Indian Institute of Technology Kanpur
National Programme on Technology Enhanced Learning (NPTEL)
Course Title
Engineering Graphics

Lecture – 23
Angular Perspective Views-2
&
Space Geometry-Part-1

by
Prof. Nihar Ranjan Patre
Department of Civil engineering, IIT Kanpur

So as I said last class let us see a few examples, simple and complicated examples with different animations.

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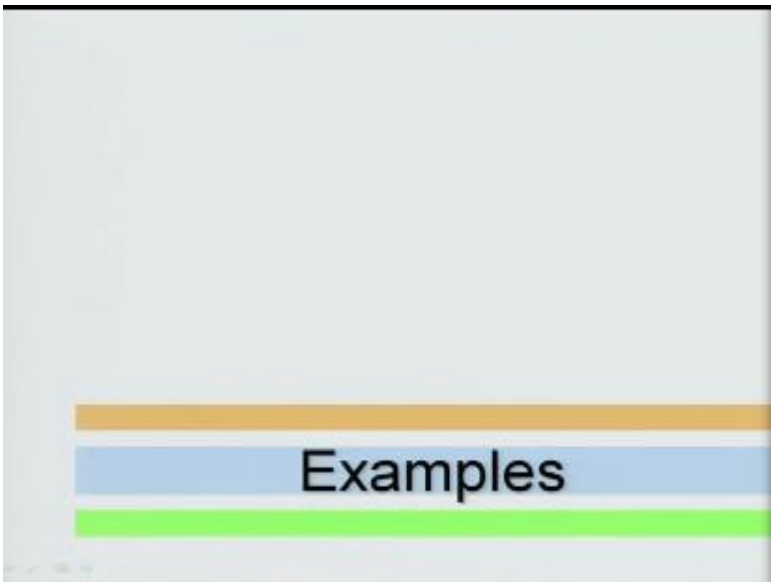

About perspective views, start with this warehouse.

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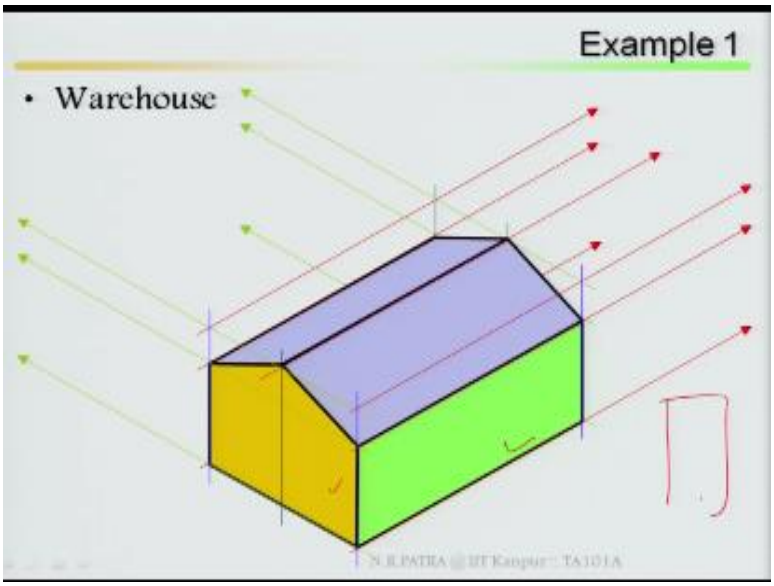

This can be done in both way, this warehouse, I can put it in isometric view so that I can see this side as well as this side or I can put this warehouse, just rotate it so that I can see it on one direction. So that means in this example there will be one vanishing point, as well as there will be two vanishing point. So in this case it will be a two vanishing point to take the clear pictures of both the sides along X and Y in isometric as well as Z. So that is why it has been rotated.

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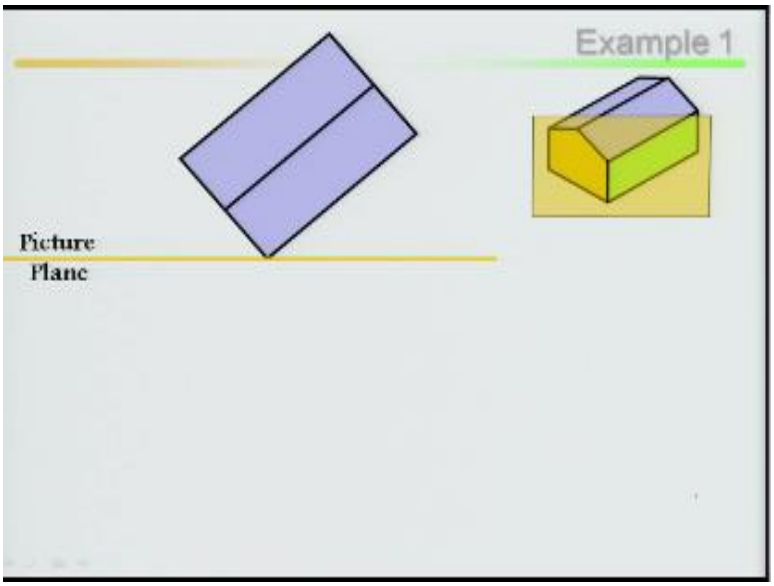

So let us start with this, so this is the top view, then draw the picture plane assuming it touches your picture plane you have a choice.

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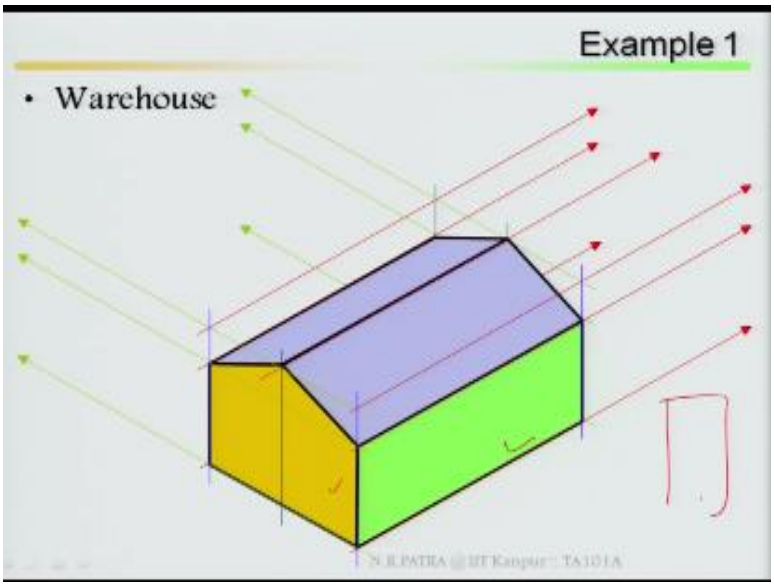

Whether if you want it you can touch the picture plane, if you do not want do not touch it.

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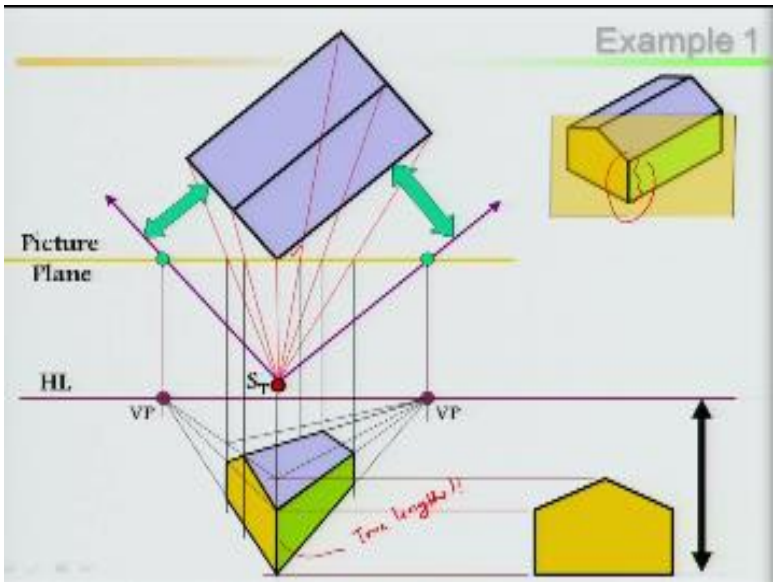

Maybe other part, so it touches your picture plane then S_P station point, from station point draw the parallel lines, parallel to your – this parallel to your left face, parallel to your right face. Then draw horizon line, then draw intercept from station point to your left face and right face. The parallel lines which intersect in the picture plane from there draw intercepts, then vanishing point 1 or vanishing point left, then vanishing point right.

Then take the side view or maybe the front view looking at that how this object is there in this case, this is the front view. So put it here and then from there as I said last class, once it is touches here, it touches here that means this edge, if this edge is touches here that means this length will be your true length, because in this case not surface or face only edge is touching. So then from this side view or the front view you make it project it back from the station point and from there, then left face as well as right face draw it back.

That means entire part will be within this range, warehouse will be there. So this will be your in true length. Then look at the inner as well as outer faces, so I just put it all together how it looks, this is your true, this is in true length. Then animated it the way it is there animated it, so this is your perspective view.

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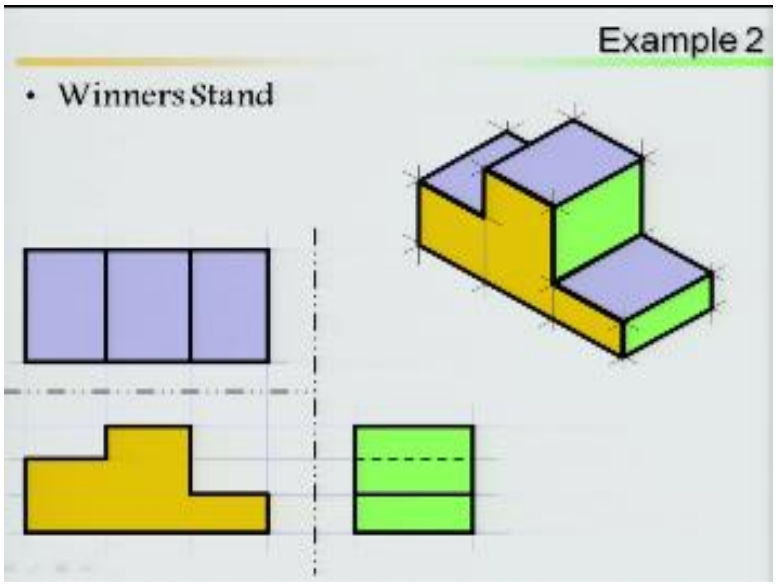

Then come to the example 2, simple one winners stand, how we are putting it. So this is your top view, this is your front view, this is your side view, how it looks winners stand. Take it a different color animations, look at this colors, first, second, and third, this is the winners stand.

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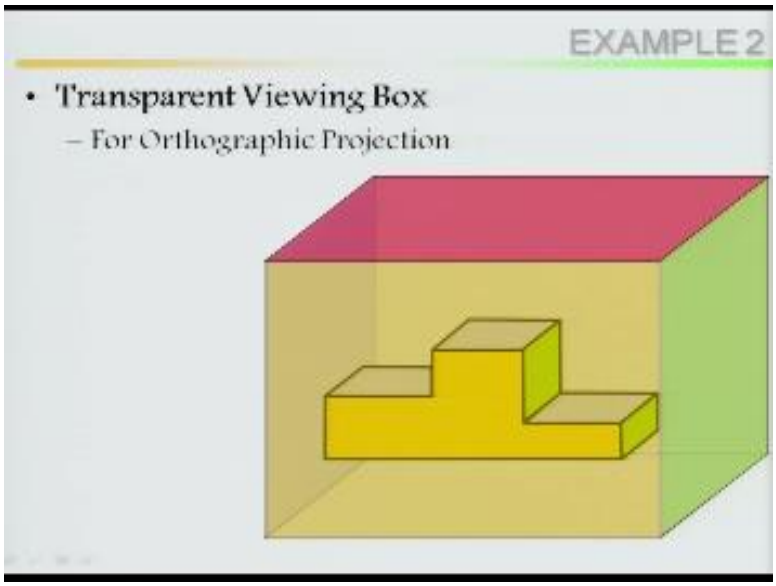

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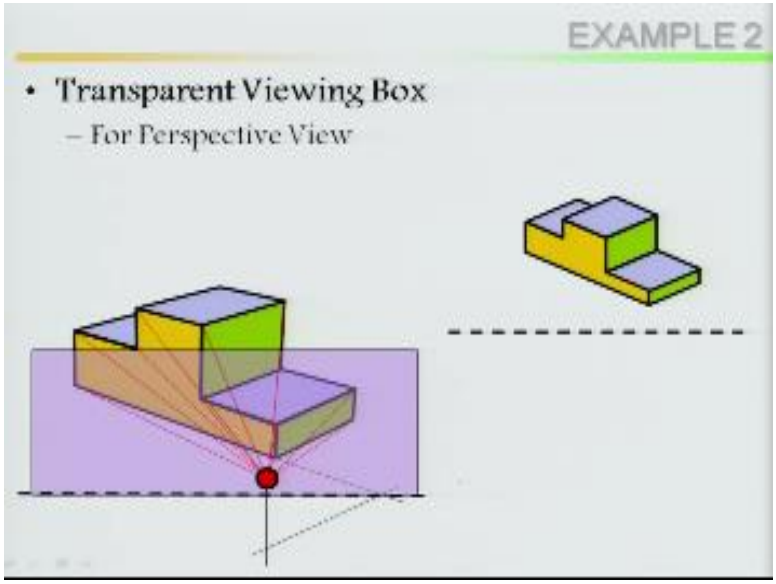

Then look at this, how we are going to take it, I put it here picture plane, then your station point.

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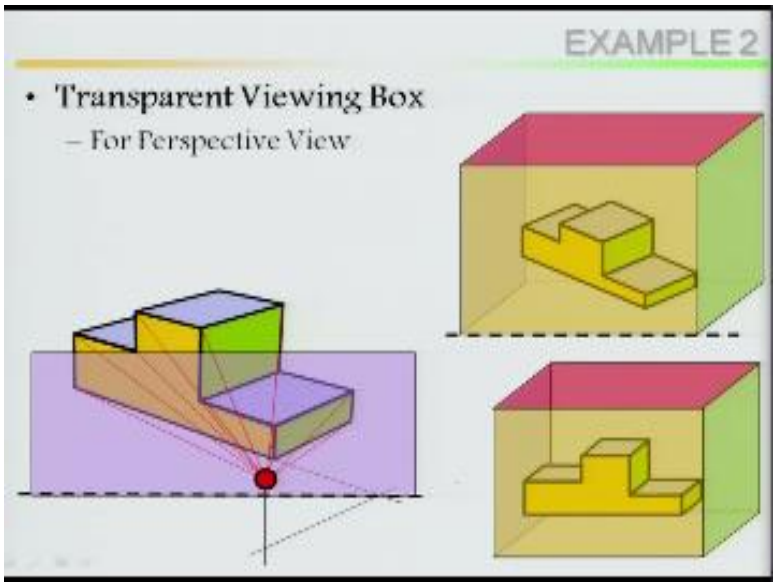

Then you can draw it back from this perspective view how it looks, I just keep it here and leave it for you.

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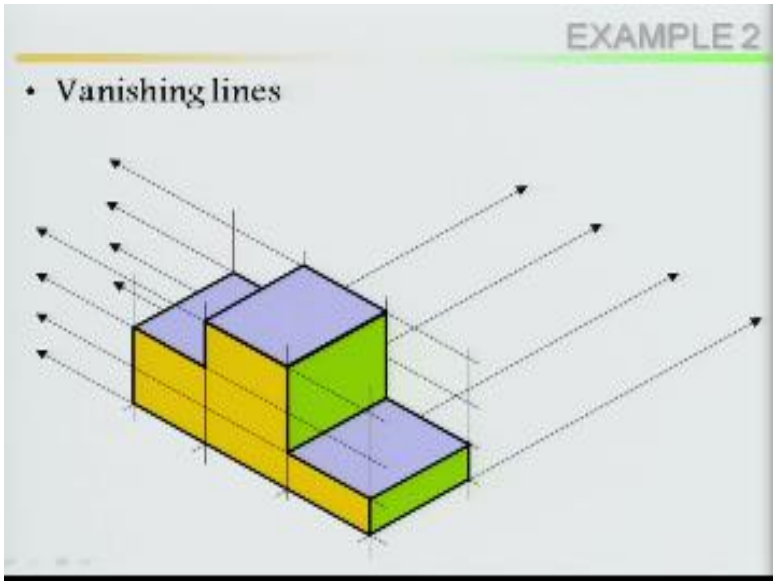

Then come to this vanishing lines, look at here this is your vanishing lines. Once you have rotated here as I said in this direction X as well as Y these are the vanishing lines so in perspective they will be vanishing, as the distance increases they will be vanishing some point.

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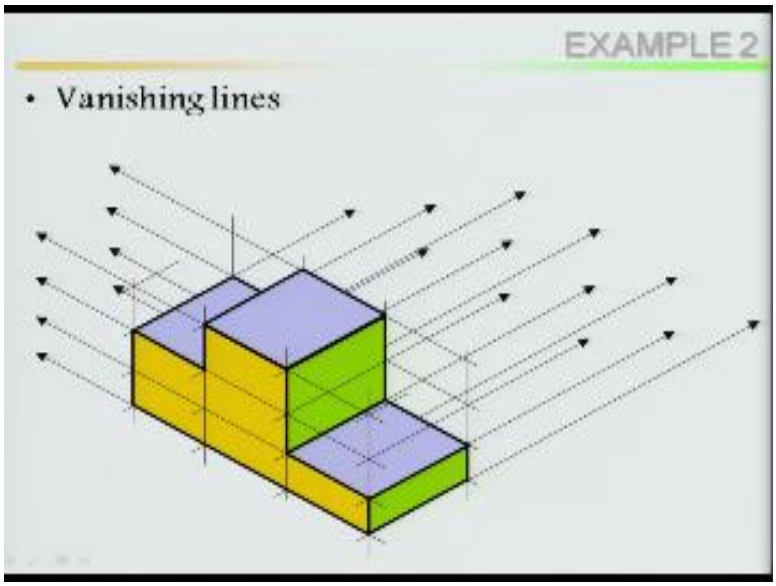

In this case these are the two vanishing point you are supposed to get it.

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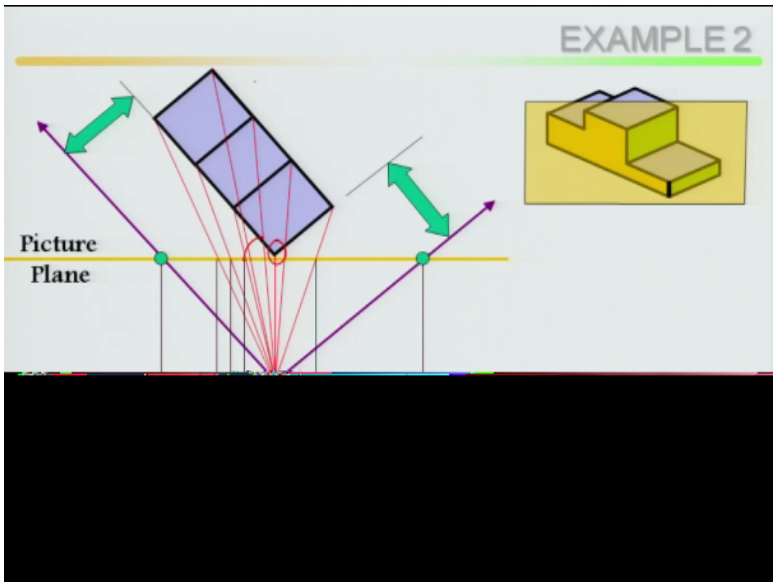

So let us start with this picture plane, then top view, and top view has been rotated so that I can see this isometric that means both the sides I can see it. So in this case there are two vanishing points, locate your station point, from station point considering your left face draw parallel lines, then considering your right face draw parallel lines, where this intercept picture plane from there draw perpendiculars.

So then your vanishing point left, vanishing point right, then take your front view, then draw it project it back from station point, as this edge again it touches your picture plane so this lengths supposed to be your true length, then take your left hand side vanishing point, right hand side vanishing point, then from station point locate your outer edge in the left hand side, right face, left face, as well as right face, then again outer edge of your from right face to left face, then plot this, so this is what how it looks.

So you try to practice, these are all the description to you how to do your perspective but you these examples you try to practice at your hostels, so then more you practice more you will be knowing its a intersections, one by one intersections so very easy, sometimes it becomes difficult, sometimes it will very easy for drawing point of view

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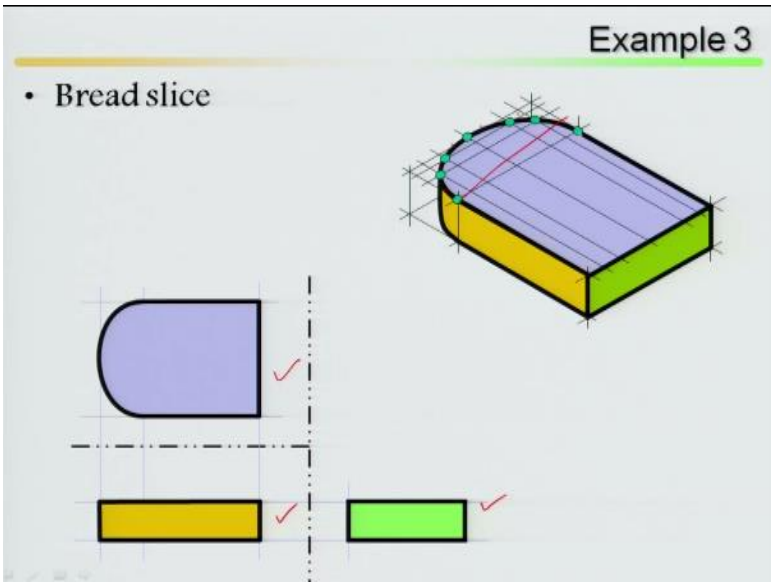

Then bread slice, simple examples bread slice, so what is the problem in this bread slice, bread slice the problem is your circle, semi circle. So as I said earlier then you take number of points, if I put it here if I am taking it isometric, take number of points 1, 2,3,4,5,6,7 as many as number of points, then project it back, then how it looks look at here, this is your top view, top view, front view, and it is your side view, in this case how many points you have taken 1,2,3,4,5,6,7 so

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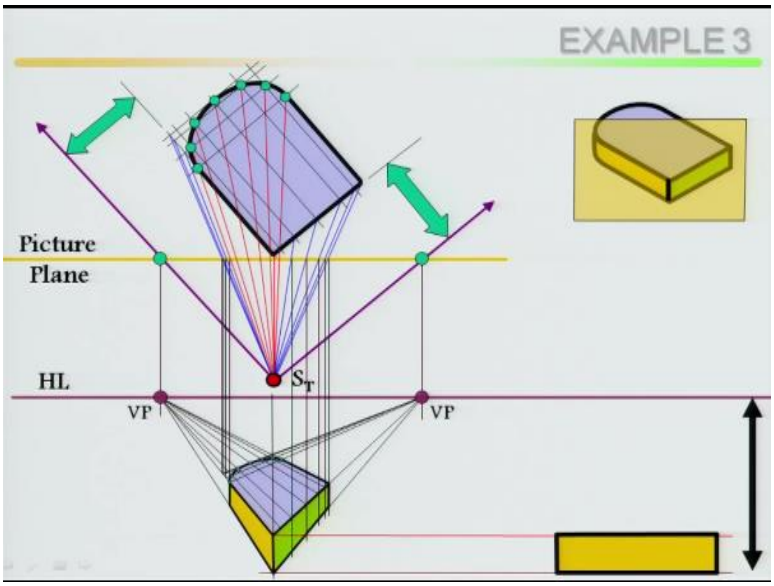

Then go to these, construct your top view, then after constructing it can be rotated so that both the spaces you can see it, then from there put the numbers, divide it, then locate your station point, mark the points from station point to draw parallel line your left face, from station point to draw a parallel line to your right face, then project it back, locate your vanishing point left, locate your vanishing point right, then take your front view or side view, then as it touches then this will be your in true length, then once you locate it then from there your left vanish, right vanishing point as well as left vanishing point, mark these.

So then you go one by one, this is your right face, this is your left face, once you finish right face left face then you go for this exterior part, look at this, go one by one, so how it comes, as it has been located here points, this points has been marked so here semicircle becomes ellipse. Similarly I can rotate it back if you come to here

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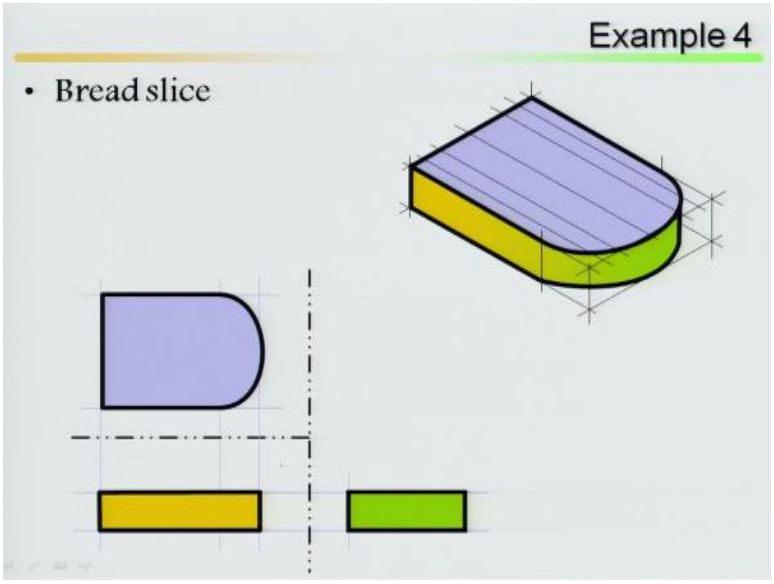

One case I have shown it touching to your picture plane, in this case let us look at this just I rotate it, bread slice rotate it so this part will be this side so in this case this is your top view, this is your front view, this is your side view.

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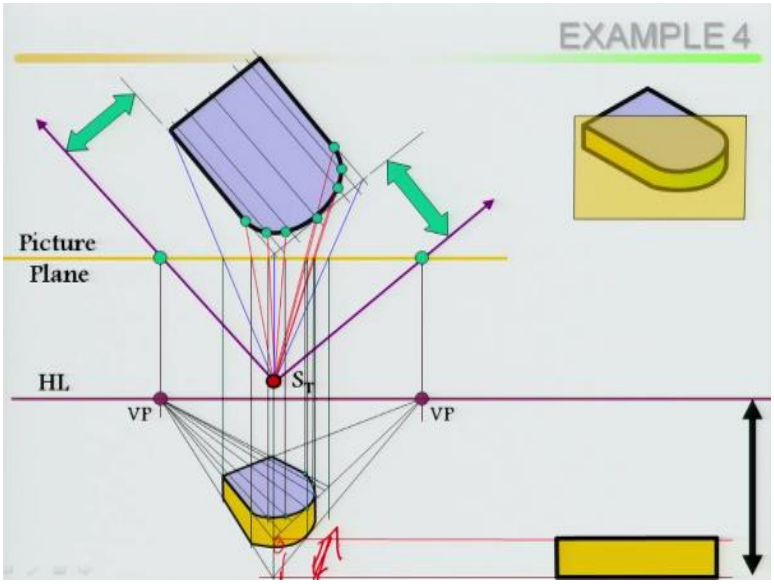

Then draw the isometric so of the top view so that you rotate it here, then it is some distance away from the picture plane that means it is not, you are not supposed to get the true length, then divide it into number of parts from station point let take the left face, station point take the right face, parallel lines draw, then horizon lines draw perpendiculars, then vanishing point left vanishing point right you locate it back, then take your front view, draw this and from there if it touches here this is supposed to be true length, as it has not touches this is not true length.

So then from there you mark it all the points, now it has been shifted if it is touches this line will be touches here, now it has been shifted, it has been shifted towards up, now look at here how it looks? Intermediate steps I am just missing, you just try enough examples I go by slowly, last class as well as last two last class these are all discussion of different examples.

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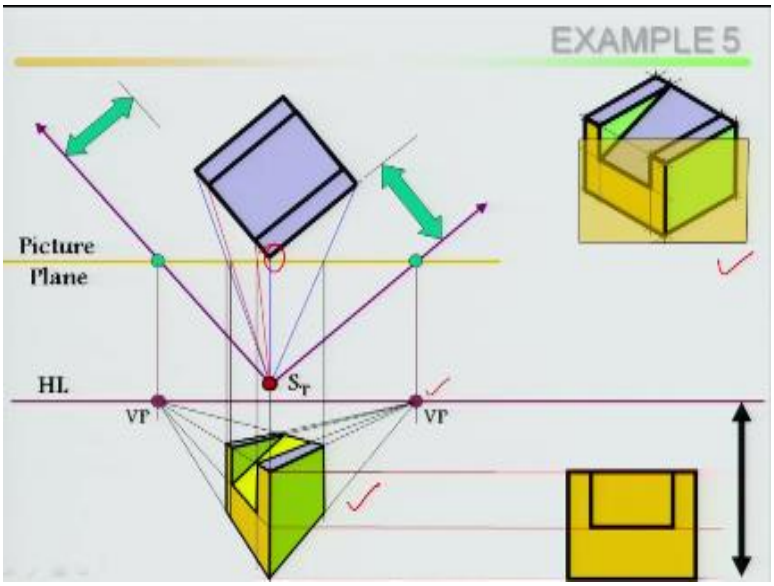

Then go to another example look at this, this is not a bread slice sorry, example 5 take the top view this is your isometric view, in the top view this isometric has been put it and this has been touch in your picture plane. Once this touch means this length will be in your true length, then locate your station point and locate your vanishing point left as well as vanishing point right, then take the side view, take the front view.

Then once you get this, this is your true length from there find it out your edge you join up to your left vanishing point as well as right vanishing point, that means this object will be located in this zone. Then identify take one by one face then in the left face identify the extreme edges as well as interior part, exterior as well as interior, then from left to go to the right. All has been identified and marked.

Then color has been made, how it looks? The figure is here you can observe the difference, this is your isometric and this is your perspective because what will happen, there is a convergence there is a vanishing point both this axis at the end what happen? They are going to be vanish so that is why this entire length is too steady, it is not supped to be constant throughout. If it is true length slowly, slowly it is diminishing.

Then at this one point it will completely diminish and this remains as a vanishing point. So this is all about this few examples, I can say that many more examples, today's few examples if you go to the last class, last to last class some complicated examples I have finished. If you practice with this examples this is good enough to learn perspective view.

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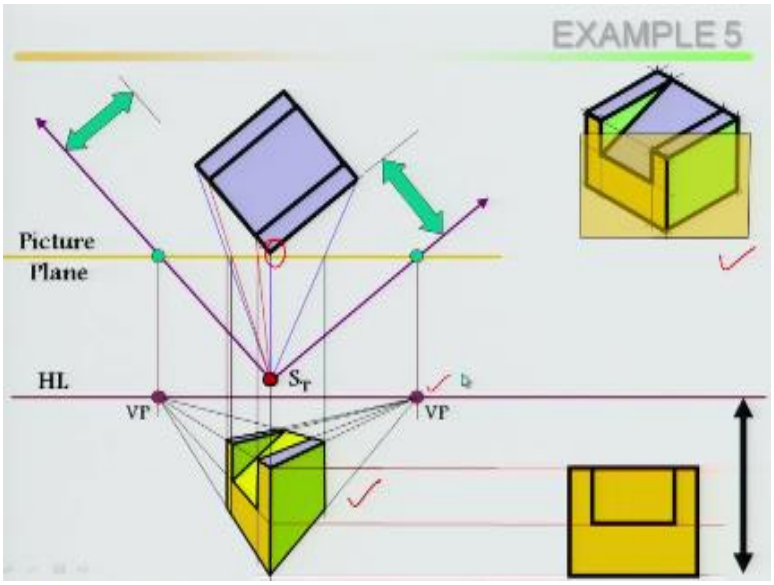

This is all about the perspective view. Now come to this new chapter, we are finished what are the things we have finished till now? We have started with the basic drawings, lettering, then orthographic, isometric, oblique, missing line, missing views, dimensioning, till now we have covered, then perspective. Now we are going to a space geometry.

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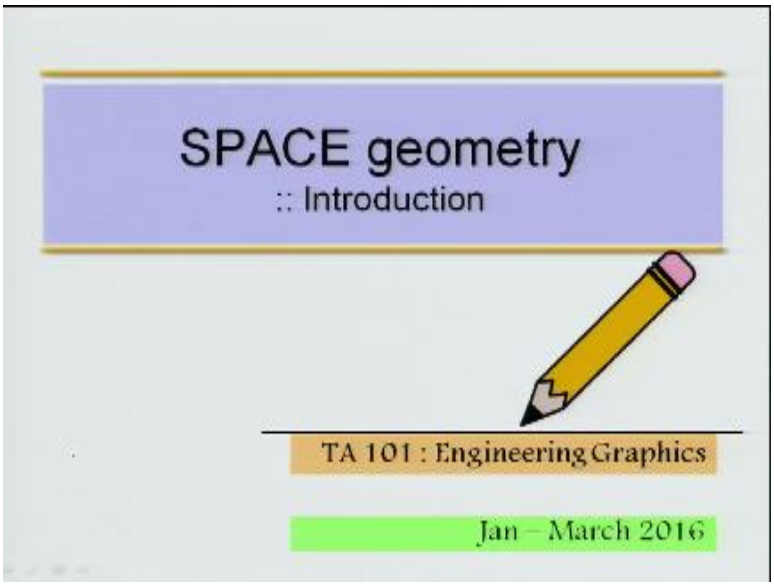

This is quite interesting space geometry, lines and planes in this space geometry particularly lines, lines and planes, planes and planes particularly intersection of lines, intersection of lines and planes, intersection of planes and planes. These are the things in the 3D space we have to discuss and from there we have to find it out what is the true length, true length of the plane one of the edge or true length of the line.

If line is intersecting in a space what is the true angle of the line? These are the course content particularly in case of your space geometry.

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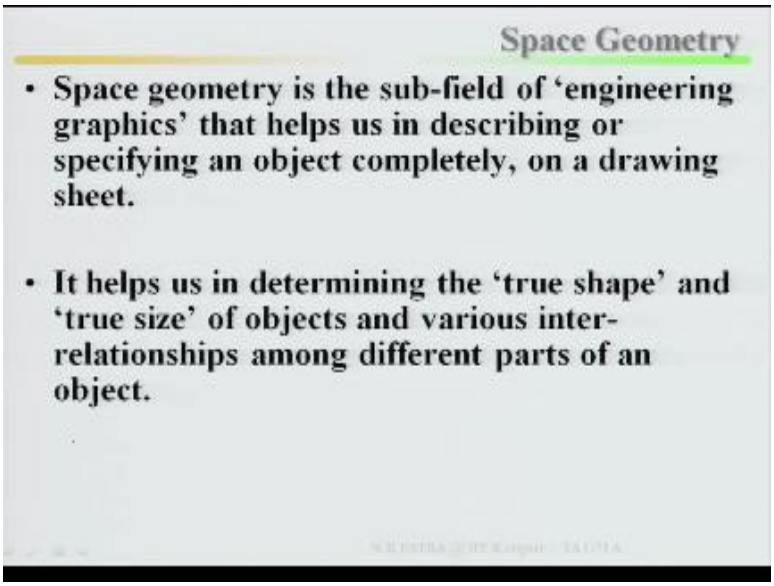

So if I rewrite the, actually space geometry, space geometry is the sub- field of engineering graphics that helps us in describing or specifying an object completely on a drawing sheet. It helps us in determining the true shape as I said earlier and true size of the object and various inter relationship among different parts of an object, various inter relationship among different parts of an object.

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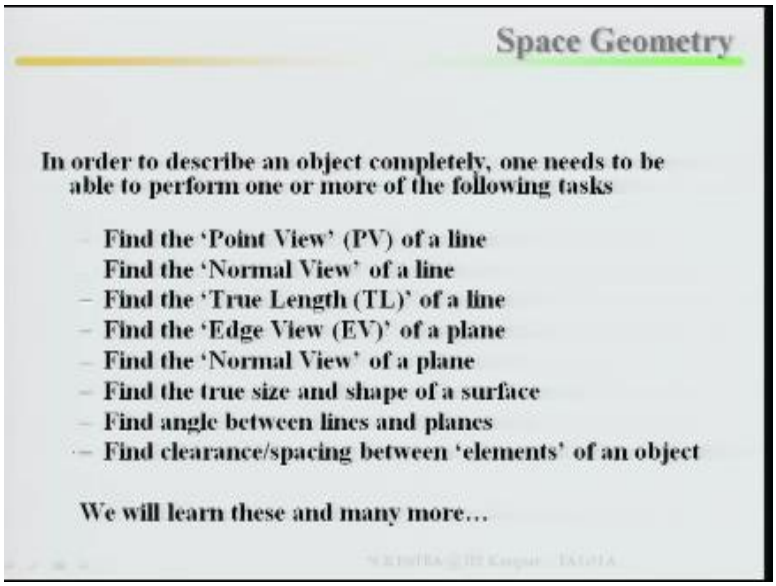

In order to describe an object completely look at this, one need to able to perform one or more of the following tasks, one or more of the following tasks. Find the point view, find the point view of a line, find the normal view of a line, find the true length of a line, find the edge view of a plane, find the normal view of a plane, find the true size and shape of a structure, a structure may be of any size any, any shape.

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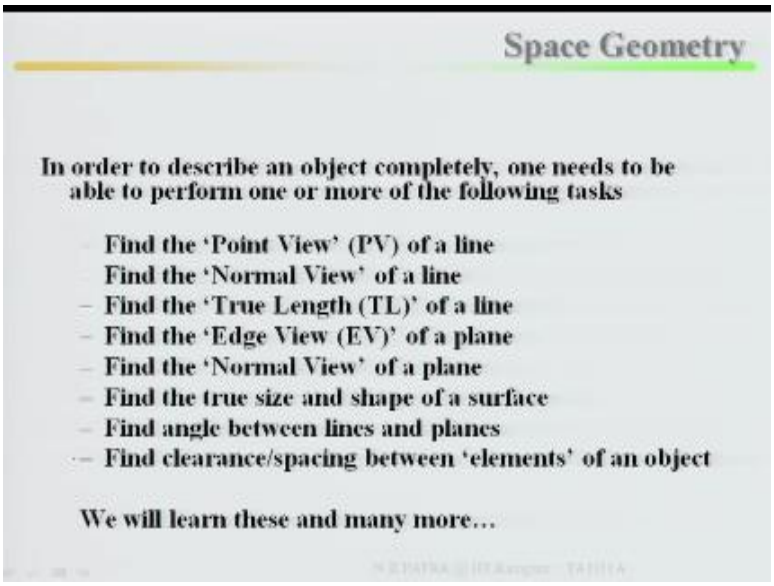

Find angle between line and planes as I said earlier, find clearance/spacing between elements of an object. These are the all comes into space geometry, directly or indirectly it is linked to your object in the space, object in your space.

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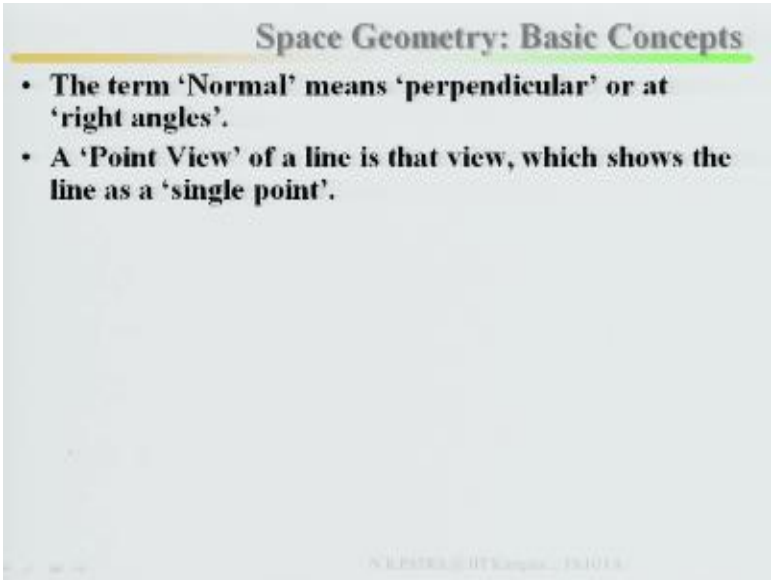

Now the, there are different terminologies, the term normal means it is obvious normal means perpendicular or at right angles, normal means perpendicular or at right angles. A point view, a point view of a line is that view which shows line as a single point. If this is a line, this line can be looked at from here with my eyes and it can be projected it back, this I can say that it is normal view, if this is a line if I rotate it I can looked at the line from this, so I can take the projection from here so inter line if I am looking from here inter line will be merged as a single point, single point or this is called point view. A point view of a line is that view.

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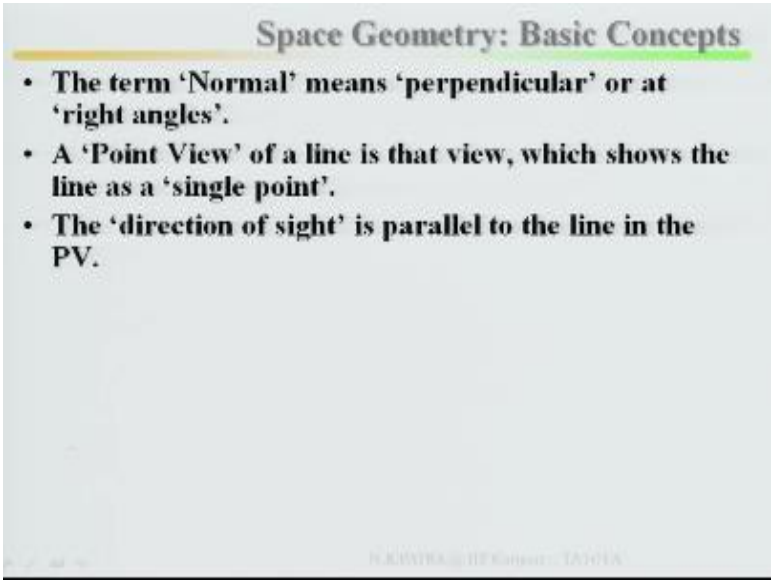

Which shows the line as a single point. The direction of sight is parallel to the line in point view. The direction of the sight is parallel to the line in the point view. Look at here, in the point view the direction of sight how I am sighting I am looking from here, direction of sight is parallel to your line in the point view, line is here I am sighting here, my direction of the sight is parallel to your line in the point view, these are all required you just try to understand. Similarly an edge view.

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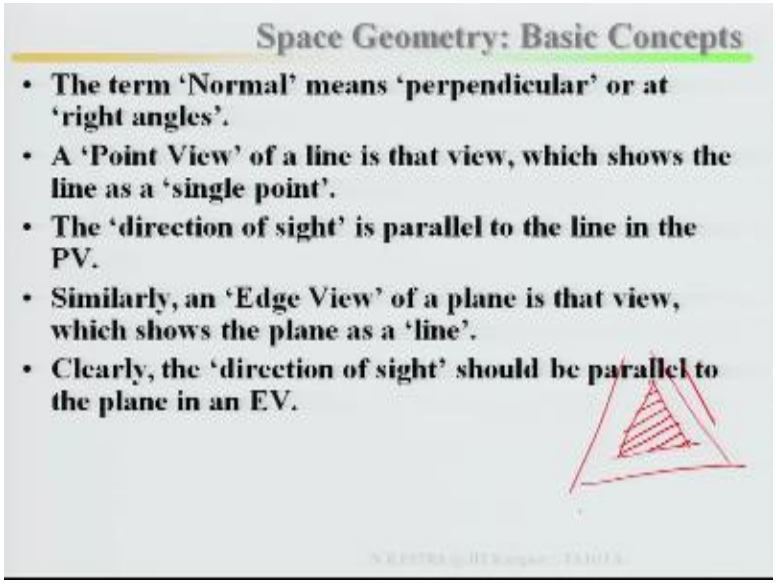

Edge view of a plane is that view which shows the plane as a line. If I take a triangle suppose if I take a triangle, if I looked at from this edge how it looks like, what will happen if you looked at this edge, all will merge, this points will merge. So how it will look like, a line, any of the, this triangle any of the sides if you looked at here so it will be a line. So edge view of a plane, this is called edge view. Edge view of a plane is that view which shows the plane as a line. Clearly the direction of sight should be parallel to plane in edge view. The direction of the sight should be parallel to the plane in an edge view.

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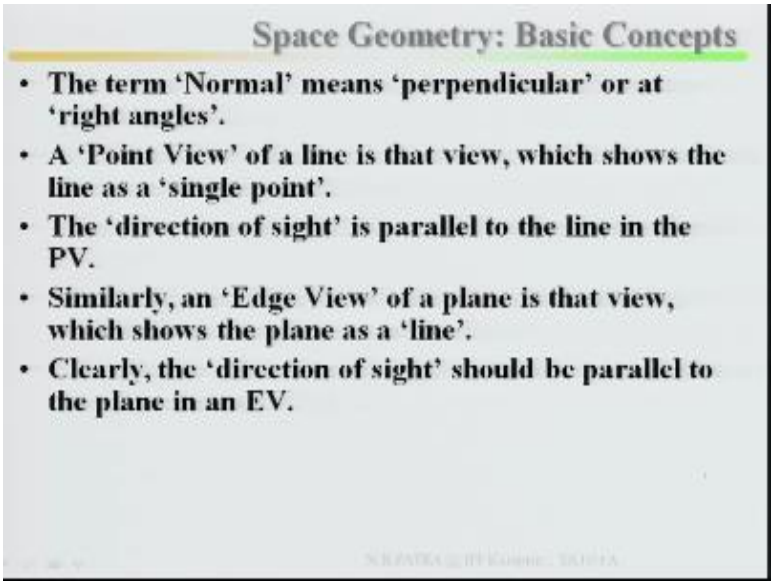

Just once again because this will be required for you, it will start throughout, it will be required. Normal means perpendicular, point view means a line that view which shows the line as a single point, point view means that line show as a single point. In this case the direction of sight is parallel to the line in the point view. Edge view of a plane which shows plane as a line, I am looking at the edge that shows the plane as a line. The direction of sight should be parallel to plane in the edge view.

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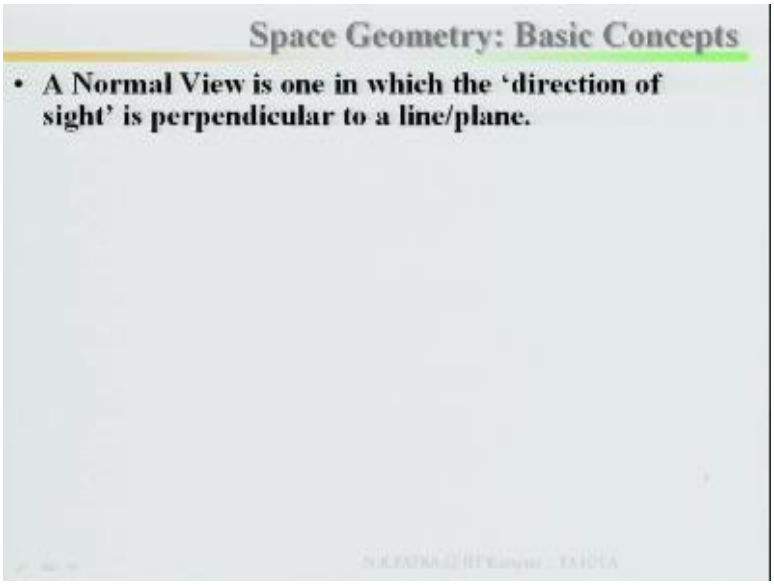

A normal view is one in which direction of sight is perpendicular to a line, this is a line I am looking it. A normal view is one in which direction of sight, my direction of the sight is perpendicular to a line or plane, my direction of sight is perpendicular here to a line and plane.

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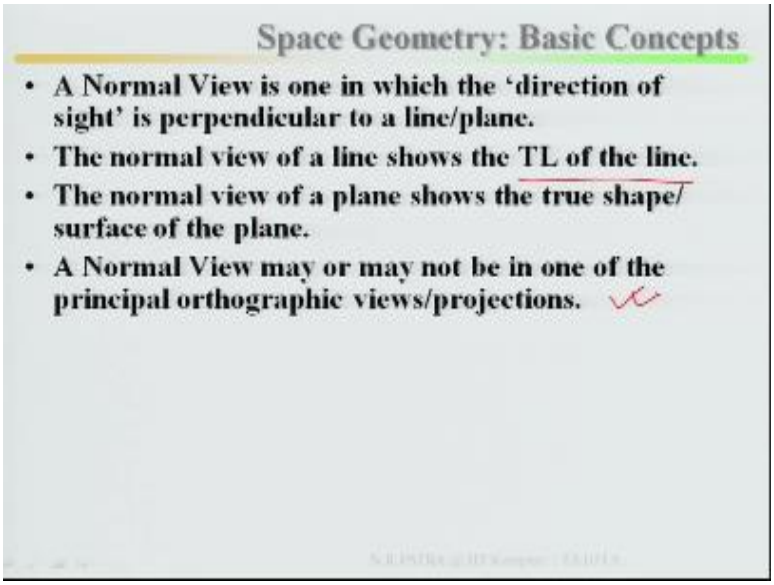

The normal view of a line shows the true length of the line. Remember the normal view of the line shows the true length of the line. The normal view of a plane shows the true shape, surface of the plane. The normal view of a plane shows the true shape or surface of the plane. A normal view may or may not be in one of the principal orthographic views and projections, this is most important. We are going to discuss the, a normal view may or may not be one of the principal orthographic views or projections try, to understand.

One of the principal orthographic views or projections, front, top, side these are the three, rear, then in the side left hand side, right hand side, rear, then bottom.

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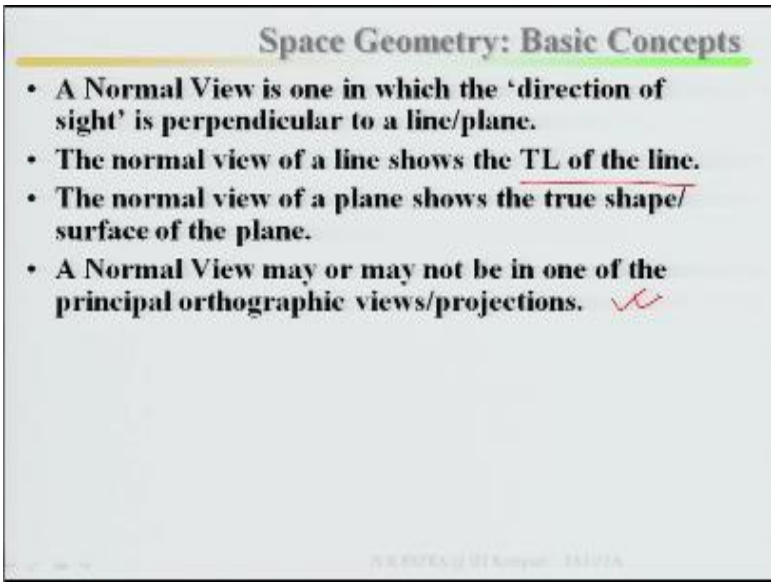

Six, it is not necessarily that normal view may be in one of the principal orthographic views or projections. This is all about introduction to your space geometry, I want to stop it here, I will start next class most important of your space geometry, first part is your lines then we will go to the line plane then plain plane. Thank you.

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