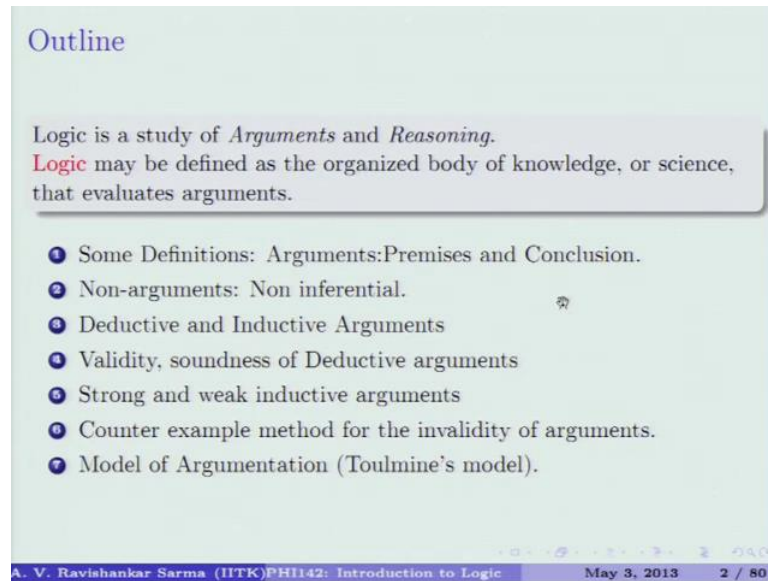


**Introduction to Logic**  
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**Lecture - 1**  
**Identification of arguments**

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Outline

Logic is a study of *Arguments* and *Reasoning*.  
**Logic** may be defined as the organized body of knowledge, or science, that evaluates arguments.

- 1 Some Definitions: Arguments: Premises and Conclusion.
- 2 Non-arguments: Non inferential.
- 3 Deductive and Inductive Arguments
- 4 Validity, soundness of Deductive arguments
- 5 Strong and weak inductive arguments
- 6 Counter example method for the invalidity of arguments.
- 7 Model of Argumentation (Toulmine's model).

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So, today we get started with the basic concepts. So, this is going to be the first part of the course in the basic concepts what will be doing is this. We will start with the basic definitions, there will cover what we mean by an argument since each argument consist of a premise, conclusion and then will going to talk about what constitute a premise and what constitute a conclusion, and then when the premise leads to the conclusion each 1 will be interested. So, first will talk about some basic definitions and then will talk about sudden things which are in the common in the category of non arguments. So, basically they are non inferential passages and then we move on to 2 different kinds of arguments; 1 is directive arguments and another is in directive arguments. Basically we are interested in studying the difference between in directive arguments and directive arguments.

So, once we find out the directive and in directive arguments then we will move on to some of the basic and important properties of logic. So, they are validity and validity talks about how the premise leading to the conclusion. So, after the logic is what follows

from what; in this case, premise how the premise leading to the conclusion is studied by what we call it as validity. It is not just enough that the arguments are valid. So, it has to be sound also for example, if we have many arguments which are valid, but does not make any sense in it for example, if you take it into consideration all circles are squares the other way wrong it as all squares are circles, all circles are parallelogram then all squares are parallelogram, although the conclusion seems to be true, but the premise are false.

So, something that take care of the fact that is not enough as the argument is valid, but your premise argument of premise to be true enough, since the argument that I explained that the premise are false conclusion is true in all. So, we want to avoid such kind of arguments in which the argument is valid, but it is not sound. So, will talk about the soundness of directive arguments and then it comes to in directive arguments then will talk about whether they are weak whether they are strong. So, when there is an important method with, which will come to know the invalidity of an argument? So, that method is called as counter countering example method.

So, what will do in counter example method is that, we will create an incidence where we have 2 conclusions in false premise. So, if you can come across with an example of 2 premise of false conclusion then the argument is in valid. So, then one of the important thing which we are going to study is one of the model of an argumentation. So, basically we want to know when the argument is good 1 and when the argument is bad 1. So, if you want to study in detail, what constitute a good argument and what constitute a bad argument then we need to know this is 1 model of argumentations. So, one of the important model of argumentation is due to philosopher if Stiffen Turvin he has come out with an interesting model, where he talks about a model of an argumentation.

So, will talk about the model of an argumentation at the end of this thing after all this course is all about logic, it is an introduction to logic course and basically logic is basically considered as study of argument and reason this are the 2 things which will be interested in logician would be interested in. So, the systematic study of arguments and reason, and one of the definition which is given in one of the popular book of introductory introduction to logic by Matric Harlee is this is the format. Logic may be defined as arguments body of knowledge or sounds, but evaluates say it is important to study arguments, what is mean by the argument and what constitute arguments and all.

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The slide is titled "What is Logic?" in blue text. It contains three numbered bullet points in blue text. The footer is a dark blue bar with white text.

What is Logic?

- 1 Traditionally, logic has been considered the most general science, dealing with arguments.
- 2 The task of logic is to discover the fundamental principles for distinguishing *good* arguments from *bad* ones.
- 3 The study of those general principles that make certain patterns of argument valid and other patterns of argument invalid is called formal logic.

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So, one of the important question on last before going to further is what is logic? Is one of the important a most difficult to define is not just like you know to define physics, defining mathematics is that, such as logic is almost everywhere that it is use as justificatory tool and all. So, traditionally logic has been consider as most general science which deals with the arguments and task of logic is basically to discover fundamental principles, to discover for distinguishing good and bad arguments . So, we have good and bad arguments now, how we will distinguish between good and bad arguments that are what logic will take care of. So, the other thing is this that the study of it also talks about the study of those principles which makes certain patterns of arguments valid and other patterns of arguments in valid.

So, this comes in the category of formal logic there are such an argument which are valid were few of valid form where such an argument which are in valid, just because it got an in valid form and all for example, if you have a implies b, and then a and then b follows a too. So, that argument is valid argument since it exhibits a valid form. So, the other case of invalid case is that, a implies if a then b and then not a and then not b . So, this is called as fallacy, something that the mistake in argumentation is in invalid form whereas, argument is in valid.

So, logic is also those general principles that makes certain patterns like a implies b, and then b follows some that which makes it valid where as a implies not a and then not b

now we follows from this 2 thing, which is making this argument in valid. So, logic takes studies about the distinguish between this 2 different patterns of argumentations 1 is valid another one is valid, invalid because of case that it has invalid form and valid because it exhibits valid form.

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The slide is titled "Three functions of Language:". It is divided into three sections, each with a light blue header:

- Logical Function**
  - 1 When the language is used to convey the information.
  - 2 Sentences uttered can be spoken as either true or false.

There are two doors in this room.  
On September 1939, Adolf Hitler's army invaded Poland.
- Expressive**
  - Indicative of Emotions and feelings.
  - Example: The dirty cockroach.
- Evocative**
  - Language is employed to evoke response in others.
  - Example: Help! save me! Pardon me!  
What are we doing here?

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So, we are talking about a study of argumentation after these arguments are composed of composing in the language, in which and then we have 3 different functions of language. So, logic is after all is used as language it has 3 basic functions. So, the first one is the logical functions, language has the logical function especially when it is used to convey some kind of information. Example of the sentence is attired it can be spoken at by false, and then this kinds of things are called as declarative sentences. So, especially when language is used to convey some king of information and that information, can considered as either true or false, then it is used in the logical sentences for example, if you consider there is only 1 door in the room and so, this sentence can be spoken as either true or false there is no middle value between this things. You cannot say that this neither true nor false or something likes that.

So, this kind of sentence can be spoken either definitely either true or false. There is only 1 door to this room. So, the sentence is true if there is no 2 doors or 2 doors are missing, then it is consider as false. Another historical is September 1939 inverted. So, this is the historical part. So, we can verify with the historical part and then we can say that the

sentence is true or false. So, what is clear is that the language is used to convey some kind of information that information is spoken as either true or false. So, language can also be used in expressive sense, in senses that it indicative of some kind of emotions feeling etcetera.

Example when we come across some kind of dirty cockroach, for something like that; immediately we express our emotion etcetera like that, by saying that dirty cockroach like that or something like that. So, it is used in some kind of expressive sentences language can also used in an invocative sense for example, that language in employed to evoke response in other in somebody is talking to some 1, then 1 person tries to evoke some kinds of emotions in other and all. Say for example, you say danger you will shout and say save me and pardon me etcetera. So, save me, pardon me all. So, these statements cannot be spoken as either true or false.

For example. So, rather things which come under the category of things, that kinds of questions like what are doing here and all. So, this cannot be spoken as the true or false. So, what will be considering ah in the this course is those sentences, which can be spoken as either true or false or things which are taken into the consideration is one of the basic units of our sentences or prepositions of logic.

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**Propositions or statements**

- ❶ The precise nature of propositions is a matter of some philosophical debate.
- ❷ (OED) Noun: A statement expressing judgment or opinion; a proposed scheme or plan; a matter to be dealt with; A formal statement of a theorem or problem.
- ❸ a proposition as a claim or assertion that affirms or denies that something is the case. All propositions are either true or false, and no proposition can be both true and false.
- ❹ propositions are the sole bearers of truth and falsehood.
- ❺ Questions, commands, and exclamations do not express propositions.

**Examples**

- ❶ All triangles have three sides
- ❷ Akhilesh Yadav is the current chief minister of Uttar Pradesh.
- ❸ If today is Friday, then tomorrow is Saturday.

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So, what are this prepositions and what are this statements are. So, there is the presisation of preposition, is the matter of some kind of philosophical debate and not

consist of what exactly you mean by proposition and all, but if you take into the consideration of the Oxford English dictionary, when it is proposition is considered to be noun which is considered to be statement expressing or kind of judgement or an opinion or it propose the scheme of scheme or plan are invited to be dealt with formal statement of theorem or a problem. It looks like that the last 1 formal statement of a theorem or a problem seems to be coming closer to what we mean by a proposition.

So, in this course what we take into the consideration is that the proposition is the simple sentence which can be spoken as either true or false. So, it can also be called as declarative sentences etcetera. So, proposition sentences statements etcetera all this are used in the same since especially in this course. Sometimes the proposition is used as claims or a assertions that something the device for example, if you say that it is raining outside suppose it the actual the fact that, it is raining outside the sentence is true otherwise it is false all proposition are to be true or false and no proposition can be both true or both false or neither true nor false and this things which we leave it out.

So, there are other logic that takes care of the particular kinds of things and sentences can be neither true nor false or sentence can be both true both false will be taken care by some other logic, which are which come under the category of non classical logic. The logics that will be studying come under the category of standard logics or the classical logics. Another definition of propositions are the proposition are other things which come under the category of not under the category of this things questions, commands exclamations; usually there is no express any proposition suppose if you say, what is your name and all or if you ask some 1, that what is your name and all that comes this sentence cannot be spoken as true or false. If you say that shut up and all; something you say like this that also cannot be spoken as true or false and is not a declarative kind of sentence. So, those things are commended in the category of proposition.

So, now, so, for what is said like that is the proposition or sentence or statement use it as. So, proposition or sentence which can be spoken as either true or false the example of proposition are like this all triangles have 3 sides is the mathematical facts. So, examples if you say Akhilesh Yadav is current chief minister of Uttar Pradesh or if you say today is Friday and tomorrow is Saturday, all this things can be spoken as either true or false.

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**Argument**

- 1 **OED:** Noun: A heated exchange of diverging or opposite views. A set of reasons in support of something.
- 2 An argument is a collection of statements called *premises* and a final statement called *Conclusion*.
- 3 In philosophy, an argument is a group of two or more propositions that express an *inference*.
- 4 An *inference*, in turn, is a mental process of linking propositions by offering support to one proposition on the basis of one more other propositions
- 5 The *conclusion* of an argument is that single proposition which is supported by other propositions.
- 6 *premise* is a proposition that provides a basis of support for the conclusion
- 7 Good inferences are those in which the premises provide adequate support for the conclusion, and bad ones, those in which the premises are inadequate to this task.

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So, now, we come to. So, far we talked about the basic units of an argument the basic unit of argument, is proposition or statement or sentence 1 and the same. So, now, what we mean by the argument. So, again we refer to oxford English dictionary it is also considered, as noun unfortunately in the dictionary it is used in the negative sense usually, when we mean when we say that, we are arguing with someone else then it is usually consider as some kind of feature exchange of diverging, opposite views for example: child is arguing with father for something, then there might be exchange of some words etcetera or reason of things or support or something that suppose to be which we can make use of. So, this is not the 1 use of 1 which we are going to talk about that mean argument is not an exchange of a feature exchange of diverging or opposite views.

So, what we mean by argument is that is the collection of statements; that means; that sentence which can be spoken as true or false all the commands all the things and all questions and etcetera. The collection of statement is called premise and we will talk about what we mean by premise and the final statement what we called it as a conclusion. So, the structure of argument is that it consists of premise it consist of conclusion. And especially, in the philosophy and argument is group of 2 or more prepositions that express some kind of inferential process of inferential and all. Inference is an mechanism which, you will come to know how the premise are dealing to the conclusion.

So, what is the inference is mental process of thinking prepositions offering support of 1 preposition on the basis of more other preposition and all. Suppose we have 2 preposition which sounds as premise rather we have another kind of preposition, which is sound as conclusion and all. So, in an argument need to distinguish what is premise and what is conclusion and all; because ultimately the premise has to be to some kind of conclusion. If any one of this things is missing then it is not called as an argument and all no argument.

You will come across the argument is consist of premise it consist of conclusion it is some kind of description or something like that and all. So, what we mean by the conclusion is this as conclusion is that single kind of preposition, which is supported by the other prepositions. So, there are in an argument what we have is at least you know 3 prepositions out of this 3 preposition, 2 seems to be supporting the other 1. The 1 that supports the other preposition is called as conclusion and those things which are going to support are called as premise and all.

So, what we mean by the premise the premise is the preposition that provides the basis of support for the conclusion. So, what I am talking about is simply this that, the argument that we have conclusion and. So, premise is usually support by the conclusion or conclusion is supported by the conclusion. So, now, what we mean by the support etcetera and all, will talk about validity etcetera and all we will talk about what exactly I mean by premise and conclusion. So, usually in the beginning we said that as it is also study of good and bad reasoning and all. I mean in good we need to talk about, what we mean by good inference. Good inferences are those in which premise provides adequate support for the conclusion and the bad 1s are those in which, premise are inadequate to this task and all.

So, in an argument we have we find out that there are premise, and there are conclusion and if the premises are supporting adequately supporting the conclusion, then it is called as a good argument and if the conclusion is not adequate enough to believe the conclusion to be true then it is called as bad argument.



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Inference

OED: Oxford English Dictionary

Noun: a conclusion reached on the basis of of evidence and reasoning. The process of relating the conclusion by *inferring*. In a technical sense, it is the reasoning process expressed by arguer in an argument.

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So, then we basically we are just talking about some of the basic definition. So, basic concept of logic and in that we need to talk about all this things and all. So, then the next concept which we need to define is inference. So, again if we refer to Oxford English dictionary, it is also consider to be a noun inference is the kind of conclusion reached on the basis of evidence or any reason. So, the process of relating the conclusion by some kind of inferring. So, in technical sense it is the reasoning process expressed by the arguer in argument.

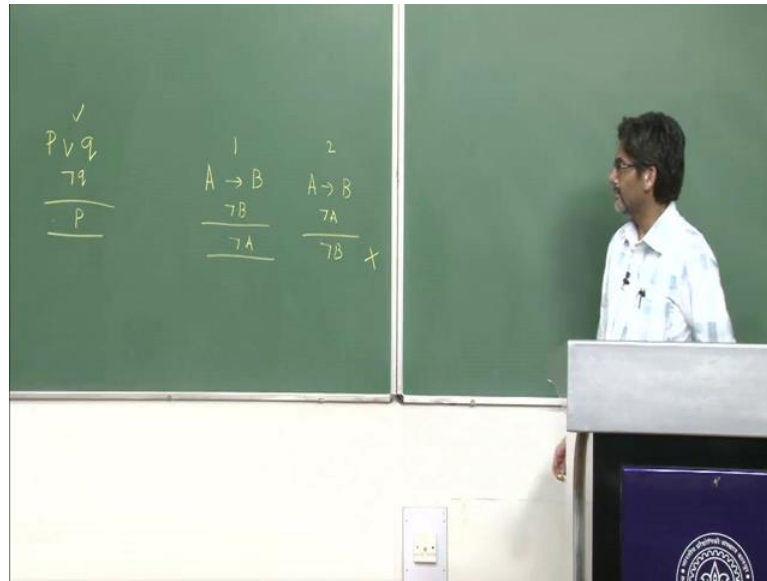
So, the reasoning process employed for example, you say all man are motal. So, critics are man. So, critics are motal then in that. So, so critic is motal is inferred by this 2 conclusion that all man are motal. So, critics are man. So, this process of moving from all man are motal all man are critics man. So, critics are motal. So, this process is called as kind of inference process.

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The slide is titled "Formal and Informal Arguments". It is divided into two sections. The first section, "Formal Argument", contains three numbered items: 1. **P1:** The IITK administration must either energetically support the development of battery powered autos in the campus or else suffer increasing atmospheric pollution. 2. **P2:** IITK must not suffer increasing atmospheric pollution. 3. **C** Therefore, IITK must energetically support the development of battery powered autos in the campus. The second section, "Informal Arguments", contains the text: "Why do I have to study Logic? I am going to be either a movie star or a contractor like my dad. He couldn't factor his way out of a brick." At the bottom of the slide, there is a footer with the text: "A. V. Ravishankar Sarma (IITK) PHI142: Introduction to Logic May 3, 2013 8 / 80".

So, then once we identify these arguments and all then it is important to distinguish between formal and informal arguments and all. So, formal arguments are like this; suppose if you say the administration must support the battery power in the campus or else suffer for increasing atmospheric pollution and the premise 2 says this the Kanpur must not suffer increasing the atmospheric pollution it is denying the first premise the first line suggests, that is the antecedent and the second suggests it is consequent. So, the conclusion is this that, the Kanpur must support the development of battery power of. So, this particular thing has a particular kind of format the format is like this this has this particular kind of structure.

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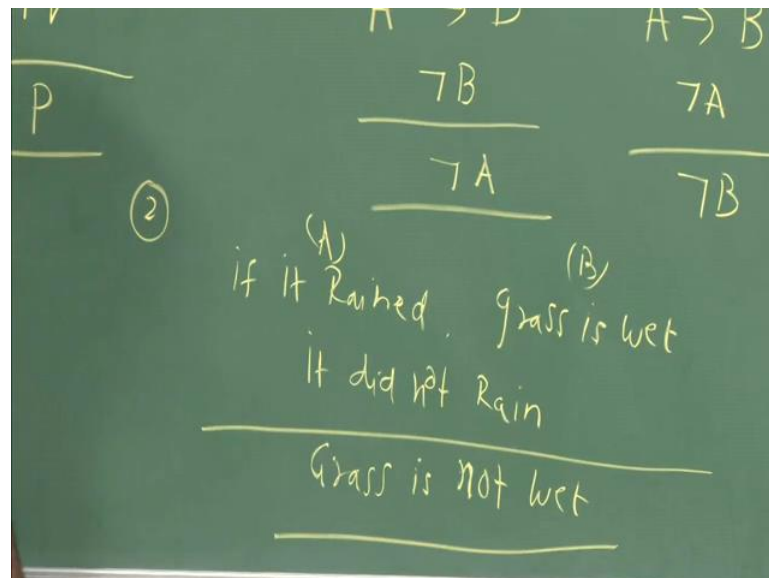
The first 1 is A and the second 1 is B, and then we are denying the conclusion and then we need to deny the antecedent. So, this argument is by virtue of the it is valid kind of argument it exhibits valid form, it is a valid argument for example, if we say A implies B, and then not A if you infer not B then it is not valid argument and all. So, when it is a case I will explain little bit later. So, this is the valid for and it is a invalid form invalid form since it exhibits invalid form, it is invalid argument and all. It is interesting to note that in invalid argument which usually exhibits invalid form, it is said to what conclusion to A implies B whatever you substitute here substituting it is just representing what kind of preposition.

So, whatever you substitute for A and B it is going to be since it exhibits invalid form and all its going to be invalid element. So, example that we spoke we are talking about, the commended category of first 1 is. So, the IITK administration must either inadequately support development of battery power in the campus or else suffer any increasing atmospheric pollution and all. So, actually this is usually represented as  $p \vee q$  that is the first thing, and then just a 1 second then it is adequately must not suffer an increasing atmospheric pollution. So, this q is represented this thing and there is a rule in logic which says that, where  $p \vee q$  and then not q then leads to this 1 P. So, this is the 1 how which we represent it.

For example, the IITK administration must either analytical support the development of battery power campus is represented by p or else it will suffer increase in atmospheric pollution is represented as q. So, now, the second premise is the IITK must not suffer in atmospheric pollution; that means, it is not q. So, then  $p \vee q$  and then q is not a case; obviously, q is ruled out. So, p has to be the case. So, IITK must now support the development of battery power of campus. So, this is comes under the category of disjunctive. So, this going to be valid whatever you substitute for p q r which constitute a preposition and all in this particular kind of case and all.

Suppose, if you look into the other 1 the 1 which i show it on the board the argument 1 the number 1. So, A implies B and not B and not a and that is also come under the category of valid arguments and all; since it exhibits valid form. And the second 1 A implies B and then not a and if you say not B, then it is invalid argument and all for example, if we take for second argument which is called as which is considered as invalid argument. You can say that, if the grass is wet it is rain when the Grass is wet. For example, will use this thing for the second 1 if it is rain then grass is wet.

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So, this is the first sentence which we are talking about we are talking about example 2 and all. So, this is the 3rd example, if you rain then the grass is wet; obviously, when we rain then the grass is wet only. So, this is represented as A and this is represented as B. So, now not A is it is not rain. So, now from this 2 argument if you infer that grass is not

wet grass is not if it rain the grass is wet if we not rain then the grass is not wet. So, suppose if you said that, if it rain the Grass is wet and it indeed rain in all then you can say the Grass is wet and all.

So, in second example we can come up with counter example with which in your premises 2 and the conclusion can be false and all. So, this is invalid for. So, it is called as invalid argument and all, if it is rain the Grass is wet and all. So, it did not rain suppose if you this particular kind of thing and all 1 second suppose if you say this also for example, if you take this example into consideration A implies B and then not A and infer B and all. So, then you will see the difference that, it rain if the grass is wet is; obviously, true if it did not rain that is also a fact in all then you look at the conclusion grass is wet and all.

So, you can come up with the counter example: Grass can be wetting in several other ways also, it might be the case that sprinkler must be on or somebody pour some kind of water into it or some water comes from somewhere etcetera and all or rain and all. So, what is clear from this argument is this that, if you write A implies B and then not A and then this you infer B and all. In it clearly a invalid argument and all the invalid senses it is invalid form and all and even in the example also, you can say that if it rain the Grass is wet is true and did not rain is also true, but still it is difficult to us to believe that the grass is wet and all because grass can be wetting by several other ways and all it sprinkled may be on or some other ways.

So; that means, the kind of counter example in which the premises are true and the conclusion is false and all. So, in such that the case when the premises are true and the conclusion is false, then it is called as invalid form of argument. I will talk about the validity part little bit later, but what I am trying to say is this the just by seeing the form you can say, formal kind of argument, because the argument which I expressed on the board has clear cut form and all. We can talk about validity or invalidity little bit later and all; all this which are expressed on the board they are all formal kind of argument and all.

So, then what are consider to be informal kind of argument to be informal argument are those argument, which did not express specific kind of form and all we need to analyse the content of the argument. So, what is important here is that, formal arguments exhibits

some kind of form and all by virtue of form we can say that it is a for an argument and all. So, for example, in this case  $prq$  and not and then not  $p$  for example, we have mention here, but look at here. Other example, which is the suppose if you say particular kind of thing somebody is trying to argue in this way. So, we say this why do you have to study logic and then we say I will be a movie star or a contractor like my dad it goes on says it could not stay out of brick and all. So, no need to study logic and all.

So, in this particular kind of argument it does not exhibit any specific form and all; like the 1 which we have here we have  $prq$  and not  $q$  and  $p$ , but in this certain example we do not have any specific form which we can see in this particular kind of argument, unless and until you analyse the content of argument you will not be able to conclude anything in this particular kind of case. So, those things which those arguments, which require the analysis of content they are called as informal kind of arguments and all.

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The slide is titled "Form and Content of an argument" in blue text at the top. It contains two main sections, each with a purple header and a light blue background. The first section, "Form", defines it as the logical structure of an argument and provides an example about elephants and rocks. The second section, "Content", defines it as the actual propositions of an argument and provides an example about Kheer and eternal happiness. At the bottom, there is a footer with the name "A. V. Ravishankar Sarma (IITK) PHI142: Introduction to Logic", the date "May 3, 2013", and the page number "9 / 80".

**Form and Content of an argument**

**Form**  
The form of an argument is its logical structure or the manner in which the premises offer support for the conclusion.  
Since the form describes the relationship between the premises and the conclusion, it cannot be true or false  
**Note:** only propositions can be true or false.  
**Example:** If elephants can fly, then rocks can float in water. Elephants can fly. Therefore, rocks can float in water.

**Content**  
The content of an argument is the group of actual propositions that comprise the argument.  
It is with respect to *content* alone that one may consider truth and falsehood  
**Example:** Kheer is better than nothing. Nothing is better than eternal happiness. Therefore Kheer is better than eternal happiness.

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So, now it comes to important question that how to distinguish form and content of an argument and all; because we are saying that any argument which saying that specific form and all is the 1 which I show it on the board they are formal arguments and informal arguments the informal arguments are those arguments which can be, which require analysis of content. So, what is the form of an argument? So, the form of an argument is the logical structure or the premises which have support to the conclusion and all.

So, if you look at the any one of the example 1, 2, 3; forget it about whether it is valid or invalid, but it exhibits some kind of form and all. So,  $p \rightarrow q$  and you denied you deny the  $q$  and; obviously, it leads to that possibility of  $p$  in the first argument  $A$  implies  $B$  is consequent, then you have to deny the antecedent also where  $a$  is the antecedent and  $B$  is consequent here. So, in the second example  $A$  implies  $B$  and then not  $A$  and if you say  $B$  follows; that is some kind of exhibits form and all, but its invalid form. So, it is invalid argument we will talk about validity little bit later and all, but this moment we are trying to distinguish between the form and content of the argument.

So, now form also describes relation between premises and the conclusion. So, we have to note that the argument is the formal structure which is exhibited by 1, 2, 3; which are shown on the board they are not consider to be true or false, the argument cannot be true or false the argument can only be valid or invalid and all. In the same way, if you look into the preposition then preposition cannot be valid or invalid a preposition can only be true or false. So, this is the common mistake which the students make it and all. So, that is, this that you have to clearly note that an argument cannot be true or false an argument can only be valid or invalid or may be strong or weak and all arguments.

So, the preposition can be true or false; suppose if you say this particular kind of thing this argument is little bit funny and all. Suppose if you say if Elephants can fly, then rats can float in water and all. You now that, Elephant cannot fly. So, you can say that rats can float in water. So, Elephants can fly. So, Rats can float in water and all. So, these are the example which is far away from the reality that we come across today, in this course. So, the thing is that these kinds of arguments still exhibit some specific kind of form. So, they are consider to be in this case, if the elephants can fly then the rats can float on water it can be represented as  $A$  implies  $B$  and Elephant can fly is represented as  $A$  then rats can float in water is represented as  $B$ .

So,  $A$  implies  $B$  and then form  $A$ . So, this is the valid kind of argument and all, but it does not make any sense to us. So, unless and until the arguer is trying to make some fun out of fun of someone else and all or something like that, we can use make use of this particular kind of argument, but you have to note that this argument exhibits some kind of valid form.

So, if you take the other kind into consideration content of the argument the content of the argument is the group of actual set of preposition implies the argument. So, it is with respect to content alone that, we may consider truth and false and all of the preposition. So, this preposition are true and false with respect to some kind of context and all we have to analyse the content of preposition then only you will come to know it is true or false you have to put it in context and all. Suppose, if you take into consideration this is very funny example Kheer is better than nothing; obviously, when someone is hungry and all and is presented with Kheer and all he will be very happy.

So, then the second preposition is nothing is better than eternal happiness of course, everyone is striving for some kind of eternal happiness after all purpose of life to be happy and all. So, nothing is better than eternal happiness; if this 2 are consider to be true you then; obviously, infer that Kheer is better than, eternal happiness Kheer is some kind of material kind which we need it and all coming out of hunger etcetera and all, but that may not give us some kind of eternal happiness. So, clearly if you do not analyse the content of the argument and all; that means, the premises you used here, this argument are seems to be perfectly some kind of valid argument and all. So, unless until you analyse the content of argument you will not come to know whether it is valid or in valid argument.

So, this argument requires the analysis of argument only, if you can analysis the content of argument then you will come to know this is valid or invalid kind of argument and all. So, atleast you will not believe this particular kind of argument that, Kheer is better than nothing is better that eternal happiness, then Kheer is better than eternal happiness. Suppose, if you follow some kind of formal structure for this 1 then A implies B then B implies C and A implies C, but if the argument you do not take the consideration into argument there is no way to judge, whether it is the argument of goon 1 or bad 1.



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Logic: a study of forms of reasoning

Logic studies forms of reasoning.  
The content can deal with anything, mathematics, cooking, physics, ethics, or whatever.  
When you learn logic, you are learning tools of reasoning that can be applied to any subject.

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So, now, the second one is shown is this logic is the systematic thing of argumentation and is also study of different science of reason and all. So, that content can deal with anything, that it can be mathematics it can be cooking, it can be physics, it can be ethics and whatever. So, logic is basically used as a tool a justificatory tool, which appears in all the subjects and all. So, it cannot be separately it cannot be studied independent subject and all that it is pardons partial of this part and all, mathematicians use the tools of logic physics also used tool of logic etcetera and all. So, when you learn logic what you are simply doing is learning tool of logic that can be applied to this subject and all.

For example; the rules that I have used on the board the inferential rule, which can be any subject matter subject matter can be anything it can be mathematics it can be cooking etcetera. So, basically logic is used as justificatory tool. So, now we have said that argument consist of premises and conclusion. So, now we go in to the details of what we mean by the premises and what we mean by the conclusion of an argument and then hoe to identify a premises and how to identify a conclusion in a given argument.

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Premises and Conclusion of an argument

- 1 Premises are the statements that set forth reasons or evidence.
- 2 **OED:** An end or finish, the summing up of an argument or text, a judgment or decision reached by reasoning, the settling of a treaty or agreement.
- 3 Conclusion is a statement that the evidence is claimed to support or imply it.
- 4 All metals expand upon heating. Iron is a metal. *therefore*, Iron expands upon heating.

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So, one of the definition of premises is that premises are the statements that can be spoken as true or false that is meaning of a statement that said for reasons are evidence. So, the statement for example, we are given a passage, which consists of different group of statement. So, in the passage suppose we want to identify the premises identify the conclusion, then it need to define what we mean by the premises, the premises are those statement where both statement are evidence. So, if we take into consideration Oxford English dictionary, it end of conclusion can be treated as end or finish or coming of an argument or text or judgement or a decision reach by this, the settling of TTR agreement is called as a conclusion and all, but in this course the logic what we use is conclusion in statement that the evidence is claim to support the particular kind of thing and all.

So, the premises set for things and evidence etcetera and all and this premises support some other kind of preposition, the other preposition which we are call it as a conclusion for example, if we say all metals expands upon heating and iron is metal, then iron expands upon heating in this particular kind of argument iron expands upon heating is conclusion whereas, it is supported by this 2 premises and all metals expands upon heating and iron is a metal. So, the premises seem to be the conclusion adequately support to the conclusion is called as a good argument. If the premises are not enough to believe the conclusion to be true, then it is a bad argument and all.

So, we are not interested in good and bad kind of subjective kinds of judgement, but we use different kind of terminal validity etcetera. So, what are the question we need to ask our self, to identify premises and conclusion in a given English language passage and all. First we need to identify what are premises and what are conclusions, then once you identify premises and conclusion then you is looking to premises are leading to conclusion, whether the premises are giving sufficient evidence to believe the conclusion to be true or not the 1 which will think of...

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Questions:

Some questions

- 1 How do we recognize arguments?
- 2 How one distinguishes arguments from non-arguments?

Only when an argument has been identified, we will be able to critically examine in a clear and objective fashion.

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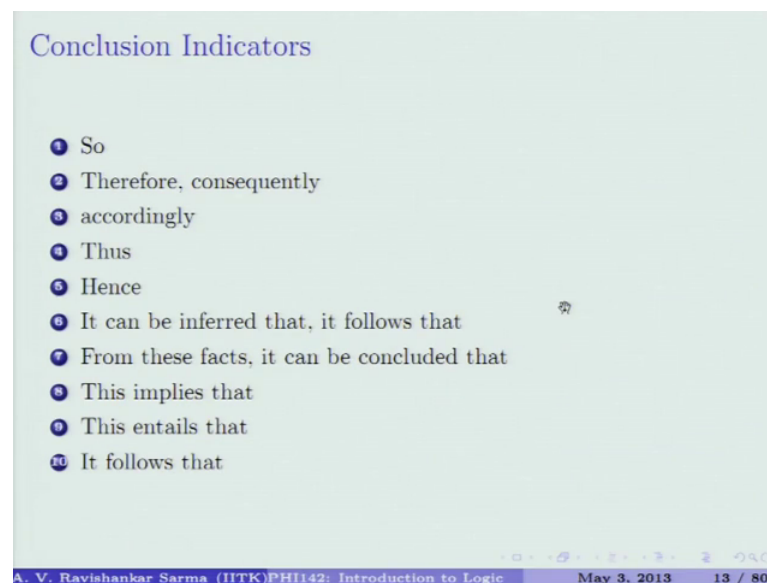
So, now most important question, which will ask is how to recognize arguments? Recognize argument which is meant that we need to recognize the premises recognize the conclusion and then how this premises are leading to the conclusion the 1 which we need to see. How 1 distinguishes argument from non-argument? Suppose in English language passage, you find out some premises and find out some conclusion then premises are leading to conclusion you call it as argument, any type of specific structure and all. The structure is that, the premises and conclusion and there is a inferential claim made in the arguments and all.

Suppose, if in this kind the inferential claim is missing in some kind of passages. Let us group of statement leading to and all; if the inferential claim is missing it is called as a non-inferential passage and that comes under the category of non-arguments and all. So, basically, what we are trying to do is this that, we are trying to distinguish between

argument and non-arguments, argument exhibits some specific types of structure and non-argument do not have such kind of structure arguments are inferential whereas, non-arguments are non-inferential. So, it is all we mean by inferential and non inferential little bit later.

So, only when an argument is been identified will be able to critical examine in a clear and objective fashion in a task of logician, to identify what he means by an argument or what he has to come from an argument and then only you can judge whether you can start criticising that particular kind of argument. We can say that, argument is not good enough or we can say that argument is strong, weak or all this things come up with. So, further we need to have, we come up of with argument and all for argument what we need is premises and conclusion. So, first and most things which we doing is, we will identify conclusion and all.

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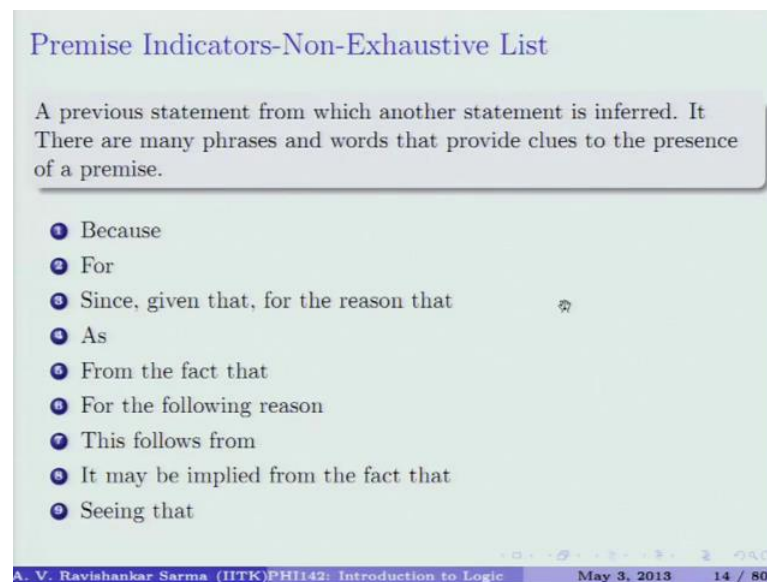
The slide is titled "Conclusion Indicators" in blue text. It contains a numbered list of ten indicators, each preceded by a blue circle with a white number. The indicators are: 1. So, 2. Therefore, consequently, 3. accordingly, 4. Thus, 5. Hence, 6. It can be inferred that, it follows that, 7. From these facts, it can be concluded that, 8. This implies that, 9. This entails that, 10. It follows that. At the bottom of the slide, there is a footer with the text "A. V. Ravishankar Sarma (IITK) PHI142: Introduction to Logic May 3, 2013 13 / 80".

So, conclusions there are some indicator for identifying the conclusion in a given English language passage and all. So, what is happening in it; you are given a English language passage consist of group of statements and all it covered with so many other things and all exclamatory of language is used in. So, many things and all which we have seen earlier. So, how to identify the conclusion in a given passage and all in English language passage.

Suppose, if you are reading newspaper or reading something else or scientific text or something like that. So, how do you identify the conclusion in group of statements and all? So, usually conclusion indicators are these things. So, the statements which end and begin with so; Therefore, Consequently, accordingly, Thus, Hence. The most commonly used 1 is thus therefore, and all this is the 1 which usually come across in most of the English language passage and all. Suppose, if you come across another word which begins with the sentence which begins with hence or it can be inferred that, suppose it begins with the phrase it follows that or it can be concluded that and then so, and so, or it says it implies that, something follows after that are it entails that or it follows that etcetera, all this things are will come under the category of conclusion indicator and all. And you should note that this is not an exertive list.

So, there may be several other indicator and all which converts some of the meaning or which, we used already it might come closer to may be thus or hence or something like that therefore, etcetera there may be some other phrases which come under the category of conclusion.

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**Premise Indicators-Non-Exhaustive List**

A previous statement from which another statement is inferred. It  
There are many phrases and words that provide clues to the presence  
of a premise.

- ➊ Because
- ➋ For
- ➌ Since, given that, for the reason that
- ➍ As
- ➎ From the fact that
- ➏ For the following reason
- ➐ This follows from
- ➑ It may be implied from the fact that
- ➒ Seeing that

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So, now 1s we identify with the help of conclusion indicator, that here is a conclusion in a given English language passage, then the next question that we need to ask is what are the premises what are going to be the indicator phrases for identify the premises. Premise can be identify by the this indicators and again this list is not exhaustive, we are not

saying that this is the only thing that constitute the premise indicator anyway many thing which comes under is one of this thing and all.

So, this is just our task to identify the premises and the conclusion. Is you identify the premises and the conclusion then we can say that, this is the presence of argument then you can start criticising it and all after all we are talking about critical thinking. So, what is a premise? Premise is the statement to another statement inferred and all what is inferred as a conclusion and the previous statement are all conclusion. There are many phrases and words that, provides clues to the presence of the premise and this are the indicators, because for since most common word used is since.

So, whenever you come across something which begins with since are given that, for the reason that as that the fact that etcetera or for the following reason this follow from the seen that etcetera all this things comes under the premise indicator. Is you identify one of this phrases and it begins with this kind of sentences, which follows after this things then we can say that premises are present in a given passage and all.

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Examples:

- 1 IIT Education education is a good thing but costly. A lot of students depend on bank loans and scholarships pay their tuition fees. Discontinuing bank loans and scholarships would mean that fewer students could afford IIT education. Therefore, discontinuing bank loans and scholarships would be a bad thing.
- 2 Smoking is bad for your health, **because** it destroys the healthy functioning of your lungs. Anything that destroys healthy functioning of your lungs is bad for your health.
- 3 Punishment does not deter crime unless it is swift and certain. Punishment is not swift and certain in the justice system of India. **Therefore** punishment does not deter crime in the justice system of India.

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So, here are some of the examples which we know we can identify what are premises and what are conclusions. So, first look into the first example is a good thing, but costly somebody is arguing like this on student depends on bank loan, scholarships they have to pay their Tution fees etcetera. Now, all of a sudden if bank discontinue there loan,

scholarships, that mean that, few of student can prefer IIT education costly and all; of a sudden stops there scholarships and all loan which they can pay the Tution fees and all.

So, now, in this case of English language passage the 1 which we say is that, we have to identify the premises and the indicators. So, now, the first thing which you need to find out or strategy is to find out, the conclusion indicators. So, now, you can clearly see that in the last line of first argument therefore, is there. So, whatever follows after therefore, is considered as a conclusion. So, the conclusion here is this thing, discontinue bank loans and scholarships would be a bad thing and all. So, that is called as a conclusion 1s you identify the conclusion. You need to find out what support you need to this kind of conclusion, because what support this kind of statements are consider the premises and all.

So, the 1 which is previously followed by the conclusion are said to be the premises and all; for all this things, IIT education is a good thing costly a lot of students depend upon bank loan, scholarships pay, the Tution fees etcetera discontinuing bank loans etcetera all this to be supporting final fact that, bank loan discontinue bank loans and scholarships would be very costly and all become costly for the student.

Now, consider the second example with this we will end this lecture. So, smoking is bad for your health. So, now, 1 in the bold letters is a premise indicator. So, because it destroy healthy function of your lungs and all; anything that destroys healthy functions of lungs is bad for your health. So, now, the first sentence smoking is bad for your health it is supported by statement, which follows after the phrases because. So, that is why smoking is bad for your health, is the conclusion and then whatever follows after that seems to be supporting why smoking is bad etcetera and all.

So, See in the third example punishment is not deter crime unless it is swift until you give strong kind of punishment and all. This crime will continue and all the punishment is not swift, in certain injustice system of India therefore, whatever follows therefore, punishment does not deter crime the justice system of India that is seems to be the conclusion. And whatever is before that punishment is not deter crime unless it is swift etcetera and all consider to be premises and all.

So, in this lecture what we have consider simply this that, what we have identify we have talked about what we mean about an argument it said that argument consist of premise

and a conclusion, then we also talked about how to identify a premise and a conclusion in a English language passage. It said that, whenever you have a premise indicator you say that English language passage consists of premise and if you have conclusion indicator you can say there is a conclusion in the given passage.

So, now the next question is this the if suppose the premise and the conclusion indicator are absent in a given English language passage. How to identify that it is an argument are in the next lecture we will consider, what we mean by the non-argument, what we distinguish arguments from non-arguments and what kind of specific structure the argument have all this question which will try to answer in the next lecture.