.

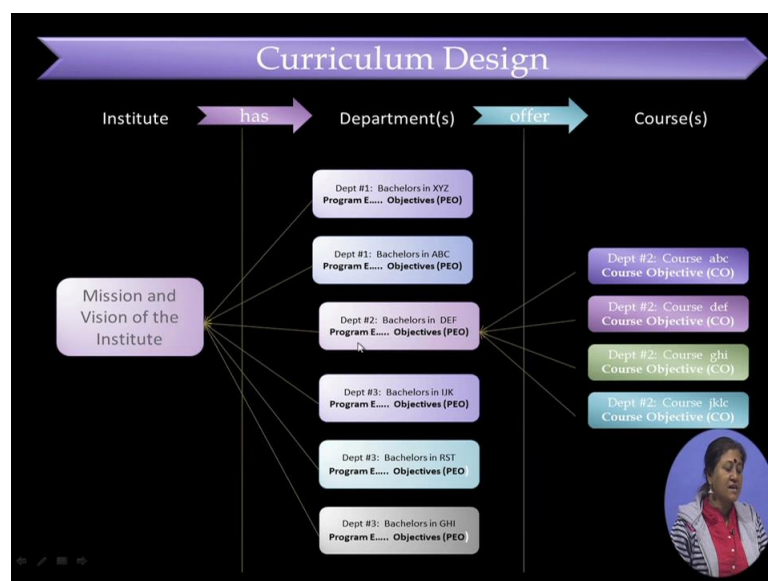
So, and we introduce the outcome based learning right. So keeping these things we developed our software and what are the features of these web-based tool. Here, any institute can develop their own course, any individual can develop their own course because the outcome based framework is there and industry experts in that when the developing the course, the industry experts also can see the course and they can provide the framework you know, for any course any they can give their comments and according the learner can also know and the course developer also can change that okay, this industry people they want this. So, according

to that we can change our objective with the, we can give more learning materials we can everything is there.

So, features industry experts can add individual learning resources, their case studies, unsolved problems for any course outcome and any student and learner, a can view the above courses for develop the intended skills. So, this is really a very modern approach for the curriculum design. So, the select the course objectives which promote higher order of thinking skill that is analysis, synthesis and evaluation level and it express the objectives of knowledge, skills and attitudes which the students should be able to do, demonstrate and on successful completion of the course using measurable action verbs.

Here, the action verbs the course developers; they do not have to remember everything in the framework, so if they can you know in the if they click in that action verbs in the knowledge level, all the action verbs is given, the course developer can choose the action verbs and they can write their own instructional objectives and it takes so the advantages of the ICT tools to make these available to everyone concern well in advance.

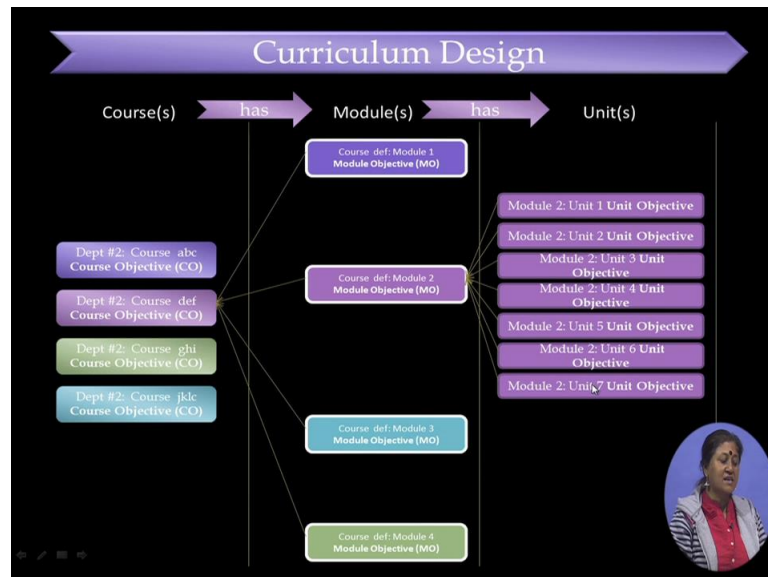
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So, just see here, here in that suppose we are we are developing a course here, in the institute, mission and the vision of the institute. Any institute if you register you can write your own mission because institute A mission and vision is different from the institute B mission and visions. So, there you can write the institute, mission and vision under the mission under the institute different departments are there, department A, B, C and different programs are there. So, under the department some courses are there, suppose here that the program if objective

program educational objectives in that institute the subject experts will write under the program educational under the department few courses suppose, this is the mechanical department and in this mechanical department, thermodynamics, fluid mechanics different courses are there.

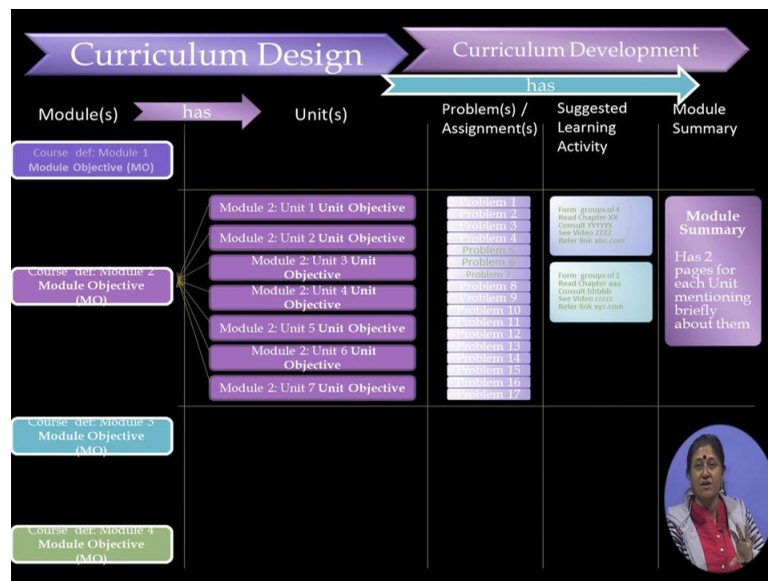
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So, under the course view under the course we just what we did under the some course, we just distribute it them into some modules and the modules some units. So, the faculty developers have to write course objective 5 to 6 course objectives, suppose it is a 40 hours of lecture, in that case one in that course suppose there are 8 modules and each modules have five units. So, in that case 8 into 5, 40 hours of course. So, 5 units' means one unit is nothing but one hours lecture. In that one hour lecture the course developer have to write 2 or 3, 2 to 3 unit objectives and in the module suppose 1 module, it caters 5 objectives.

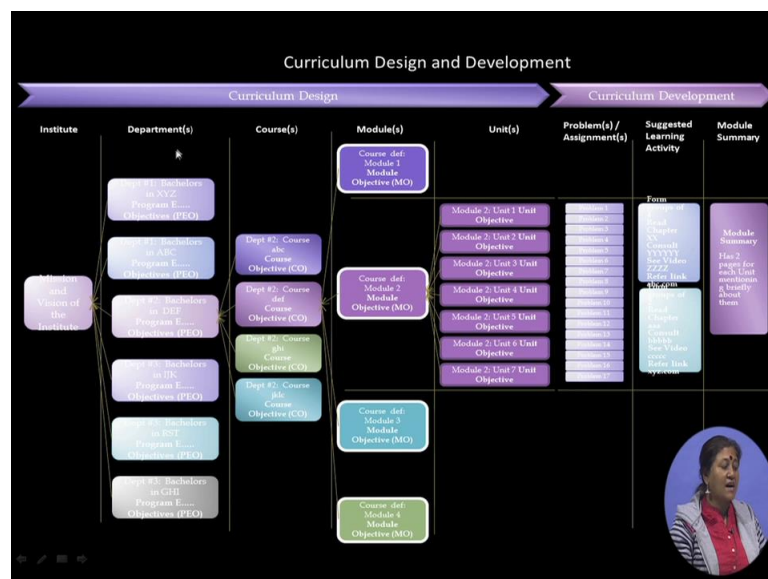
So, module objectives are little bit broader and the course objective is on the top. So, first the course, course under that module and under that module some units are there. So, here also we can see that the in the in the course few modules are there and in that module, all the units are there, suppose two unit one, unit objective, module 2 unit 1 unit objective, the course developer have to write.

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So, here under the unit some problems which each unit we have write a problem, okay. The course and if the problem should link to that objective, so it works suppose we here 2 or 5 or 6 different units are there, if the learner and the problem one is correlated with objective four. So, if the learner can do unit level problem unit level it means that they understand the unit objective, so with each objective, there you have to link some unit level problems. So, in the assignment if you do that you can understand it, you can use it there and the suggested learning strategy what books here, in this framework, it is not the content development. Here, what books the learner can follow? What lectures they can see in the web? All the links you have to give and the module summary the total summary of the module.

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So, this is the total curriculum design and development institutes under the departments, under the department course, in the course the course objectives, under the course few modules are there, under the modules units are there and each unit or each module or each course, their problems you have to give and the learning activity in the suggested learning activity what books what learning material they can use that only you have to mention those things under module summary.

So, the course level learning objectives, it is written mostly the broad general objectives unless in specific instructional objectives, but in the under the course the module is there and the module level, it is more specific and often should contain more action verbs to define the learning objectives and the under the module, there will be some units which is a very specific because one hour in one hour lecture what you want your learner, write it very specifically. So, this is the things are just give one example what course outcomes objective, just see a introduction to algorithm design by professor P. P. Chakraborty.

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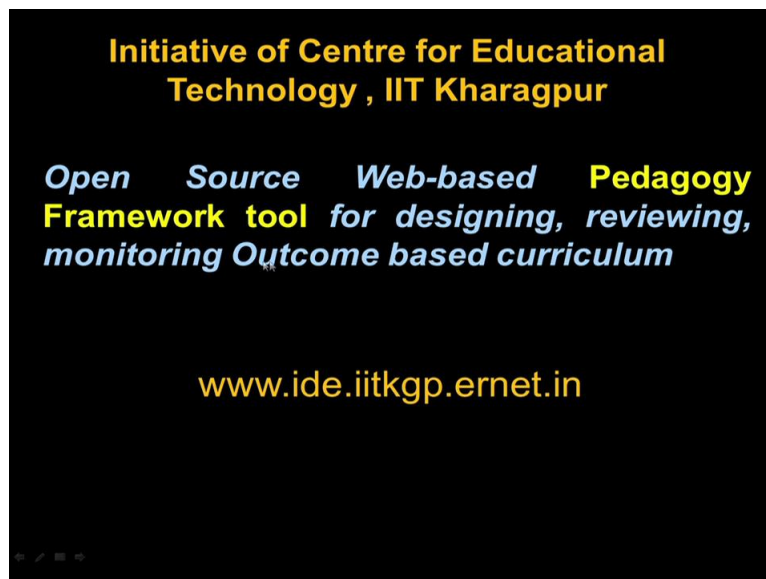
Course Outcomes / Objectives-
Introduction to Algorithm Design
Prof P. P. Chakraborty, IIT Kharagpur

Given an English language problem description, **define** (K) the problem precisely with input/output requirements, **examine** (An) its inherent complexity and **develop**(App) a generic or set of initial solutions (which can be explored for various design options) and **justify** (Eva) their correctness

Given an English language problem description, define the problem precisely with input/output requirements, examine its inherent complexity and develop a generic or set of initial solutions and justify their correctness. Here, define is an action verb, examine is an action verb, develop is an action verb, justify is an action verb, define it is an knowledge level action verb, examine; it is an analyses level action verb, Develop, it is an application level action verb and justify is an evaluation level action verb. So, in it is a very good instructional objectives and here, all the different action verbs are there.

So, it is not that in each objective only one action verbs is there, there can be 2 or 3 action verbs so, when you will write the performance component, the action verb and the proper what you want your learner very specifically you write. So, this is I am just giving the some example. Now, professor Dasmandal will explain you how to use the software framework? Where you have to do so that you can develop your own course? Thank you.

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So, let us discuss about that the tools that outcome based curriculum development tools which have been IIT Kharagpur, under MHRD project that is called open source web-based pedagogy framework tools for designing, reviewing, monitoring outcome based curriculum. So, what is meaning is that if you want to develop that outcome based curriculum whatever the theory we have discussed, whatever been the first 5 lectures we have discussed that what is problem in education present education systems and how to improve the student engagements. If you develop your whole course using this framework tools and if it give it to the students before they come to the class then what happen, we belief that it will increase the student engagement and also, it will increase the students self-learning ability how we will discuss, okay.

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Features of the Open Source Web-based Tools

- **Any institute** can developed the outcome based frame work for any program
- **A individual teacher** can developed his/her course in Outcome based frame work
- **Industry experts** can provide feedback for any course/ program outcome
- **Industry experts** can add additional learning resources, case studies, unsolved problem for any course outcome
- **Any student/learner** can view the above courses for developed the intended skill

So, what are the features of the tools? Any institute can develop their outcome based framework for any program. The tools provide a facility to develop the outcome based curriculum for a whole program and all program of the institute are demonstrated in the tool. Required you can register as an institute and you can add your institute mission and vision, then you can add one program, then you can write program educational objective then you can add the courses which is required to taught for fulfill that program educational objective and you can develop each and every courses based on this outcome based curriculum framework, so that facility is there that is called institute registration facility is there.

Any individual teacher suppose your institute does not interested about to develop that open source curriculum kind of things, as a teacher you can login and develop your curriculum using this framework and give it to the students before you come to the class before you teaching it and that increase the student engagement because in the curriculum design principle such that it will provide all the information about the course to the students and student will try their in their home and come to the class with prepared, so I will describe that thing.

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Features of the Open Source Web-based Tools

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The tools also provide, industry an expert can provide feedback or any course program outcome. An industry person said that okay, suppose I am developing a course on, let us the data structure and algorithm and I develop the whole course and it is available in my this portal. An industry experts seating on his own desk or seating in his home can see the whole course and can comment particularly that okay, these course objective or course outcome is not appropriate, it may be like this, so that comment then and there we will come to the teacher's side and teacher can see that comment and he can modify that things, okay.

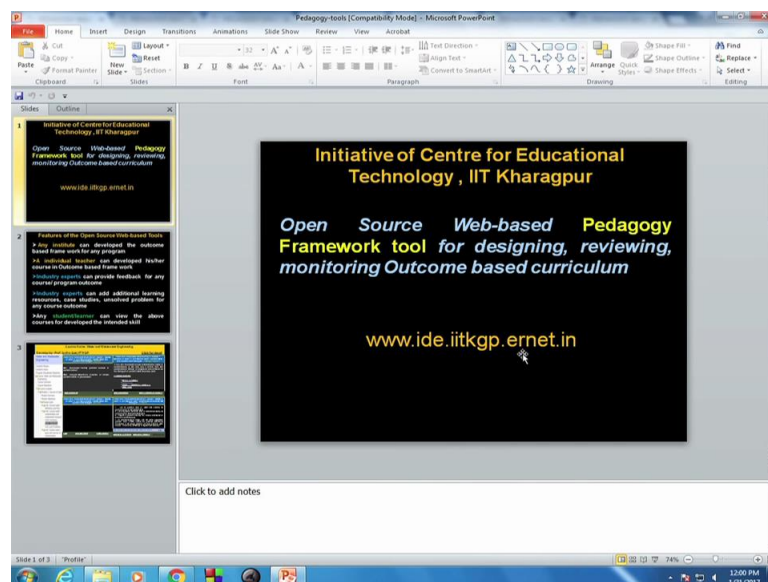
So, if that the industry can give an active feedback directly to the teachers regarding the outcome, regarding the teaching methodology of the course, regarding that industry expert can add additional learning resources, so somebody who want suppose you are teaching a subject, somebody can say this is the very good learning resources I found, so you can add it then case study, suppose I am teaching a course I require a lot of case study and I one of the case study taught in the class and industry expert when visualizing this course and he say that there is a there is a problem I have that can be discussed in the class also, you can then and there add that case study and it will be come to the teachers.

So, industry and academia active collaboration is possible throughout these tools. Next is any student and learner can view their goal, their pathway, their test item whether they reach the goal or not that create the self-learning ability at any point of time. More ever, it is also provide a teacher training, suppose there is a course on Digital signal processing and this semester you assign a teacher whose may be the new comer who may be the not taught course earlier.

Now, let us the whole framework is available for that course for that college for that program and this is given to the new teachers, what he know, he know what are the course outcome, each and individual lecture outcome, so why he will go to the class he know what has to be supposed to be taught or supposed to be test from the students whether they receive that goal or not. What kinds of problem are standard to teach this course? What kinds of industry feedback is available regarding this course?

So, all the information is available to the teachers. So, he can prepared his teaching learning process as per his own individualism and he can interact with the students with that whereas, it is not the matter that whether the teacher is a new comer or he is a first time teaching the course, the quality will be same because the course structures is given to the students, students has to acquire those skill. Even if the new comer teachers miss some point, students can say, sir we have not the received this goal because we have a confusion in this regards, then teacher can then and there he clarify the confusion or the teacher can take advice from his senior teacher, sir, the students are asking about this kind of this misconception I do not know not the correct answer can you suggest. So, whole teaching community will be benefited if that kind of curriculum development is already available, okay.

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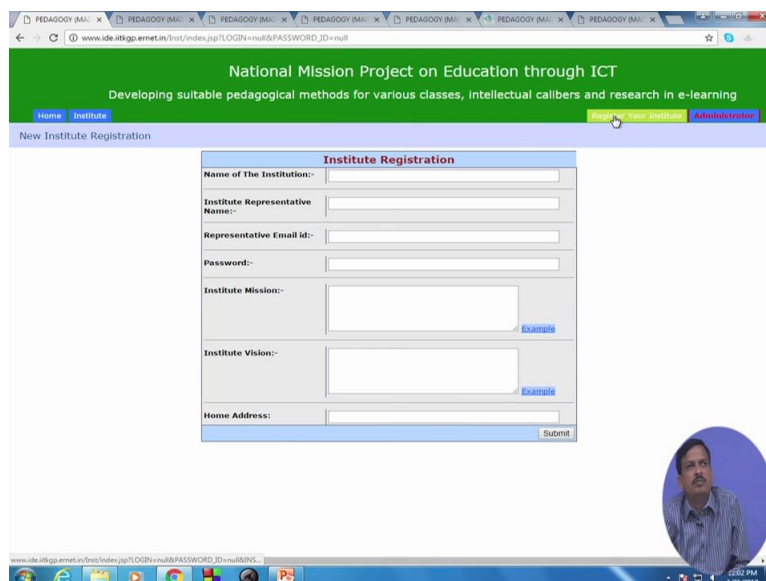
Now, I will show you in the software itself how you develop your own course? How institute can registers? How industry can give feedback!? How you see the feedback? All kinds of features and facility I will show you, okay. Let us go to the website, if you see, in my first slide I say that address is www.ide.iitkgp.ernet.in this is the website address please note it down www.ide.iitkgp.ernet.in, if you type this in your browser, it will open this page.

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As I said that this is a project given by the Ministry of human resource development and under this project this framework tool has been developed and there is others also, there is a some course which is already developed by a expert teacher is also available, okay so this is a whole site you can get some documents, developer guide, reviewer guide, outcome based curriculum design, those are project related things but you can go through it you can see that things, but in the tool wise suppose I want to do institute registration then I can go for the institute registration, if I click on institute registration then it will page open up like this.

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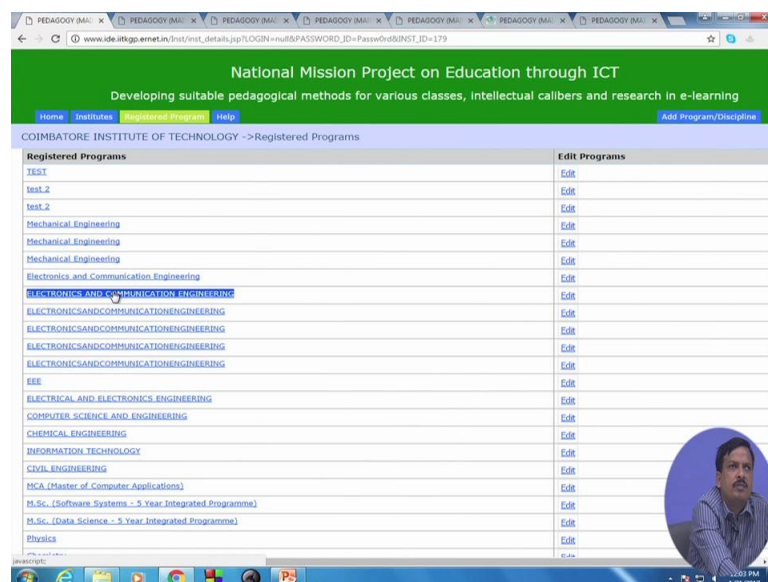


Then as a institute register your institute I can register name of institute representative. So, institute representative is the moderator of development of the course. So, collectively write

down the institute mission and vision, then as a person act as institute moderator, he can submit that mission and vision statement and then submit it. Once you submit it, then institute name will be come in here, okay. Once you click that institute it, there is a lot of people are doing it in a kind of test kind of basis and there may be something somebody doing it very seriously.

So, you can add a program or discipline, suppose my institute has a 5 discipline computer science, 4 year Computer science, 4 year Electronics, 4 year Instrumentation, 4 year Mechanical, so, I can 4 program add 1 by 1 program I can add. So, I can write the program name B. Tech computer science, okay then program educational objective or program educational outcome be PEO, program educational objective. There is example is given, so you can go through this example a write your program educational objective.

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Once you registered then your registered program will come here that is mechanical engineering. Once you click the mechanical engineering now for attainment of the program educational objective, which is derived from program specific outcome, okay program specific outcomes should match the program educational objective and program specific outcome is nothing but NBA or Washington accords attributes 12 attributes, which will be attained by offering different course in last lectures I will talk about this details, okay.

So, let us you identify the course all scientifically you identify the course that okay, B. Tech computer science may be it be mechanical, may be required thermodynamics, machine tools and machining, kinematics of machine all kinds of course are identified. Each and every

course now can be registered by the institute coordinator, he is register the course, create the password and send the password to the teachers. Now, the teachers will login if you see the course under the mechanical all courses will be displayed then he can login on the course and develop his curriculum, okay. The program we are not here included the lab courses curriculum web development, but yes next years 2 to 3 years we will include that lab courses curriculum here and also diagnostic test but formative evaluation also will be included in this software okay.

So, excluding the lab courses all the theoretical courses teachers can develop his curriculum. I will demonstrate how to develop a single course, okay. It is in the same, suppose there institute is not interested to register and do that all kinds of all courses, as a individual I can go through this page web page let us as a individual I want to develop the course, so I go to the home.

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The screenshot shows a web browser window with the URL www.idealitggs.ernet.in/Pedagogy/register_course.jsp. The page has a green header with the text "National Mission Project on Education through ICT" and "Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-learning". Below the header is a navigation bar with links: Home, Courses, Discipline, Help, and a yellow "Register Your Course" button. The main content area is titled "New Course Register" and features a red banner that says "YOU CAN REGISTER YOUR COURSE HERE:". Below this is a "Register Your Course" form with the following fields: Course Name*, Institute*, Discipline*, Principal Developer Name*, Email Address:*, Password:*, Contact Number*, Course Type* (Core and Elective radio buttons), Course Level* (UG and PG radio buttons), and Semester* (radio buttons for 1 through 8). A red note above the form states: "Please avoid Special Character expect Email Id(i.e. &, ~, \$, # etc.)". The Windows taskbar at the bottom shows the time as 12:06 PM on 1/31/2017.

Once I go to the home it will go to the home I can develop my own course. Let us forget about the program educational objective, forget about that PEOs, let us I want to fresh develop my I want to teach a course, I am teaching a course I want to develop my own course curriculum own course whole structure based outcome based curriculum for my own course, okay. In that case I go to the training, once we go to the training you get registration page course registration page, I can type my course name, institute and provide a email id and password. This email id is not this password is not password for your email id, you're during the development phase your course is password protected. So, nobody can view your course during the development, after the development once you complete your course, then it will

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So, once your registration is completed then your course will come in here, course name wise it, see the lot of people have already registered somebody is developing their course and kind of things, okay. Now, you can delete once you suppose you register wrongly you can delete your course by providing you see you can only delete or administrator can delete, but I am assuring that you will not delete the course, you can delete your course by providing your used id password during the creation time, okay.

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Expression of Interest
National Mission Project on Pedagogy(Main Phase)
Course Name : Cereal \Pulses and Oilseeds processing Technology
Principal Developer : Poonam Mishra

1 Mission :	NO
2 Vision:	NO
3 Program Educational Objectives :	NO
4 Course Overview:	NO
5 Course Objectives:	3
6 No. of Course Modules:	0
7 Course Problems:	0

Now, once you click on the course any course if you click or there is another button call report. This report is nothing but a PDF file, which you will indicate how much progress you have done on your course. So, full report will be generated, it is a PDF file and it will show you how much progress you have done, okay. So, it is like whether you have written the so individual course mission, vision is not required, so whether you write the course overview whether if the course objective, number of course module you added course level problem added or details your work will be listed in this report how many things you have done, how many things you have not done it will told instantaneously.

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National Mission Project on Education through ICT
Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-learning

test

- Institute's Mission
- Institute's Vision
- Program Educational Objectives
- Course: test
 - Course Overview
 - Course Objectives
 - Course modules
 - Module:igf
 - Module:fhghgh
 - Course Problems

Members
Principal Developer : abcd
Co-Developer 1 :
Co-Developer 2 :

Course Information
Institute : abcd
Department : abcd
Course Information/Applications: test

Institute's Mission
Institute's Vision
Program Educational Objectives
Course Overview
Course Objectives
Course Modules
Course Level Problems

So, suppose institute moderator can monitor the progress by clicking this thing or as a developer I can monitor my how much amount I work I have done I can monitor these things, okay so this is the report kind of things. Next one, let us I have registered a course and login how you login? Once you create your course name it will come a course development page, once you click the course development page, it will give you registration email id and password. Once you provide the registration email id and password, the course will be look like this, this page will be open. As a single course development I am explaining, so as an institute registration the course login and password created by the institute moderator and sent to you.

Now you login using that your institute under that course and you login up get this structure. As an individual developer, I can register my course under the training once I click on my course I will get this page, okay. Once I get this page what is written institute mission, institute vision program educational objective if I, for the single course development let us, I do not know this thing not required, then course goes start as here. So, I have I have login as a test course name is test, so whatever the course name you provide that will appear in here in the course name. Then there is one work called course overview, I have to write the course overview, what is course overview? For taken any course I want to develop what do you mean by course overview?

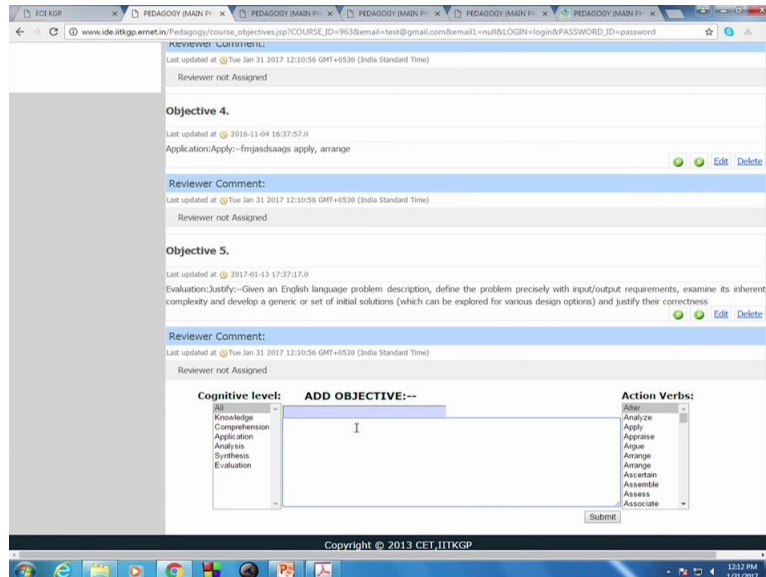
Course overview is nothing but a one page maximum may be half a page write up about the coverage of the course in one part. Another part is that suppose I want to motivate my student to take the course seriously, what I should write that part also. So, one paragraph related to how you motivate the students to take this course and one paragraph the paragraph way the coverage of the more or less coverage of the course, so that is very simple and any teachers can write that things.

Next one is come course objective, course objective means course outcome. Here, we said instructional objective, the instructional objective is the process to write the course outcomes scientifically correct or correctly write the course outcome. So, every outcome you said that correct instructional objective must have a performance component to specify it, it require condition component, to achieve make it achievable it required criterion component.

So, an instructional objective or an outcome should be specific, should be measurable, and should be achievable. So, specific means condition component, performance component means measurable component and criterion component means whether it will be achievable

or not I cannot write a course objective our students will be able to design an aeroplane, any course I cannot thought how to design an aeroplane or that skill cannot be developed within that specific of time. So every objective must be achievable, must be measurable, must be specific, okay, how do you do that?

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So, once you click the course objective you can write a course objective here, in this block. So, what is course objective? Course objective is nothing but a major take way by the students; it should be specific, measurable, and achievable. We said generally, it is 5 to 6 course objective is sufficient for 40 hour course, so if I am teaching 40 hour course, 5 to 6 course objective is sufficient. Main confusion of the teacher is that then the course objective must starting from the knowledge component then comprehensive, but bloom taxonomy you have you have learn it is not true. Course objective as the major final outcome of your course if it is a B. Tech program course if you see that NBA and Washington accords said the students must able to design, synthesize, analyze, conceptualize so all are higher cognitive level.

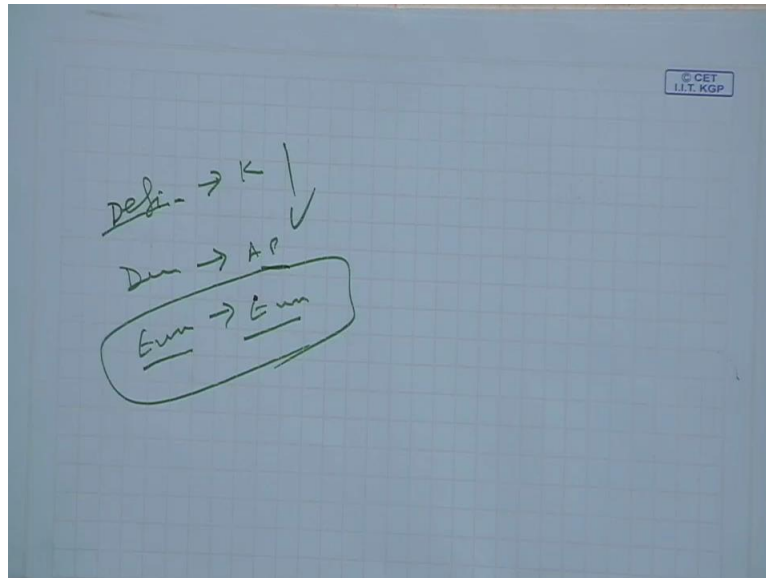
So, any course which is taught for B. Tech cannot be taught as a superficial level, the student only have to describe and define. So, a course objective may be in application, evaluation, synthesis or analysis with that higher cognitive level not the lower cognitive level and if you not write the course objective, which can be achievable by single lecture then that cannot be course objective that may be a lecture objective or unit objective.

So, course objective 5 to 6 course objective that means on an average to achieve one objective I should spend at least 8 lectures, it is for 40 lectures course, 5 objective on an average 8 lectures, so course objective are the major outcome of the course and our confusion is that is the objective in a single liner, no, objective can be a paragraph, but it should be specific, measurable and achievable. An objective must not contain the term like different, certain, basic as example, what you covered we expressively write.

Suppose given example that students were able to solve the differential equation, it is not a course objective. Solve the differential equation is measurable, but it is not specific and may not be it is achievable. So, suppose I am totally teaching engineering mathematics may be I have assigned 15 lectures for differential equation, solution of the differential equation or 10 lectures for solution of the differential equation and I covered up to second order differential equation solution.

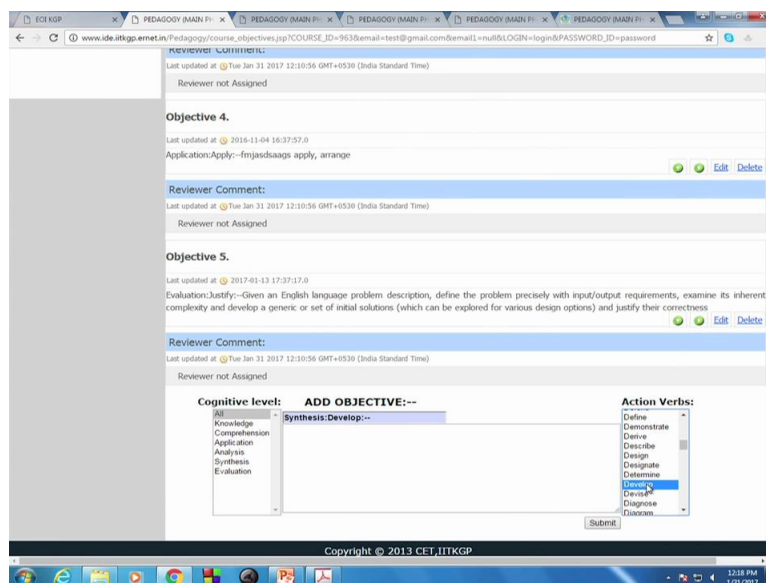
So, suppose I will write the today we will able to solve the differential equation and in examination I give third order, you will not able to solve it. So, what I am say instead of solve differential equation I should write for a given second order up to second order differential equation, student will able to solve that equation using this this this method. Many people a write a today we able to apply Newton's second law of motion as a application level objective, it is not. Applying law it is not application objective, I will determine something based on that law. So law is whether secondary issue first issue is an using this law what I able to do, so that is the objective. Next confusion is that if the objective should got the only single action verb a performance component, no it not necessary, the objective may have 4 to 5 performance component, okay 4 to 5.

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Now, that example that I can show you the example, so a objective content let us three action verb, one is define, second is design, third evaluate, okay. So, define is an knowledge level, derive design may be application level and evaluate may be evaluate is evaluation level. So, as per the bloom taxonomy if higher level, it is assume that the lower level, so if a objective has multiple action verb, okay. Let us see the objective 5; given an English language problem precisely define, first one is define then examine then develop then I have a justify.

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Since justify is the higher level I will take justify and then submit, so one objective at a time and select the action highest level of the action verb in here. So, you may not be not know that bloom taxonomy all action verb, it is not required if you click all then all action verb will be available. So, first I click on define if I click the define if I click the define, it says that it is

knowledge level, then I click the develop this develop, it is said this synthesis level, then I click justify J justify, it is a evaluation level. So, since I know this is the lowest level then highest highest highest highest evaluation is the highest level. So, since it is evaluation level then I label that objective as evaluation level and submit it.

So, one objective at a time you submit, so you write 5 to 6 objective, okay then you add module so what how do you add module, click course module add module click then at write the name in here and add. In software, module name is editable but order is not editable so because about the order name is editable, okay.

Now, I can add the module once you add the module what is what do you mean by module? A course is divided in a several module 40 lecture suppose I taught a course on digital communication, it is a 40 lectures, so let us first module is A to D conversion is one module. so I is the module. So, a module may be more or less 5 to 8 lectures will vary, okay. So, a module has a module overview I can write the module over this module edited like this way, so module overview a page then I have module objective like the course objective I have to write the module objective. So course objective means course outcome which will be which will student will able to develop at the entire course, but the module outcome or module objective are those which will be develop by the student during that module itself, okay, so those of the module objective.

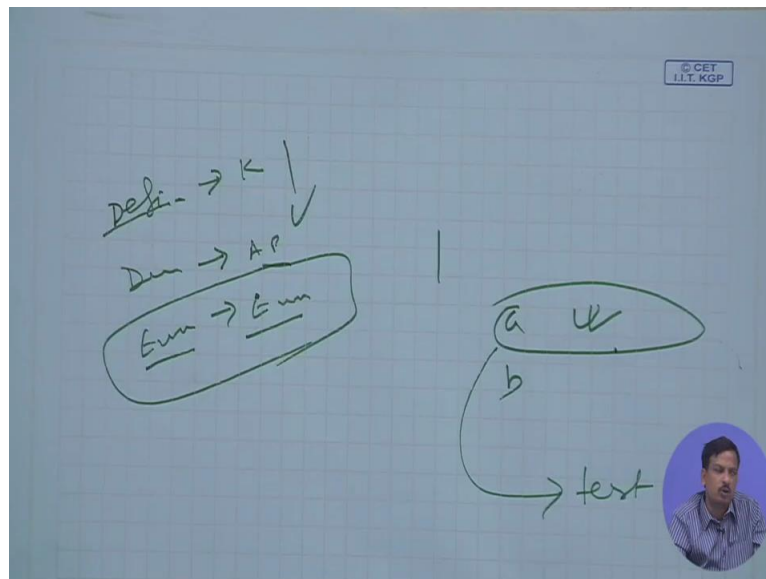
So, why I given the course is different syllabus several module? The scientific aspect is that the course has to be modulized, suppose you are talking Digital communication I am interested only know the A to D conversion, so I can click the arrow just click to the module up to A to D conversion is okay and suppose there is a 6 digital communication courses available in the net, as a learner I want particular module from particular course particular module from another course particular module from another course because the outcome of the course will be depend on my program outcome and my program educational objective, so you cannot say okay this can be developed by an IIT teacher.

So since, the IIT is digital communication course is the best course, so everybody should taught that IIT digital communication course, it is not true because every college every institute his own program and different requirement your program educational objective will be different from IIT, so you cannot copy that whole course of the IIT we have to think, okay my objective educational objective or my vision mission is to supply the manpower to the software industry so what amount of digital communication I should taught my student is be

define by their, IIT objective they produce research student so we taught maximum digital communication, okay so that is the module we have to write module objective, then if you go here then module objective then module unit.

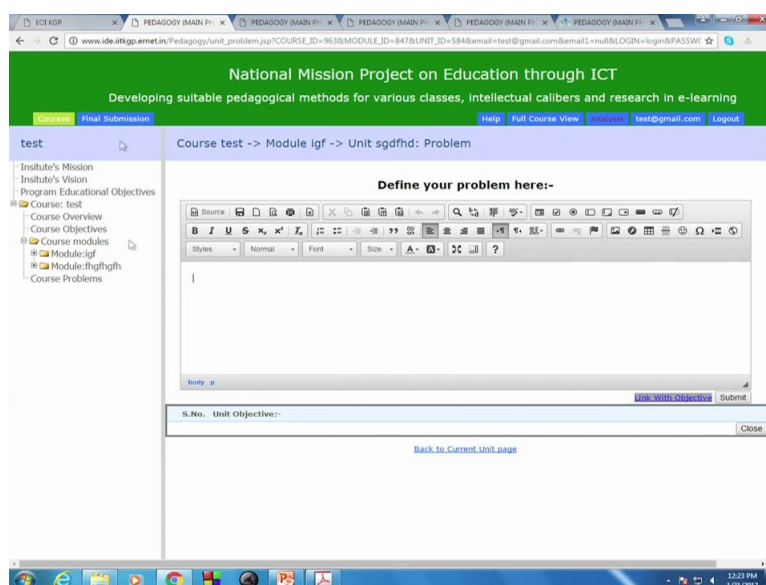
A module consist of several unit means lecture, so let us first module I have an 5 lectures so I can use add 5 unit and each lecture has a lecture summary or unit summary and has an unit summary or lecture summary and has an unit objective means lecture outcome what is outcome of this lectures, okay and then I have lecture level problem, suppose I define a lecture outcome is one, let us I have define the lecture number 1 as a outcome A and B, okay.

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Now, as a student after I reading some material which you provided let us say I am claiming that I have reach the outcome level 1, whether I reach the outcome 1 or A I have to test it. So, I said each outcome or objective must be achievable, measurable and specific, so I want to measure whether I reach that outcome or not how do we measure to provide a test. So, the each objective must be linked with the test item which is call problem unit level problem. So, unit level problem is cater to unit objective if you click link with objective all objective will drop down here, you just provide the problem and assign the objective I will show you in the course level problem.

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So, if this problem is cater to this objective only, so unit level problem unit objective only, module level problem module objective only, okay as a teacher I am developing and if you see there is another in module level so see this is unit level. In module level there is called module level problem, so it is cater to module level objective, then in module level another one is called module learning strategy, what is module learning strategy?

Lecture wise I provide some material in unit summary those are the material has to be read by the students and in module learning strategy I will specify to achieve the module objective and the unit objective which is mentioned in under that module, what are the reference material I have to read? So I can write for unit number one you can read this book chapter number this and edition of this from page number 1 to 5, specific, okay then somebody said to outcome of this can be achieve seeing this simulation link, so you can specify the link, industry said if you want to achieve this objective, go through this material industry will upload that material.

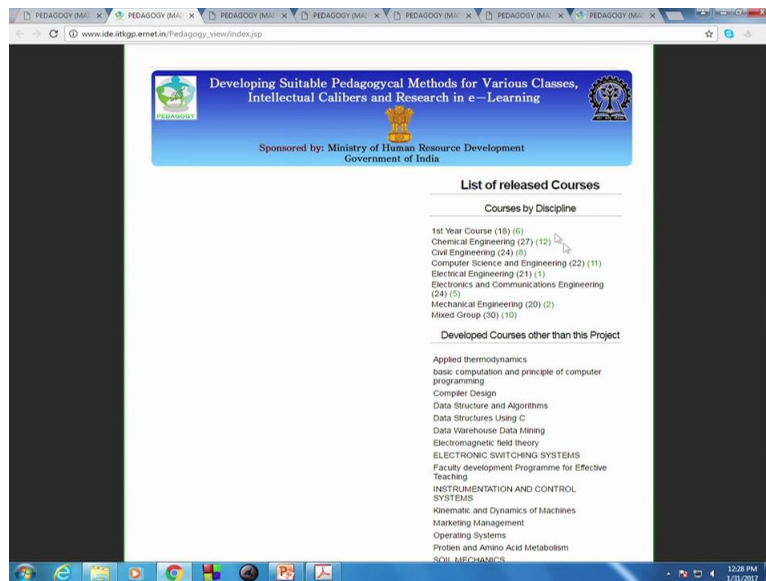
So, module learning strategy will specify different kinds of material which will be used to achieve that module objective, okay. So, that can be added by primarily first will be added by the teachers developer teachers then that can be matured by different participating module like industries, student, expert that can be rule done, okay that is module learning strategy.

Now, I said that every objective must be associated with a problem that is test item. So if I see the course level problem means whether we achieve the course objective or not I can test. So here if I link with objective all the course objective will be listed down here, suppose I give an problem here and which is cater to objective number 5 by link this and submit it then it will write the objective number 5 if you able to if you want to say that I have achieve this objective ok solve the objective number 5. You can add your solution, but the solution will be not visible to the students, if it is request will come then you can explain that solution in the class, okay. This problem you cannot deliver or you cannot solve this is can be solve like this, so this is the main concept which you should know.

So, as I said I have to increase the student engagement, I have to enhance the self-learning ability, I have to enhance the student engagement and their skill set. So skill I have already specified, path I have said I provide them test item by which student can test whether they achieve that or not. Now, I am saying in the class, I said the today I will discuss about the module unit number 5 and this is the unit objective, okay.

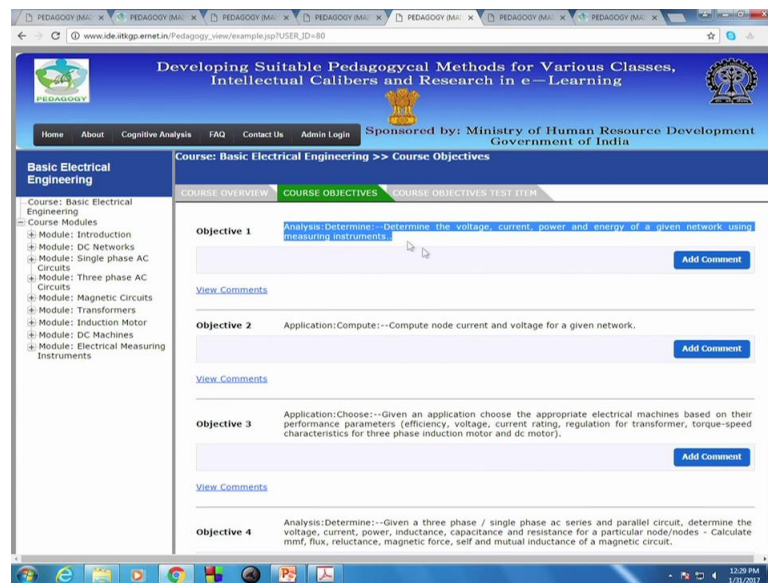
So, once I write that unit objective and corresponding problem, student will prepare then students will come, sir we cannot solve this problem because then we can discuss what the misconception is there in the problem in the class which will raise the student engagement, which is raise the student self-learning ability and this whole course will be available to the students before they come to the class, whole course is available to the industry to give their valuable comment to add some case study, to add some resources, to add some pictures all are available, okay so this is a course development I have said.

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Now, if you want to see the develop already developed courses if you see there will be if you click the home, there is a course view if you click there this page will come, so those are the course which is already developed, okay. Once you see that course, the course will be open like this way, anybody can see the develop courses, it will open course overview, course objective, course test item, okay. So, student first see the course overview then he see the course objective, okay I have to achieve this after completing the whole course and I have to solve this kind of problem this kinds of problem, okay.

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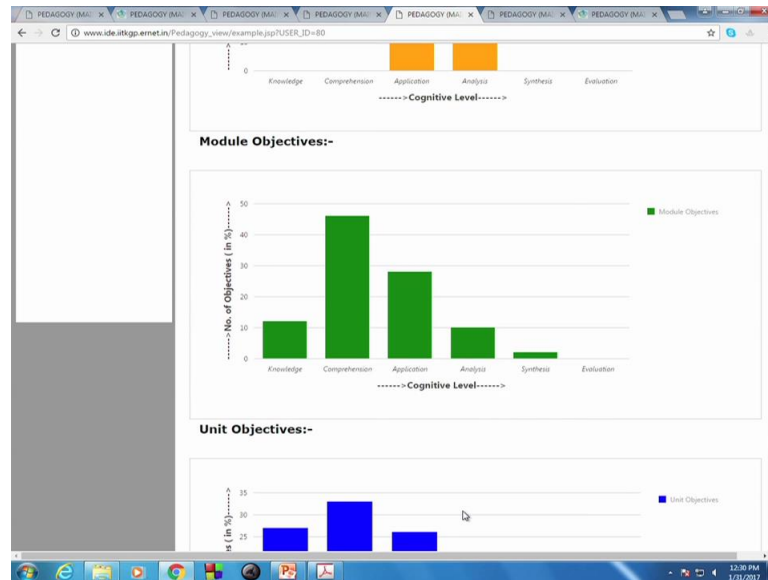


Now, suppose industry said okay objective, this objective can be achieved by this kind of problem, so if they can add a problem so he can write his name, his email id, type the problem and then he said link with that the for this objective scatter to this problem, then submit that will come to you that this problem is added for this kind of objective test link, so it is continuously evolving your curriculum, okay. Anybody can give a comment, suppose in course objective anybody can say that this objective I think is not correct because this kind of skill does not require by the industry, so I can as a Industry person I can add my comment, okay this may be modify to this kind of skill set, so I cannot say that then the industry cannot complain, your students is not employable because they have give the feedback that yes this kind of skill set we required, okay.

So, if the anybody can give the feedback, okay then if you see the module level, all the module will be visible so DC Network, click the module then module overview, module objective, module objective test item and module learning strategy you do not cross the whatever they develop material is available because they are not 100% correct with this is evolving in phase. So, you can develop a better course then the available course also, okay I can go to the course objective. And anywhere industry can give a feedback, module level objective we can module level problem can add, we can module objective we can modify, we can say a suggest some module levels add simulation, some extra kind of simulation, add learning resources you can give add another type of resources, so which will be available as a teachers and you can distribute to the students, okay. Similarly, there is a another module call

cognitive analysis, see once you complete your course, it is available to portion, it is in delivery side also it is in development side also.

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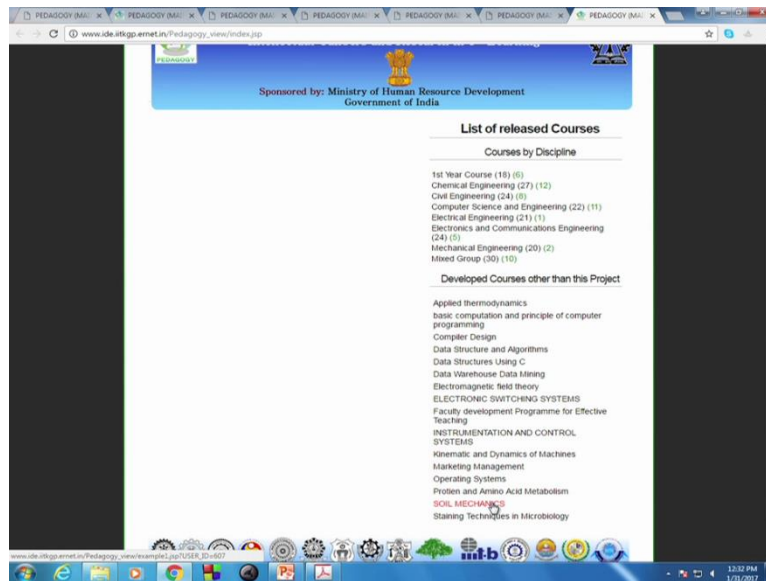


See there is an graph will come up that means let suppose your course objective more or less are knowledge and comprehensive side, then we say this course is not suitable for B. Tech course, this may be ITI course. For B. Tech as per the NBA as per the Washington records, it should be an application, analysis, synthesis and evaluation this side, not knowledge and comprehension, if I am able to analyze something I know the knowledge and comprehension. They are not final goal, they are required, they will be taught at unit level and module level, but they are not the final goal, course outcome is the final goal should be in this side.

If you see the module objective can start from here and unit objective can start from here, okay. Now if you see this course, this course objective is not correct why? because if module level I have taught some objective in synthesis level, but in course level I have not claim that means I taught much but claim less. Similarly, you write the objective analysis, synthesis, evaluation level, but none of the module and unit objective and that level that means you are not actually taught that level, so your course is not correct.

So this graph use of the graph to see the priority between the module, unit and course, what I claim whether that I develop in the module and unit or not and if I develop more my claim may be less, okay. So, this development was development can be a spirally model you initially write down your course objective develop the whole course then modify the course objective, based on your achievement, okay, so that way you can develop the course.

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Once one your course is developed there will be a button called final submission one should give the final submission, all courses will be visible in here, okay. So, I will modify the page better way so that you can told your student go to this URL and click this course we will see course, okay so that is the whole about this software. And the software will include that format in diagnostic test format evolution by which I can take a test of 400 students and identify the misconception and cater to all student individually because every student, since that it is a self-learning material, I am encouraging the student to learn by themselves., so I cater to different large class room.

In large classroom the distribution of the student will be different, some maybe fast learner, and slow learner may be mediocre learner. So, I have said this is the goal, this is the material and this is the test item, it is your responsibility to reach the goal, come to the class, and discuss about this conception only. So, it is not that a student will attain the class after the class, he forgot everything, go to the hostel sleeps and then before the semester only 7 day reading and give the exam, if this is available then it is learner responsibility to achieve the goal.

Now, if it is available industry can say okay those are the outcome is available for this program and this institute my project requirement is match with this outcome I should go to that institute and find out whether the students had that skill or not. They only test whether a student has that skill or not. So, none of the student can claim, okay sir this was in the syllabus but my teacher is not cover that you cannot claim it. Whoever is teaching the subject, the curriculum is specify what a learner has to be achieved, it may be not discuss in the class.

It is his responsibility to acquire the skill outside the class also, he can interact with the MIT fellow, he can interact with any expert and achieve that outcome.

So, learning is no longer kind of a 4 wall classroom kind of things, it is a collaborative learning, it is a teamwork learning, it is a self-learning and it enhance the students self-learning ability and also, this cater to teacher training that whoever taught the course, the quality would be remain same, okay thank you.