

DESIGN AND COMMUNICATION GRAPHICS SYLLABUS MAP

LINKS	SYLLABUS CONTENT	TIME						DEPTH
		Projection Systems	<ul style="list-style-type: none"> Planes of Reference Orthographic Proj. 1st Auxiliary Views True length & shape 	<ul style="list-style-type: none"> Proj of right solids Solids in contact Sectional views (1) Pictorial Projection 	<ul style="list-style-type: none"> Oblique planes Sectional views (2) Intersection of solids 	<ul style="list-style-type: none"> 2nd Auxiliary views Intersection of solids 	<ul style="list-style-type: none"> 3rd Angle Projection Cube and tetrahedron Solids in Contact 	<ul style="list-style-type: none"> Axonometric Projection- Isometric, diametric & trimetric
	Plane Geometry	<ul style="list-style-type: none"> Construction of plane figures Introduction to loci 	<ul style="list-style-type: none"> Loci as a problem solving tool Tangents 	<ul style="list-style-type: none"> Loci as a problem solving tool 	<ul style="list-style-type: none"> Plane figures Loci Tangents 	<ul style="list-style-type: none"> Plane figures Loci Tangents 	<ul style="list-style-type: none"> Plane figures Loci Tangents 	<ul style="list-style-type: none"> Plane figures Loci Tangents
	Conic Sections	<ul style="list-style-type: none"> Orthographic projections yielding conic sections 	<ul style="list-style-type: none"> Horizontal/vertical sections of cone & sphere 	<ul style="list-style-type: none"> Construct conic sections as plane loci – eccentricity, foci, etc 	<ul style="list-style-type: none"> Derive directrices, foci vertices and eccentricity from solid section 	<ul style="list-style-type: none"> Tangents – properties Construct conics in a rectangle 	<ul style="list-style-type: none"> Construction of a double hyperbola given various criteria 	<ul style="list-style-type: none"> Centre of curvature and evolute for conic sections
	Descriptive Geometry of Lines and Planes	<ul style="list-style-type: none"> Simply inclined planes Angle of inclination – lines and planes 	<ul style="list-style-type: none"> Sections with vertical /horizontal/ simply inclined planes 	<ul style="list-style-type: none"> Oblique planes/traces True inclinations - dihedral angle 	<ul style="list-style-type: none"> Lines of intersection Dihedral angle between planes/surfaces 	<ul style="list-style-type: none"> Sectioning of solids by oblique planes 	<ul style="list-style-type: none"> Laminar surfaces defined by spatial co-ordinates 	<ul style="list-style-type: none"> Spatial relationship between Skew lines
	Intersection & Development of Surfaces	<ul style="list-style-type: none"> Develop/envelop surfaces of right solids and their frustra 	<ul style="list-style-type: none"> Intersection of lines and planes 	<ul style="list-style-type: none"> Intersection of lines/planes with planes/curved surfaces 	<ul style="list-style-type: none"> Surface intersection of prisms, pyramids, spheres, their frustra and composite solids 	<ul style="list-style-type: none"> Locating lines/curves of intersection using inclined/oblique planes/auxiliary views 	<ul style="list-style-type: none"> Intersection of right and oblique solids where their axes are parallel to 1 ref plane 	<ul style="list-style-type: none"> Develop/envelop the surfaces of oblique prisms, pyramids, cylinders and cones
	Student Assignment (developing the skills)	<ul style="list-style-type: none"> Capture images using a range of media 	<ul style="list-style-type: none"> Analyse design of everyday objects 	<ul style="list-style-type: none"> Communicate using rendered freehand sketches 	<ul style="list-style-type: none"> Generate CAD model of new/existing designs Modify CAD files 	<ul style="list-style-type: none"> Produce exploded CAD models/pictorial views 	<ul style="list-style-type: none"> Photo realistic images of new/ modified artefact 	<ul style="list-style-type: none"> Reflect on the learning experiences
	Graphics in Design & Communication	<ul style="list-style-type: none"> Interpret/generate design briefs Develop a plan 	<ul style="list-style-type: none"> Display rudiments of good design – compare/contrast 	<ul style="list-style-type: none"> Compare/contrast manual v electronic graphic communication 	<ul style="list-style-type: none"> Represent 3D objects in logically arranged 2D views 	<ul style="list-style-type: none"> Generate multi-view drawings from 3D models 	<ul style="list-style-type: none"> Use slides or animations to illustrate graphic solutions 	<ul style="list-style-type: none"> Evaluate design with reference to criteria
	Communication of Design	<ul style="list-style-type: none"> Use standards and conventions 	<ul style="list-style-type: none"> Create layouts to achieve pleasing presentation 	<ul style="list-style-type: none"> Use 2D and 3D drawings to communicate ideas 	<ul style="list-style-type: none"> Produce working drawings/assembly drawings 	<ul style="list-style-type: none"> Produce exploded CAD models/pictorial views 	<ul style="list-style-type: none"> Include balloon detailing & annotations 	<ul style="list-style-type: none"> Design schematic diagrams to explain familiar operations
	Freehand Drawing	<ul style="list-style-type: none"> Develop freehand sketching techniques Observation techniques 	<ul style="list-style-type: none"> Produce sketches of basic solids 	<ul style="list-style-type: none"> Select the most suitable medium for producing sketches 	<ul style="list-style-type: none"> Use various methods of rendering & colouring 	<ul style="list-style-type: none"> Identify the surfaces of an object relative to one another in 3D 	<ul style="list-style-type: none"> Analyse the texture and colour of a surface 	<ul style="list-style-type: none"> Represent graphically the effects of light and shade
	I.C.T.	<ul style="list-style-type: none"> Create folder and save files Import / export files 	<ul style="list-style-type: none"> Generate drawings from part and assembly models 	<ul style="list-style-type: none"> Realise the design intent in the CAD models – modify files 	<ul style="list-style-type: none"> Use CAD models to explore geometric principles 	<ul style="list-style-type: none"> Generate exploded views & animated sequences 	<ul style="list-style-type: none"> Transfer images from CAD to ICT packages –make presentation 	<ul style="list-style-type: none"> Collect/manipulate images to achieve special effects
	Dynamic Mechanisms	<ul style="list-style-type: none"> Involute of circle and regular polygons 	<ul style="list-style-type: none"> Helix and spirals - tangents 	<ul style="list-style-type: none"> Construction of loci defined by movement of circles 	<ul style="list-style-type: none"> Loci from linkage mechanisms 	<ul style="list-style-type: none"> Cam profiles and displacement diagrams 	<ul style="list-style-type: none"> Radial plate cams for in-line rollers and flat followers 	<ul style="list-style-type: none"> Gear profiles Logarithmic spiral
	Structural Forms	<ul style="list-style-type: none"> Historical context Sketch key structural forms 	<ul style="list-style-type: none"> Produce 2D drawings of arches, domes, vaults etc.. 	<ul style="list-style-type: none"> Hyperbolic paraboloid as a ruled surface Sectional views 	<ul style="list-style-type: none"> Plane directors for ruled surfaces 	<ul style="list-style-type: none"> Hyperbolic paraboloid/Saddle Roof as a surface translation 	<ul style="list-style-type: none"> The hyperboloid of revolution, projections & sections 	<ul style="list-style-type: none"> Geodesic dome of not more than 4 points of frequency
	Geologic Geometry	<ul style="list-style-type: none"> Basic concepts Interpolation and plotting of contours 	<ul style="list-style-type: none"> Finding profiles using vertical sections 	<ul style="list-style-type: none"> Cutting and embankments for level surfaces 	<ul style="list-style-type: none"> True dip, strike and thickness of strata Outcrop of strata 	<ul style="list-style-type: none"> Cutting and embankments for sloping surfaces 	<ul style="list-style-type: none"> Determine the apparent dip of strata 	<ul style="list-style-type: none"> Solving mining problems with skew boreholes
	Surface Geometry	<ul style="list-style-type: none"> Surface developments of containers, roof surfaces and sheet metal fabrications. 	<ul style="list-style-type: none"> Determine lines and points of intersection between two intersecting surfaces 	<ul style="list-style-type: none"> Determine dihedral angle between adjacent plane surfaces forming solid objects 	<ul style="list-style-type: none"> Develop intersecting ductwork involving prismatic and right cylindrical surfaces 	<ul style="list-style-type: none"> Development of transition pieces of circular/circular & rectilinear/rectilinear 	<ul style="list-style-type: none"> Develop intersecting ductwork involving prismatic and oblique cylindrical surfaces 	<ul style="list-style-type: none"> Development of transition pieces of circular/rectilinear cross section
	Assemblies	<ul style="list-style-type: none"> Orthographic of standard components 	<ul style="list-style-type: none"> Sections of standard components Layout & conventions 	<ul style="list-style-type: none"> Single plane section view of an assembly Hatching 	<ul style="list-style-type: none"> Generate CAD model Fully dimensioned drawings 	<ul style="list-style-type: none"> Multipart assemblies & section views Exploded CAD model 	<ul style="list-style-type: none"> Balloon detailing Indication of surface finish 	<ul style="list-style-type: none"> Indicate methods of assembly

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