So last class we have discussed about isometric drawing procedure, once again just I am repeating.
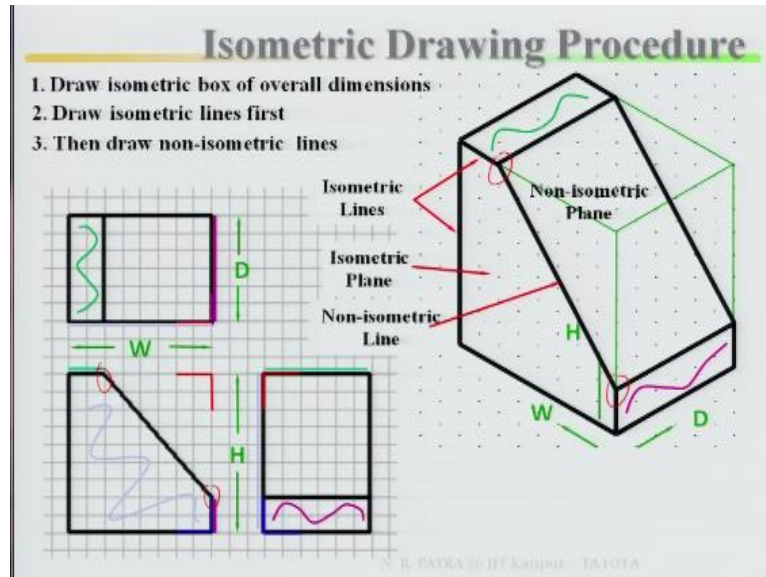
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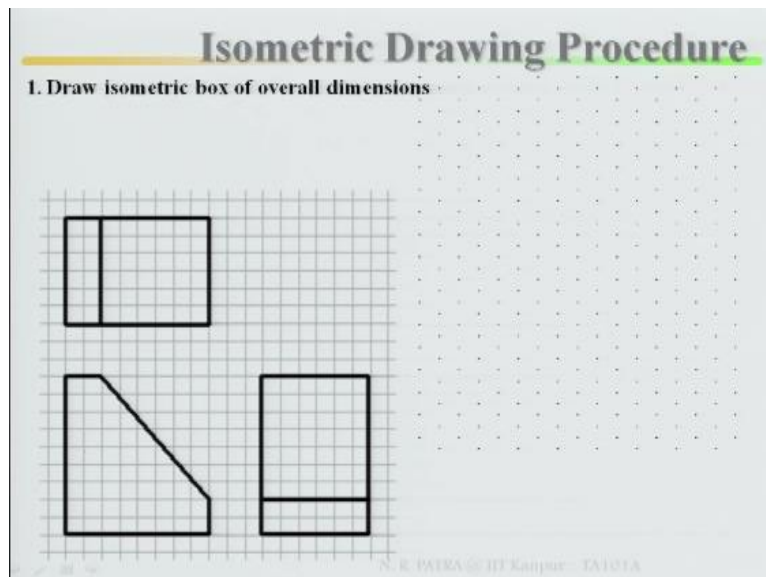
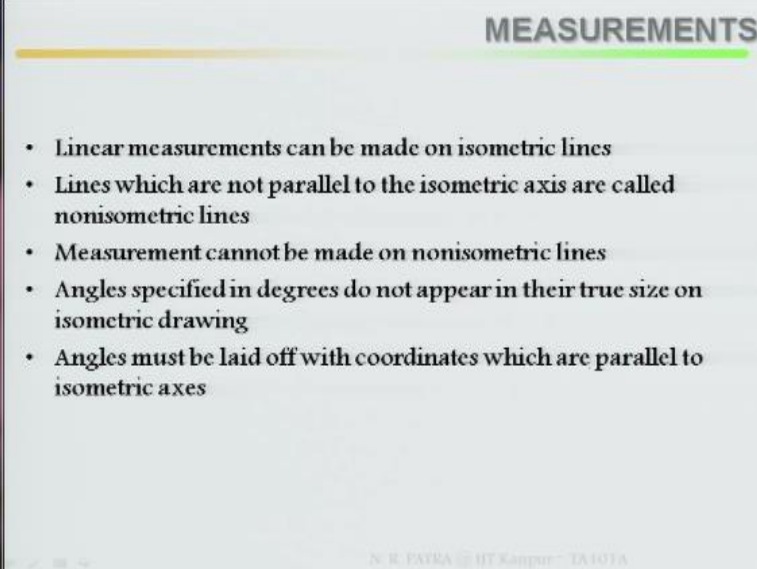Before I start this so few examples, so draw the isometric box

For the overall dimensions taking length, width, as well as height, then once you finish this isometric box this part I have covered last class draw the isometric lines parallel to your isometric axes then finish your isometric lines, then isometric plane, then draw non isometric lines that means mark the point along the isometric lines so this as I said earlier also last class this point and this point has been marked along the isometric lines.

Then you can draw non-isometric lines by joining this two points, then finish your complete isometric drawing by this process, then the slanted face is your or slanted surface is your non isometric plane.

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So linear measurements can be made on isometric lines measurements, lines which are not parallel to the isometric axis are called non-isometric lines, similarly measurements cannot be made on non-isometric lines, then last one is angles must be laid off with coordinates which are parallel to isometric axis, up to this we have cover.

Boxing Method: Origin Not on Object
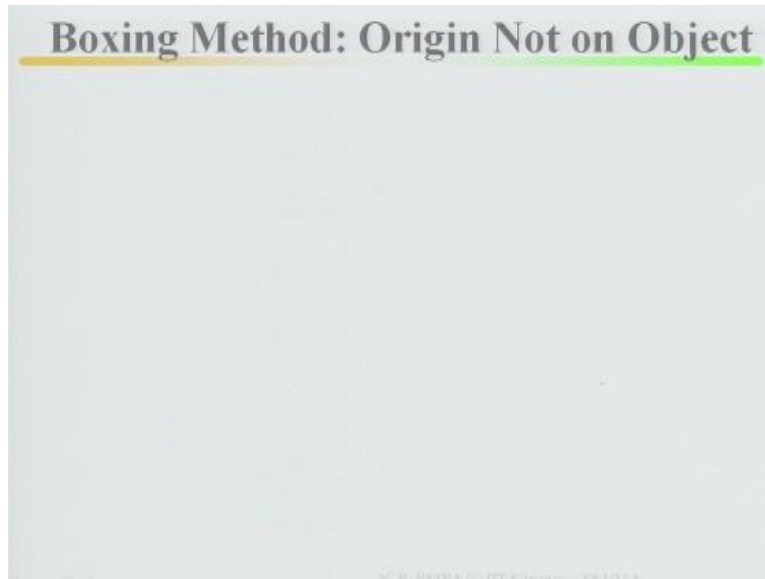
Then let us start with by means of boxing method where your origin is not an object, not necessarily origin the same point of origin you will take it you can take origin any point.
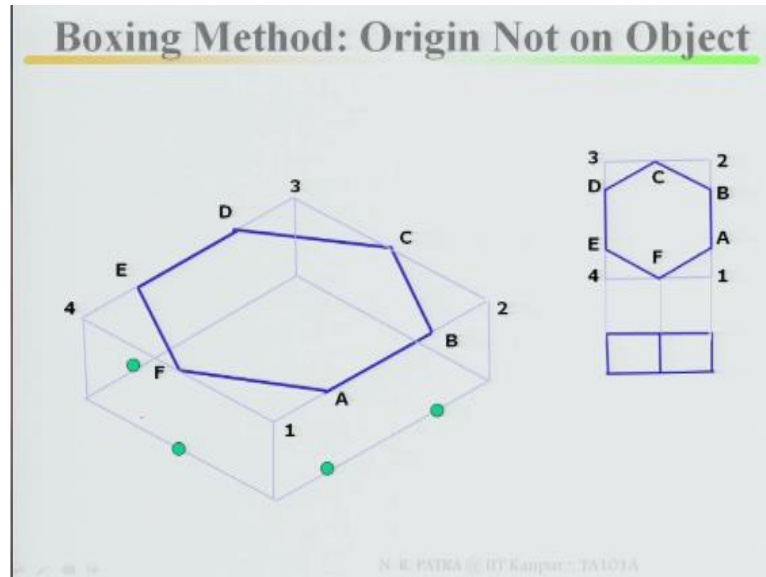
This is the object you mark it with different coordinates 1, 2,3, 4 then your hexagon A,B, C, D, E, F, first finish your isometric box look at first finish your isometric box 1, 2, 3, 4 top surface, then depth directions in your 1, 2, 3, 4 to surface mark the respective points, mark the respective points, that is your A, B, C, D, E, F, then join this AB, BC, CD, DE, EF, FA, then finish it off, similarly do you think depth directions also, finish your depth directions, after finishing this join your depth directions mark the points because this top surface where I can visualize this points I can mark it because back side these are all your invisibles.

So they are not necessarily to be marked because as far as possible in isometric drawings as well as projections, visible lines should be projected as well as drawing individual lines would be drawn.
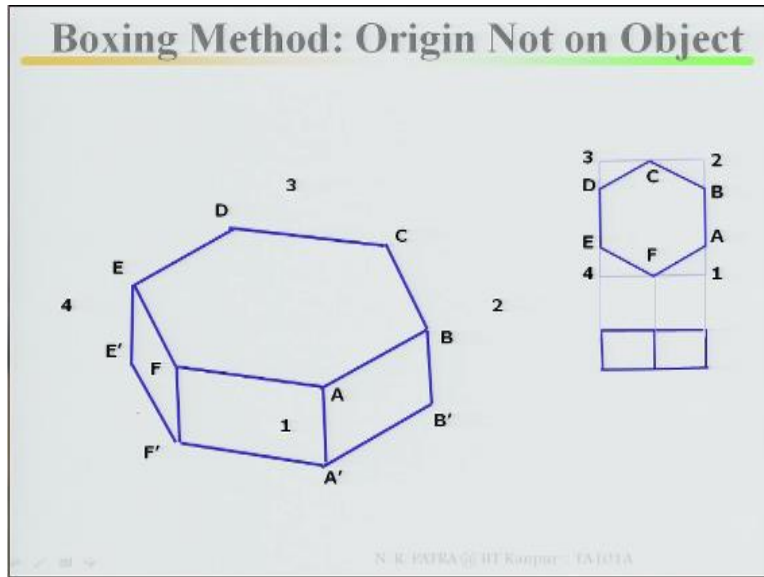
So mark it E´ F´ A´ and B´ join corresponding lines and it has been joined as well as A´ B´A´F´ F´ and E´ has to be joined so join it then finish it off. This is your by means of, this method is called by means of boxing method, boxing method means finish it off, make a isometric box first, finish it off at the surface then laid down in your depth directions this is your example 1.

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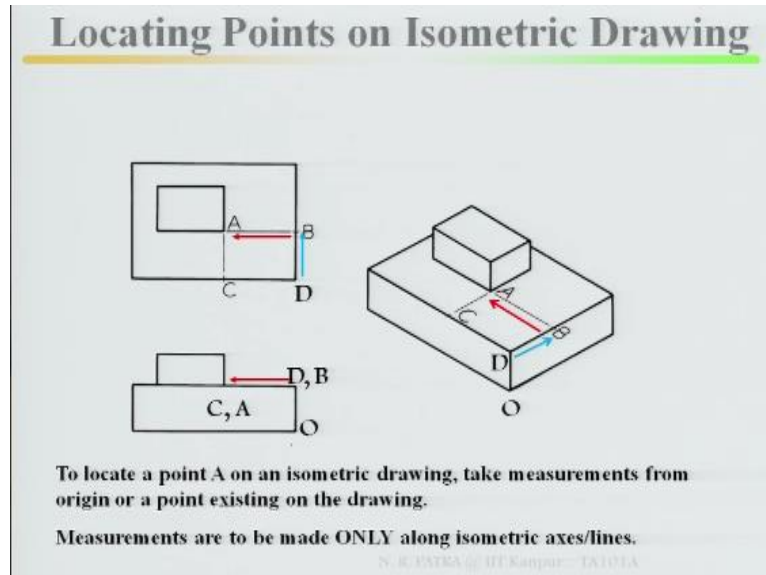
When locating points on isometric drawing look at this example this is your example two, this is your isometric drawing 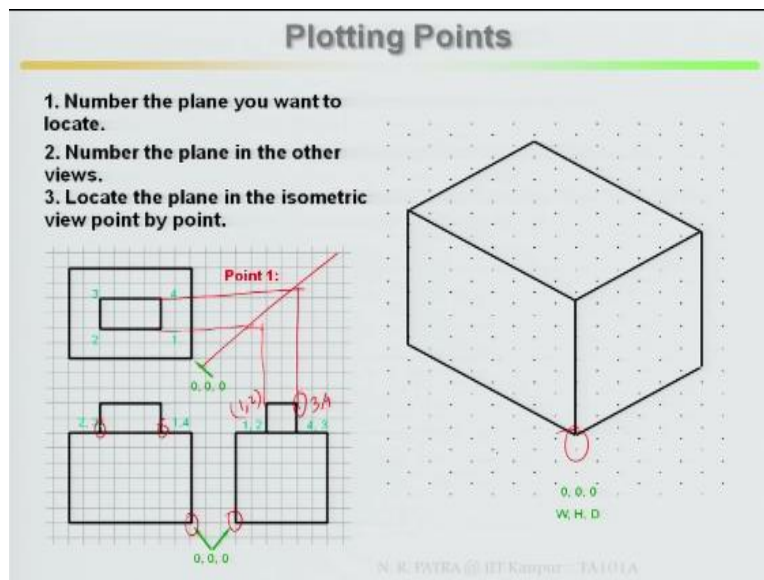has to be drawn and this is your top view and this is your font view. I mark on the top view A, B and this is C if this same coordinate I mark it here in the isometric dawning this is your A, B and C. Now we have taken O as your origin or the reference point in your isometric here, here O as well as here O. Now the momentum mark O as your reference point, now this point is your D, this is your D, this is your D, that means B, D in the top view if you look at B, D in the front view I am looking from this side B, D is merging at this point that is why this is your D as well as B because D point comes first then B point.

Similarly C, A if you look at C, A from the front view C point comes first then A point comes later, so here it would be merged. To locate a point A on an isometric drawing take measurements from origin or a point existing on the drawing. Either you can take a point from the origin you can take, choose a origin any point anywhere else you can take this as origin and this will be same point here as the origin, or take any point, any existing point, any point existing in the drawing, here these point has been taken as origin O. Measurements are to be made only along isometric axes or lines, the moment you do the

measurements along your isometric axes or isometric lines, not necessarily you can do a measurement non isometric planes or non isometric lines, now take it back with this.

Now this is a distance D and B in your isometric drawing in the top view this D and B now B to A, B to A this is your distance now come to your drawing part.

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This is your drawing this is your top view, front view, and this is your side view, three views has been given you have to draw the isometric drawing. First finish your isometric box then it has been finished, number the plane you want to locate, first you number which plane you want to locate, now the point has been made 1, 2, 3, 4 top surface 1, 2, 3, 4 this has to be located first, number the plane in other views, same number in the other views you number it.

If I take it 1, 2, 3, 4. 1, 4 will be lying here similarly 2, 3 will be lying here right, then in the side view also this is your 1, 2, 3, 4 because 3, 4 if I am taking it back like this I am drawing it back here as well as here then it is coming back, it is coming back, this is your 3, 4 this is your 1 and 2 in the side view. Locate the plane in the isometric view point by

point, consider one point by one point let us start with this, I have taken 0, 0, 0 with respect to width, height and depth, here width here it is a 0, 0, 0. 0, 0, 0 here it is 0, 0, 0 then start with this point 1, let me erase this all, we will go step by step.

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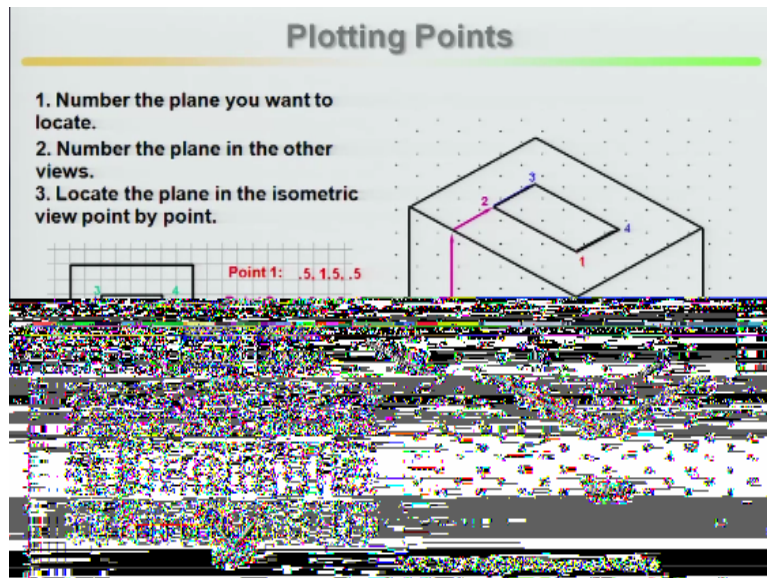
Point 1 look at your point 1, this is your point 1 at the top, this is the point 1 in the front view. Now point 1 what are the coordinates this is your point 1, point 1, point 1 in the side view, the point 1 look at here point 1 if this is 0, 0. From here to here what is the distance in the front view? In the front view here to here in width direction what is the distance? This is your 0.5% by measurement, then in height directions what is this, this is your height direction what is this measurement? In height direction it is coming about 1.5 this distance from here to here is 1.5, here to here is your 0.5, similarly in depth directions, depth directions is nothing but you can look at your top view.

So this comes out to be 0.5, now the point 1 coordinate is 0.5, 1.5 and 0.5. Now start with this locate your point 1 with respect to as we are measured here 0.5, 1.5, 10.5, 0.5, 1.5, .5 this point is your point 1 because we are looking at the first part is your, you have to number the plane you want to locate, top surface of the plane we want to locate it first.

Then come to point 1 is ready come to point 2, point 2 similarly this is your point 2, similarly this is your point 2, in the side view this is your point 2 now this distance with directions the measurement 1.5, height measurement 1.5, and depth it is here 0.5, the coordinates are 1.5, 1.5, and 0.5, from here you take it this is your 1.5, 1.5 and 0.5, mark the point, so the point is coming about to be point 2 here 1.5, 1.5 and 0.5.

Mark your point, now point 2 as been marked in your box isometric box at the top surface, which plane we are interested, we are interested at the top plane top part, then go to the point 3, point 3 this is your point 3, now obviously this point 2 and point 3 they are aligning, they are aligning that means in the width direction as well as in the height directions their distance will be same.

1.5 as well as 1.5, only from here to here depth direction how what is its coordinates, coordinate is one. Now the reference point 3 is 1.5, 1.5 and 1 with respect to your origin or with respect to this point. We have taken this my reference point or the origin, then mark point 3 in your isometric box, this is my point 3, similarly mark point 4, point 4 coordinates are like point 1 it will be .5 1.5, then in depth direction this will be 1 similarly mark your point 4 so 1, 2, 3, 4 points has been marked.
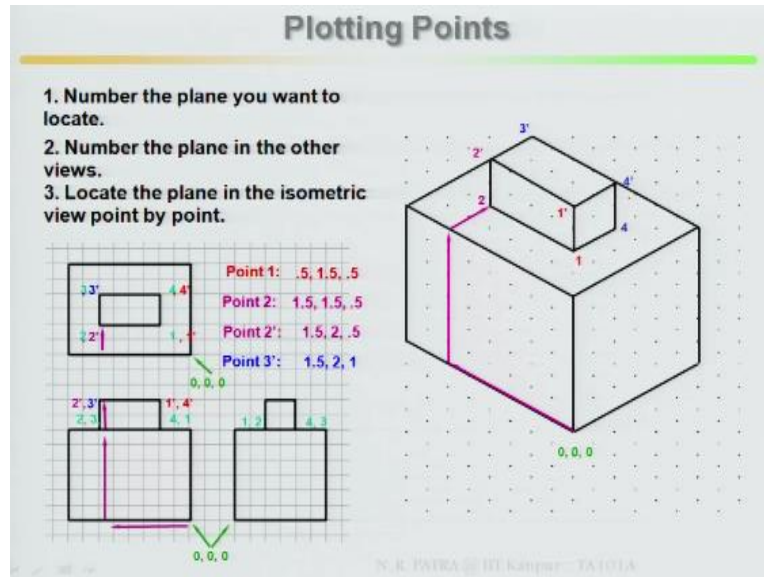
Now you join 1, 2, 3, 4 points, this is your top surface of this plane, top surface of the plane.
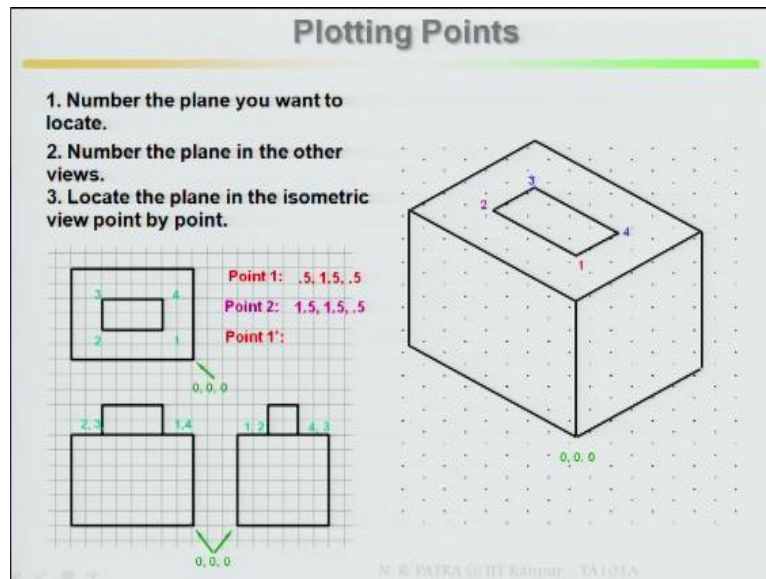
Now come to once this is your top surface of the plane now there is a depth direction is there, there is a depth direction is there, we once there is a 1 definitely in the depth direction there will be 1´ as well as 2´ 3´ and 4´ point 1´.

This is your 1´ this is here your 1´ then measure this 1´ how far is your distance .5 to end point 5, .5 to end point 5 because the distance is 1´ at the top if I am saying 1 to 1 ´ then the distance would be increase so mark the point 1´ then locate it or it lies here 1´ this is your 1´ similarly mark point 4´ what are the coordinates .5 to end 1 mark here in your isometric box where is your 4´

Now we are getting a clear evaluations about the top taking into consideration of origin or the reference point here with respect to that this is your 1´ and this is your 4´. Similarly you can do it 3´ as well 2´ or you can take it very easily with this directions if this is known, this is known, this is fixed with respect to that you can do it your 2´ as well as 3´, finish it 2´ finish it your 2´, this is 2´ as well as your 3´ then finish your drawing, this is my drawing, this is my drawing of the top surface
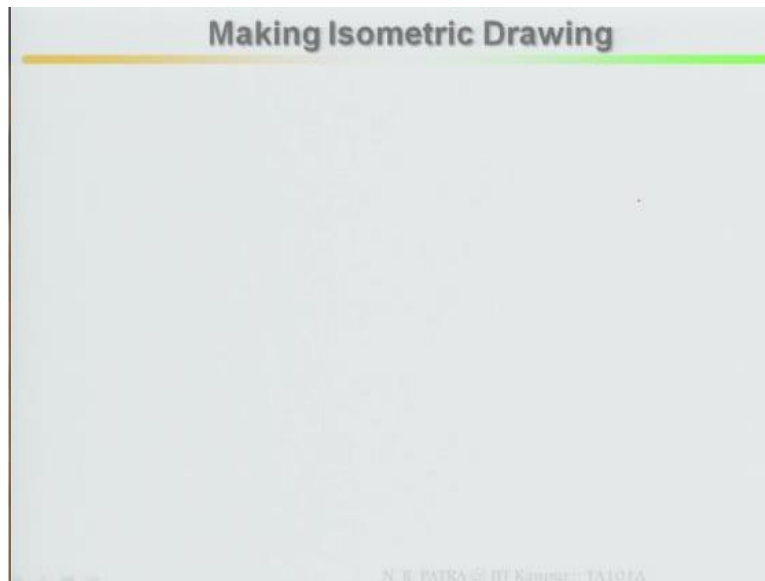
So if you go point-by-point, point-by-point and draw your isometric box then hardly there is a chance of any mistake, if you measure the coordinates and if you mark your.
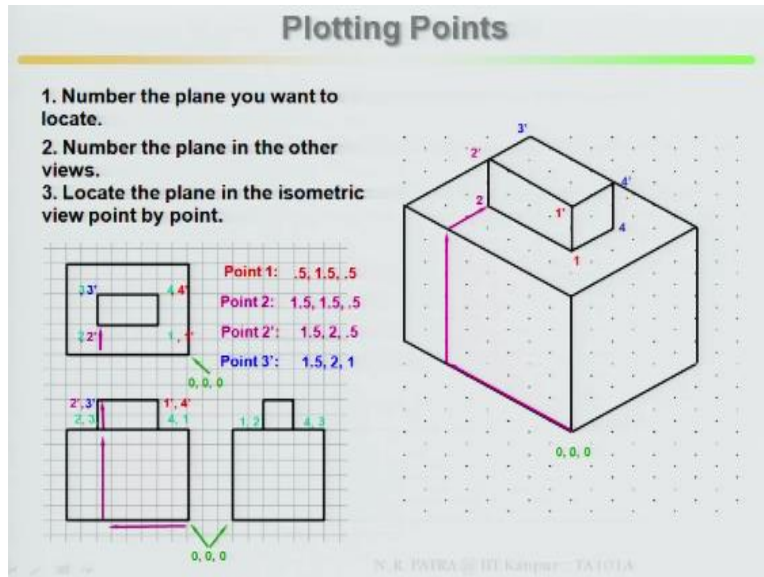
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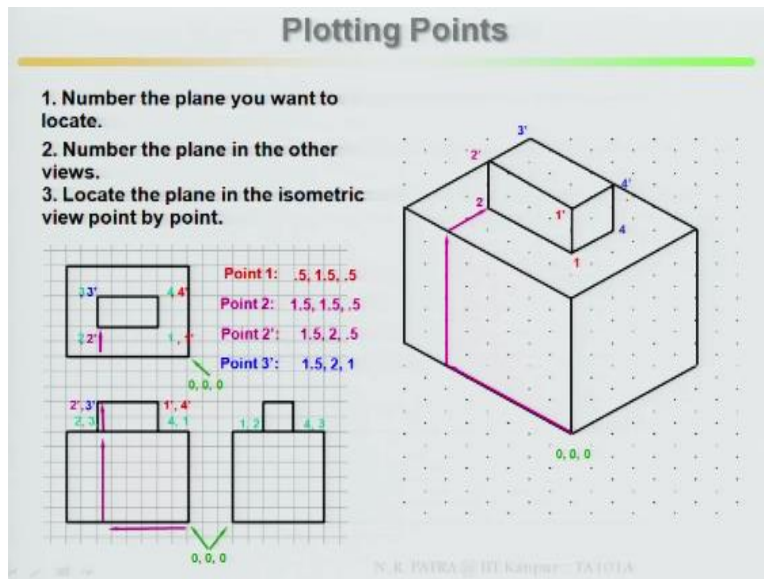
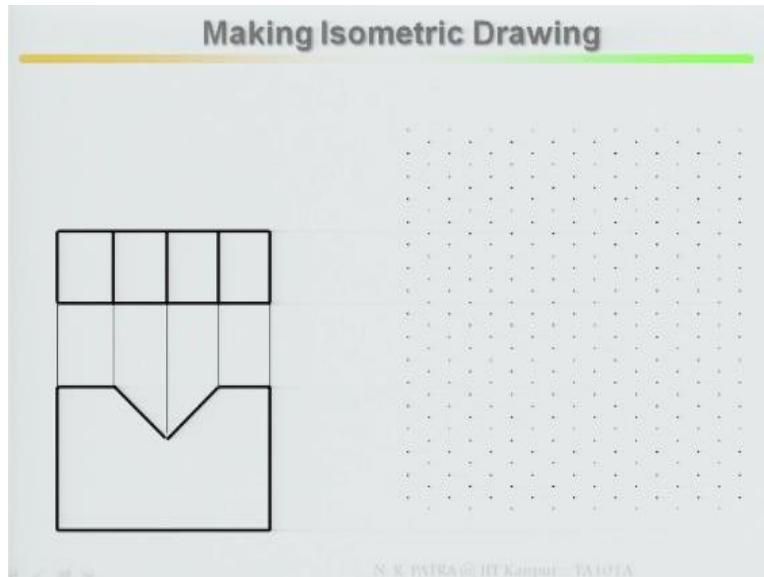Wide isometric lines along the isometric lines if you mark the points then it will very easy for constructions.

Now come to the second case example, this is your example 2 by means of boxing method how you are

To start it mark it point-by-point in the isometric box and mark your points and draw it.

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Come to your second example, this is your top view and this is your front view, imagine if this is your front view this is your top view, one of the view has not been given that is your side view has not been given so there is a slanted, there is a space, there are two cutting face meeting at one point then how it looks like, that means this slot it is continuous in the
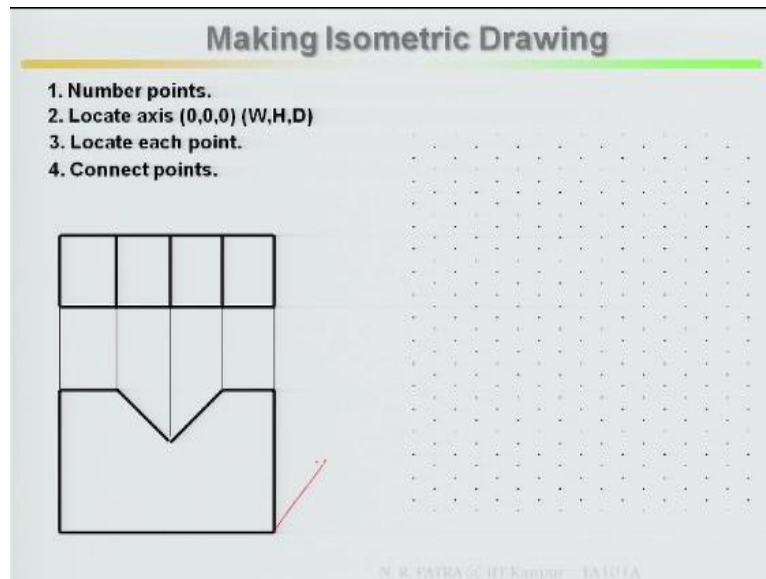
Depth directions, continuous along the depth direction, depth direction will be in this directions. To start with number points first, critical points you mark it, so locate axis 0, 0, 0, width, height, and depth, width, height and this is your depth directions, depth direction this is a depth, width, height and this is your depth directions, locate each point, connect the points, connect the points because there are non isometric lines as well as non isometric planes are there will come one by one.
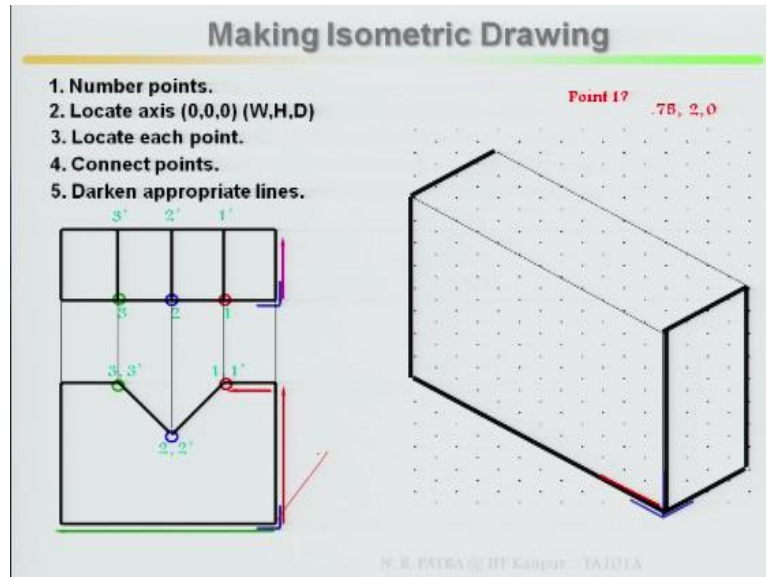
Darken the appropriate lines, that means finish top and dark your appropriate lines, start with this origin or reference point, I start with this with respect to this, mark it here, finish your isometric box, this is your width, this is your height, this is your depth, finish your isometric box, I have finished isometric box, it is very easy to draw once you have a isometric grid lines, there are two types of available in the local market, there are grid lines available if you get the grid lines stick to the one origin with respect to that grid lines you can take it. Then once your isometric box has been finished mark the points so this is your reference or origin, this is your reference or origin.

Finish your isometric box then mark the points, look at the point I have marked it, one in one prime, one is one prime is nothing but in your depth directions right, this is your width and this is your depth, this is your width and this is your height, this is your front view this is your top view, 11´ 22´ 33´, and respectively in with respect to top view in the front view mark but where is your 11´ where is your 22´ where is your 3 and 3´? Once you mark it go one by one locate 1´ or 1 first you locate 1 to 3 then accordingly in the depth direction you locate your 1´2´ as well as 3´.So mark your

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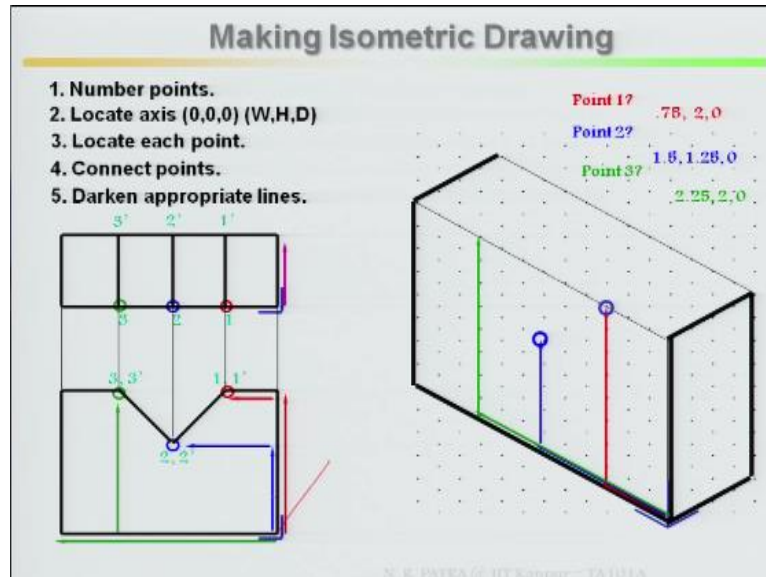
Coordinates where it lies in the width this is your 1, 2, 3, then this is the distance, this is your height, this is your width, so mark your, this is your width, mark your height, mark the point 1 and similarly mark your point 2. Point 1 coordinate is 0.75 and 2, point 1 is your this is your 0.75 width and height is your 2.0. Point 2 this is your point 2 in point 2 width is your 1.5 and height is your 1.25, mark it point 2, 1.5 and height is equal to 1.25. Similarly point 3, point 3 it is 2.25, 2.25 is your width and height is equal to 2.0, mark this point from here to here it is your 2.25 and here to here it is your 2.0

Because these points why I have taken this 1, 2, 3? 1, 2, 3 looks at your front face, 1´2´ and 3´ it looks at the rear with respect to in depth directions, so once you mark 1, 2 and 3
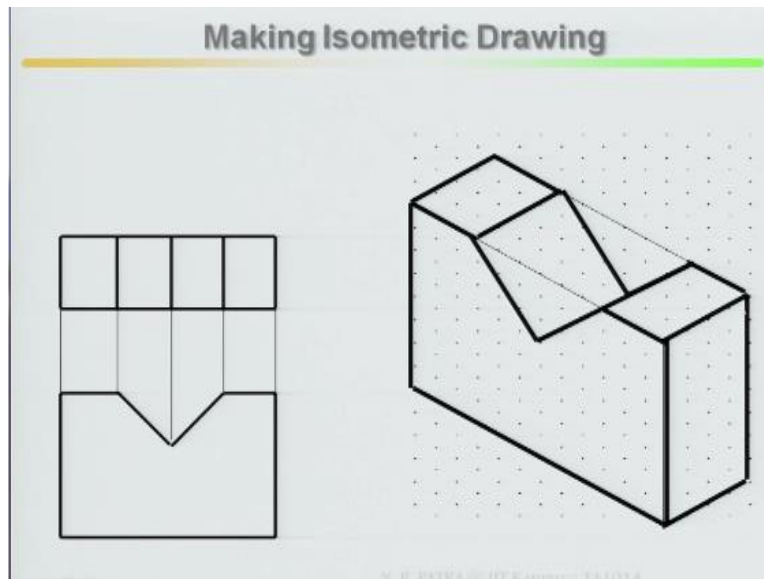
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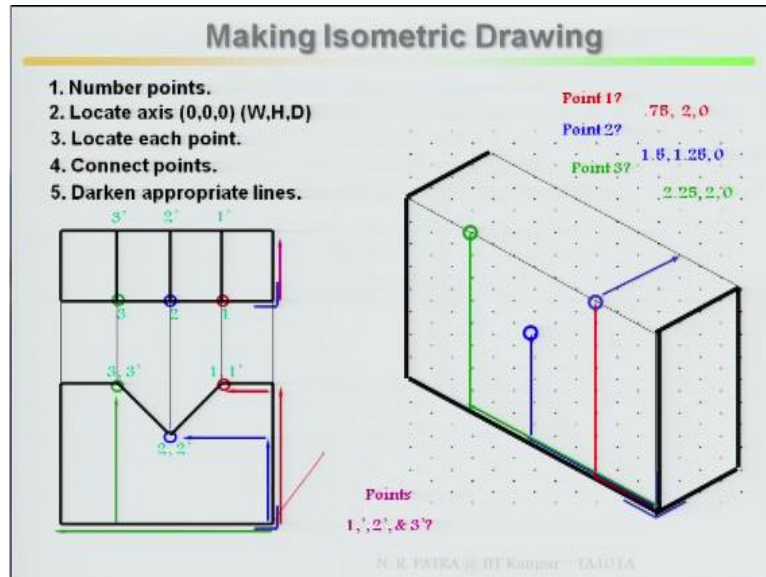
Points then join, now where it lies your point 1´ 2´ and 3´ because side view is missing, there is no side view has been given so mark this, that means it is in the depth directions, it is in the depth directions assuming that our side view has not given only two view has been given, this slanted or this cutting shape is throughout to your depth directions so I have taken.

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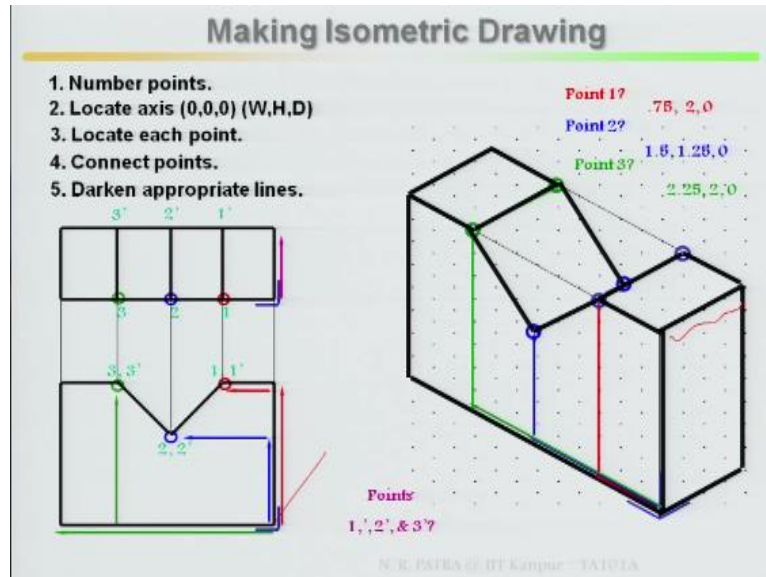
Super input this is my one and this will be my 1´, similar this is my 2 and this will be my 2´ because this is my depth directions, depth similarly this is the three, this will be my three, 3´ so all the points you mark 1´ 2´ and 3´ in depth directions, then mark it 1´ 2´ and 3´ in depth direction, finish your drawing, finish your drawing or clear and neat and clean with a dark line so that object can be visible, so I am just doing this, this is my object.

Let me take out how it looks, if I take out this it is looking like this, now you can always cross check, you can always cross check with respect to this.
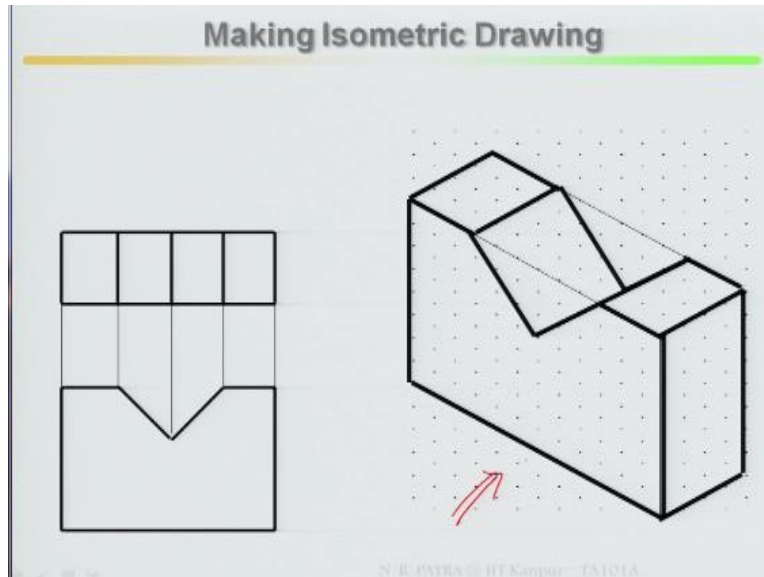
This is your isometric drawing, with respect to these if I take front view whether this is correct or not if I take a front view front this side, whether my front view is same or not viewing direction. If I am looking at the top third angle projections whether my top view is looking like this or not, once these are the same whatever the view has been given front view and top view with respect to that your isometric views are same that means your drawing is correct.
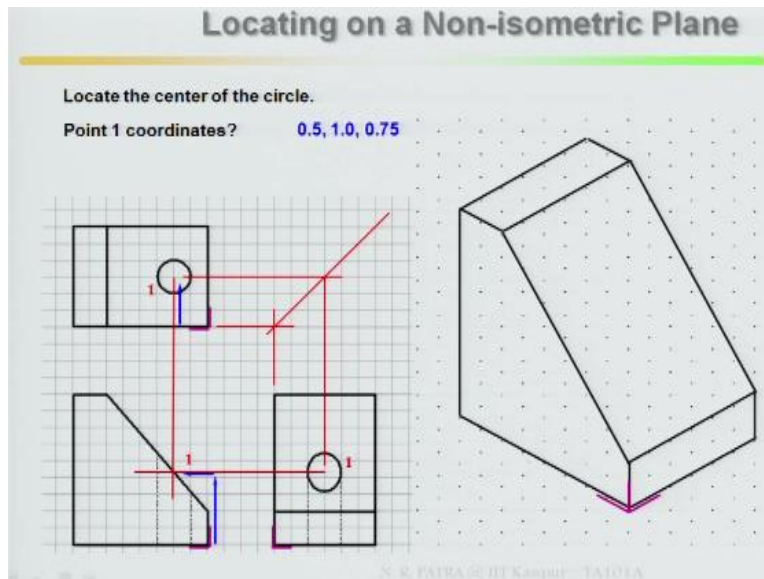
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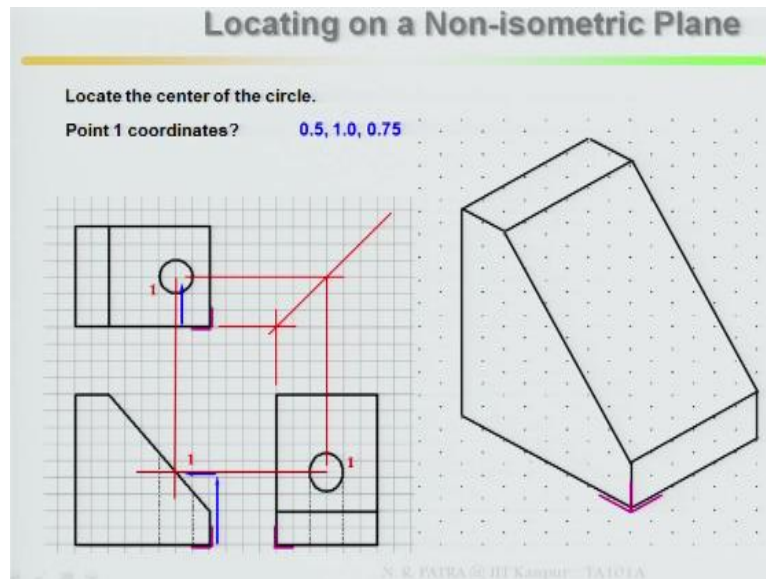
Now similarly locating on a non isometric plane these are the points

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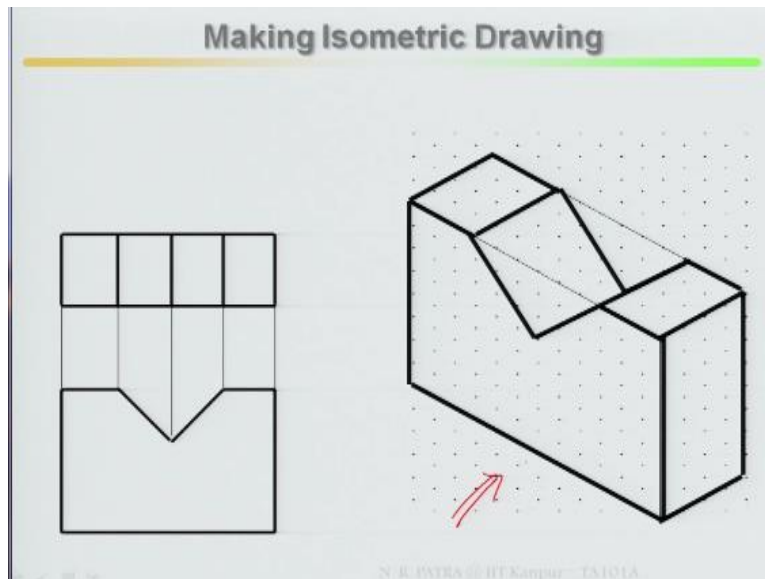
Earlier I have discussed locating on isometric planes

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Now next step is your locating on a non isometric plane, non isometric plane means if there is a, if you look at here this is your top, this is your side, and this is your front, and this is your non isometric lines and circle here you have to locate it in non isometric plane.

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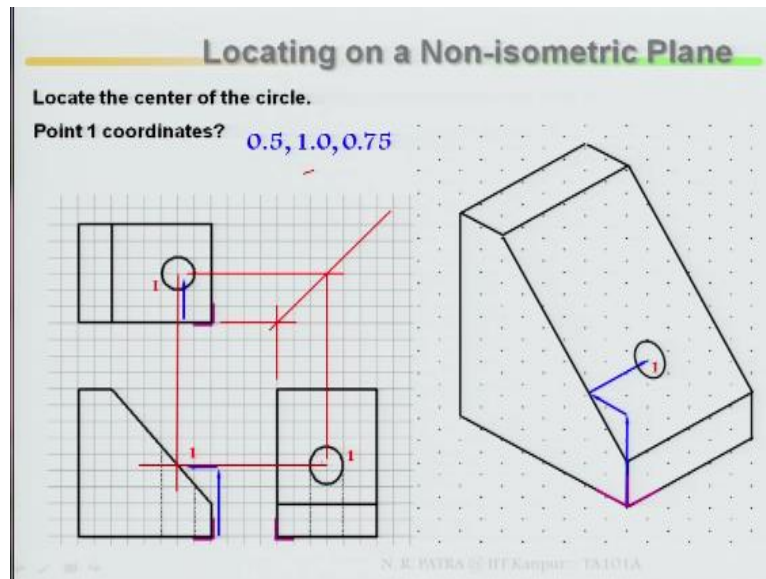
Now what is the procedure, locate a non isometric plane, locate centre of the circle, find it out where is your center of the circle, then point 1 coordinates, point 1 coordinates, this is my origin, origin point with respect to that this is your reference point with respect to that, point 1 has been marked, point 1 has been marked, with reference to point 1 here it has been center line has been marked, this is your center line of your point 1 has been marked, point 1 coordinates. Then next phase is your centre line has been marked once you locate your point 1, point 1 then center line here how it is there, then next phase is your mark the point 1 coordinates.

Mark the point 1 coordinates in width, height, as well as in depth directions, this is your height, this is your width, and this is your depth. Point is your 0.5 is your w remember whatever I am doing it this is your width, this is your height, and this is your depth directions. So 0.5, 1.0 and 0.75 mark it here, 0.5, 1.0 then 0.75 this is your point 1. Once you do this is your point 1 then you can very easily plot your either ellipse or circle, very easily you can plot it.

So in non isometric planes first you identify where is your center, centre at the circle that coordinate, once again I am repeating if
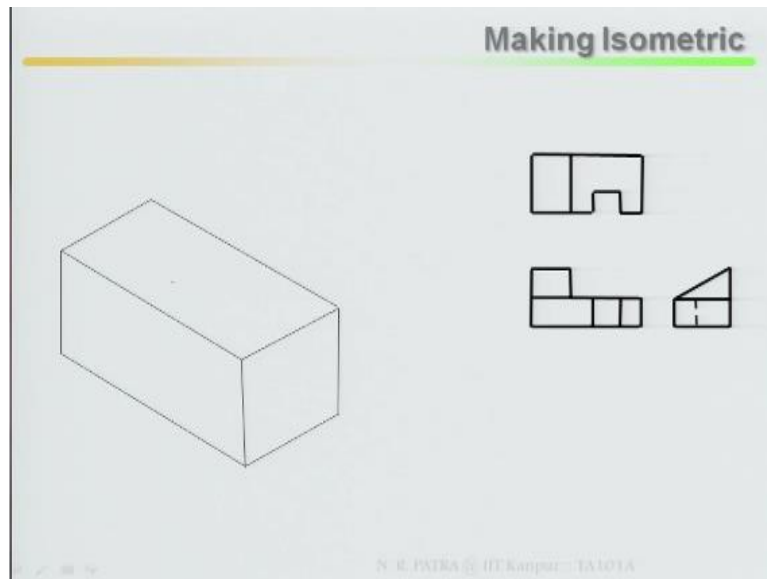
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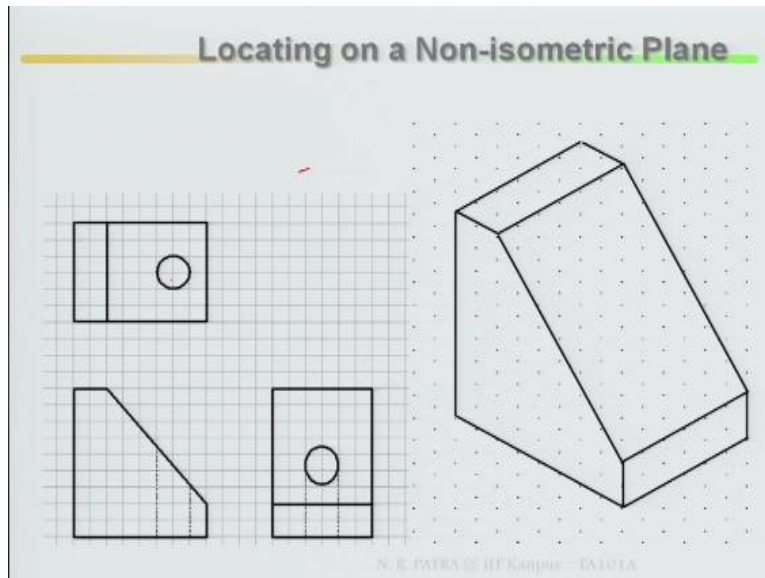
I am taking out all these things only this views has been given, this views has been given, top view, front view, and side view, and in isometric view this is your, this plane is nothing but your non isometric plane, in non isometric plane this has to be drawn particularly non isometric plane it is difficult, so you have to identify where is your center, center of the circle obtained. Once you find it out the center of the circle then you can take the coordinates, you can take the coordinates, once you take the coordinates you can draw that point and with respect to radius you can finish your circle.

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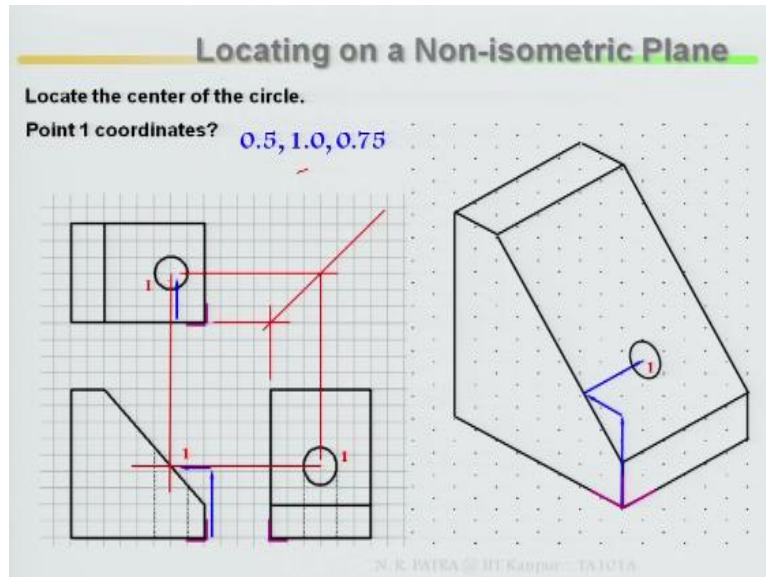
Same thing which I have explained now the coordinates has been taken into considerations, once the coordinates is fixed, once you find it out center of the circle one then you find it out your coordinate, once coordinates are there then very easily you can locate it where this coordinate acted in non isometric plane, then once you get the coordinate point 1 than you can draw your circle.

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Another example making isometric if you look at here look at this, I am just, I am just keeping now some steps

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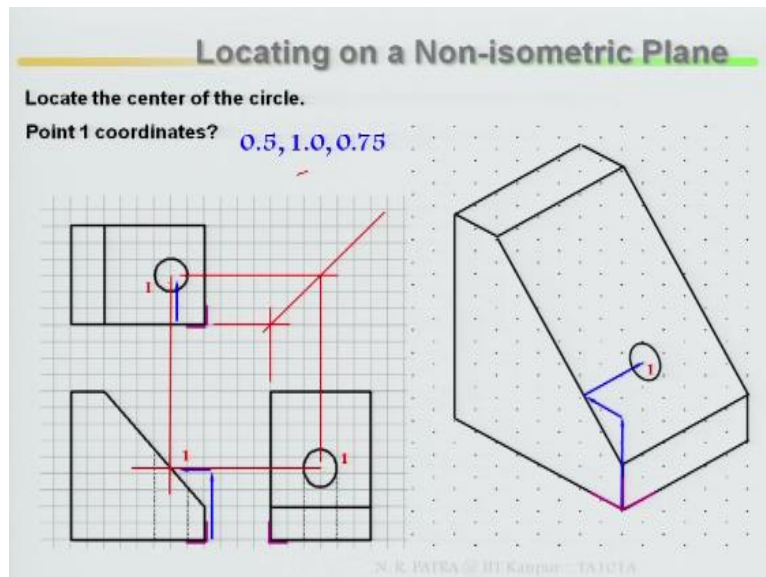
Earlier I have gone in detail making isometric box, taking reference point, identifying points, then drawing the coordinates, identifying the what are the coordinates, then taking this reference point one by one point I am doing then finishing, finishing it up now just keeping certain points this is your top view.

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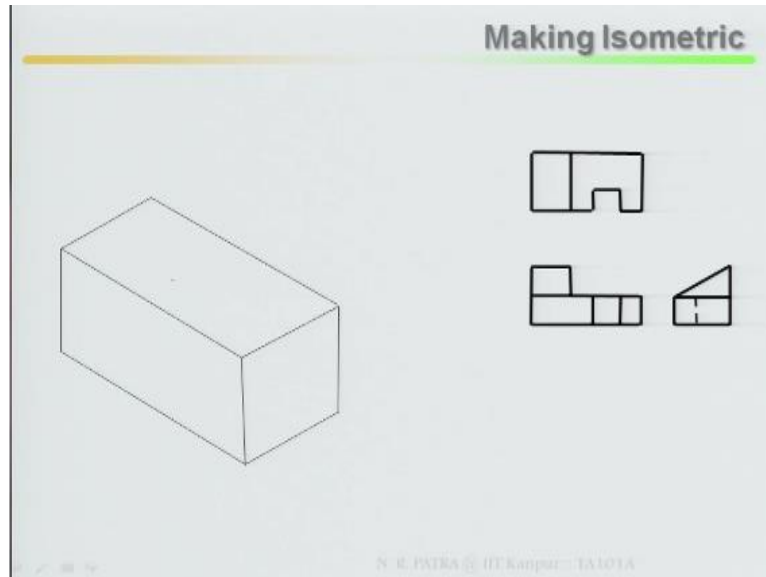
This is your front view and this is your side view, so making these isometric just going at a glance you can try at your home by taking point by point, I am just drawing it without mentioning point by point the coordinates I know, we can find it out, look at here.

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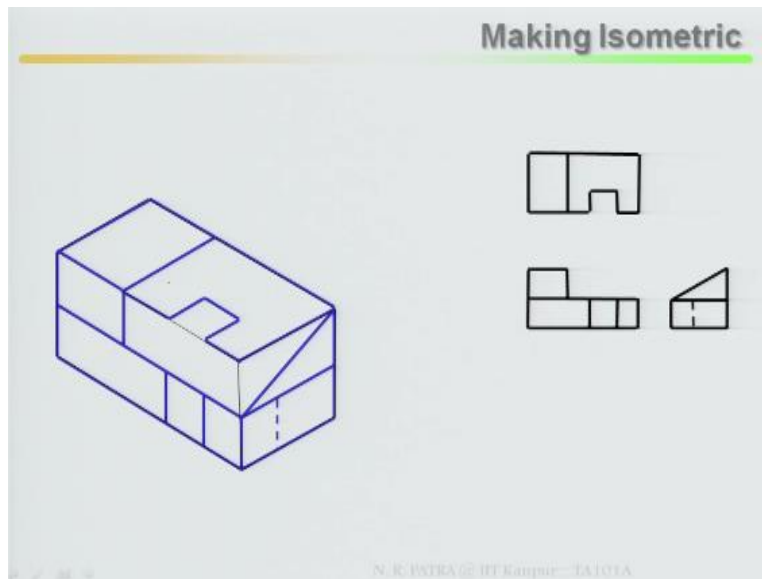
I am doing it step by step, first I finish side view how it looks, exactly what it looks I do the side view, then what it looks at the front view I plot it, how easy it is do, then finish it how it looks in the top view, all view I finished what about the way it has been looked, then I simulate one by one in considering if this is the top view in the depth directions,

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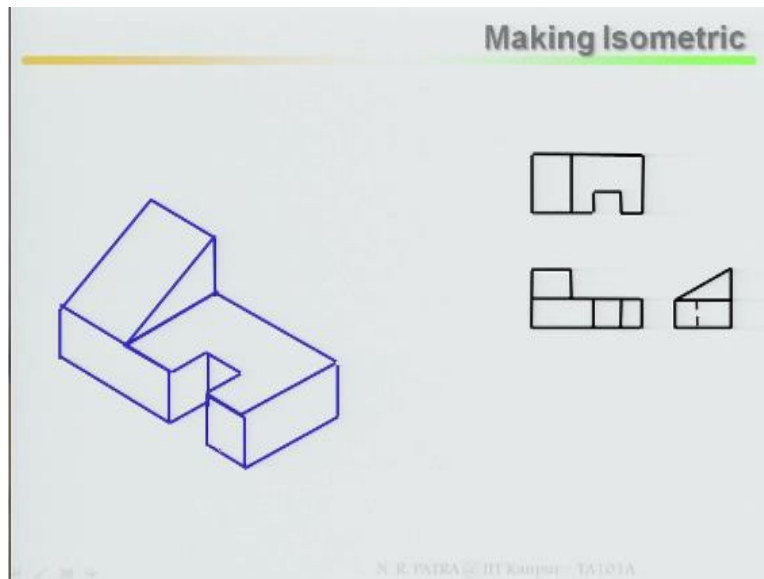
If this the front view in the depth directions, if this is the side view in the width directions, if this is the top view in the height direction, if this is the front view in the depth directions, if this is the side view in the width directions. Just going just animation how it looks, look that it, how easily it has been done, how easily it has been done, you can cross check if this is your isometric drawing.
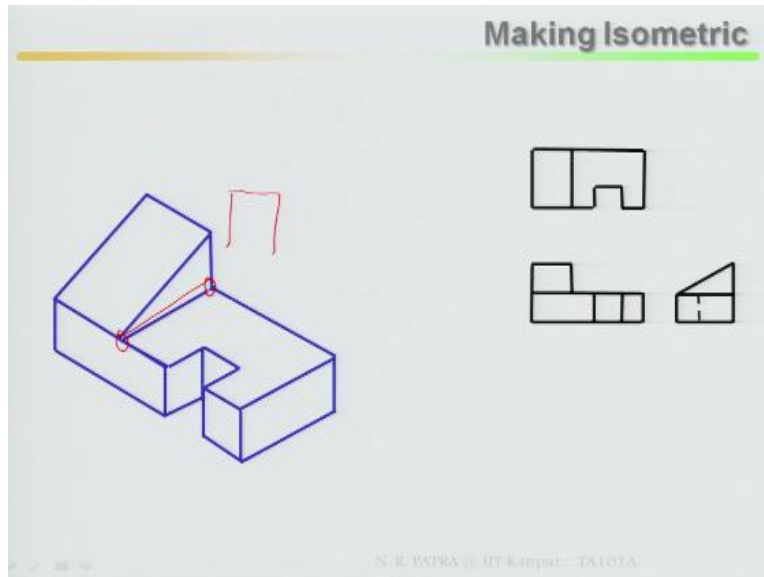
Or isometric view you can take the directions you are looking this from this direction this is your front view, you are looking from this direction this is right hand side view and third angle projection, you are looking at the top, this is your top view. Now look at from the front view, from the front the front view if I am looking at from this side that means these and these lines, these points are merging and these and these are points are merging, this merging, this merging, now once it is merging how it look, it looks one line other line because I can see it this side I am seeing, then what happen I can see this two points so here this two lines are there, this is there.

So in this case what will happen, in this case this point and this point is going to merged right, once it is going to merged so this slanted surface will completely vanish in front view so it, you are going to see only this kind of surface where it is there, so you can cross check, my meaning is that you can cross check with your isometric view whatever you are getting whether this same view if am looking at the front, top, and side view whether it is gone merging whatever it is given to us then your drawing is correct, then come to the next part circles in

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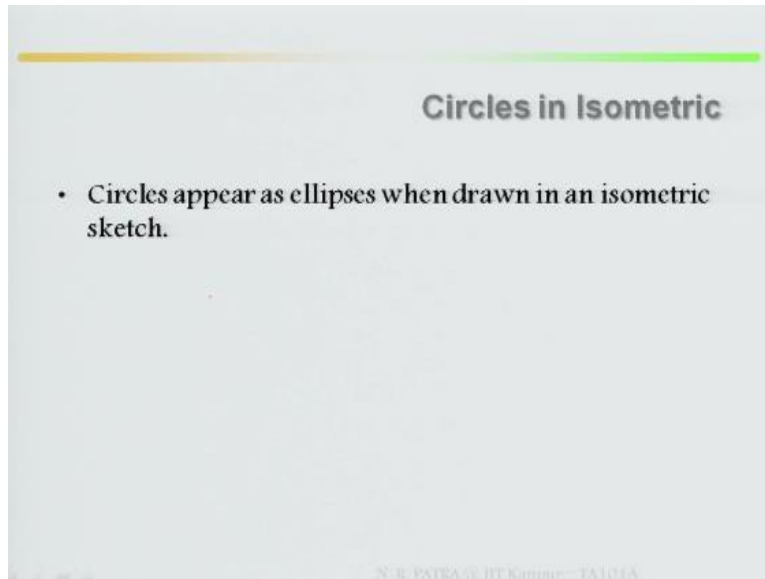
Isometric, circles in isometric, circles appears in isometric, appears as ellipse when drawn in an isometric sketch

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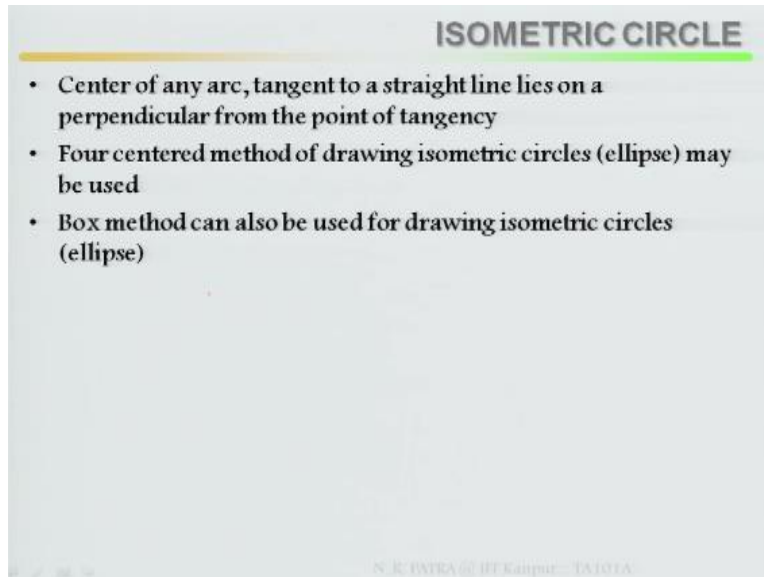
Isometrics circle, centre of any arc tangent to a straight lines lies on a perpendicular from the point of tangency. Once again center of any arc tangent to a straight line lies on a perpendicular from the point of tangency. Four centered method of drawing isometric circle ellipse may be used, box method can also be used for drawing isomeric circles, that means ellipse, so this things isometric circles and details I will discuss in the next class, I will stop it here, thank you.

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Shubham Rawat
Shikha Gupta
K. K. Mishra
Aradhana Singh
Sweta
Ashutosh Gairola
Dilip Katiyar
Sharwan
Hari Ram
Bhadra Rao
Puneet Kumar Bajpai
Lalty Dutta
Ajay Kanaujia
Shivendra Kumar Tiwari

an IIT Kanpur Production