

1.	Name of Course				Engineering Graphics			
2.	Course Code				JEGR1022			
	JEGR = the first alphabet identify the faculty within which the subject is offered., JEGR= the remaining three alphabet identify the course that offers the subject, 1022 = the first digit identify level of study; in this case undergraduate level, 1022 = the second and third digits identify subject identity and 1022= the fourth digit identify credit value or credit hours							
3.	Name(s) of academic staff				To be Assigned			
4.	Rationale for the inclusion of the course/module in the programme				Basic Engineering Subject			
5.	Semester and Year offered				1/1			
6.	Total Student Learning Time (SLT)		Face to Face		Total Guided and Independent Learning			
	L = Lecture T = Tutorial P = Practical S=Studio Works O= Others		L	T	S	O	Independent Study(IS)= 70 Total= 126	
			14	-	42	-		
7.	Credit Value				2.0			
	Lecture (1 hour per week x 14 weeks) Studio (2 hours per week x 14 weeks)							
8.	Prerequisite (if any)				None			
9.	Course Objectives 1. The objective of this course is to introduce to the students the basic principles of engineering drawing and familiarise with CAD system Course Learning Outcomes (CLO) At the end of the semester students should be able to: CLO1: To familiarize with the equipment and materials for drafting CLO2: To understand the theoretical and practical aspects of basics of engineering drawing CLO3: To understand and familiarize with the CAD System (MicroStation) CLO4: To understand the theoretical and practical aspects of the basics of architectural drawing, structural drawing and civil engineering drawing CLO5: To produce a simple drawing of architectural drawing, structural drawing and civil engineering drawings.							
10.	Transferable Skills: This course is expected the development of the following transferable skills: a) Self-management – an ability to manage time and task b) Learning skills - An ability to learn both independently and co—operatively; - An ability to use library skills, to find and organize information ; - An ability to use a wide range of academic skills (research, analysis, synthesis etc.); - An ability to identify and evaluate personal learning strategies. c) Teamwork - An ability to take responsibility and carry out agreed task; - An ability to take initiative and lead other; - An ability to identify and evaluate personal learning strategy. d) Problem solving - An ability to analyse;							

	▪ An ability to think laterally about a problem; ▪ An ability to identify strategy options; ▪ An ability to solve the problems e) Information technologies ▪ An ability to use specialist software where relevant to the discipline.														
11.	Teaching-learning and assessment strategy A variety of teaching strategies are used throughout the course, including the following: • Classroom Lessons; Lecturer and power point presentations • Tutorial Session; • Student-Lecturer Discussion • Collaborative and Co-operative learn; • Independent study. Assessment: <table> <tr> <td>Coursework</td><td>40%</td></tr> <tr> <td>Assignment</td><td>5%</td></tr> <tr> <td>Studio work</td><td>10%</td></tr> <tr> <td>Quizzes</td><td>5%</td></tr> <tr> <td>Test</td><td>20%</td></tr> <tr> <td>Examination</td><td>60%</td></tr> <tr> <td><u>Total</u></td><td><u>100%</u></td></tr> </table>	Coursework	40%	Assignment	5%	Studio work	10%	Quizzes	5%	Test	20%	Examination	60%	<u>Total</u>	<u>100%</u>
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12.	Synopsis: This course consists of two portions: Technical Drawing and Civil Engineering Drawing. The technical drawing deals with the introduction to the drafting, the geometrical construction, the developments, the orthographic projection, the isometric drawing and the sectioning. The Civil Engineering Drawing deals with the introduction to the CAD system, followed by basic architectural drawing, the structural drawing and also the civil engineering drawing.														
13.	Mode of Delivery: Lectures; Studio.														

14.	Performance Criteria :						
	CLO-PLO	Assessment Tool	1	2	3	4	5
	Marks		0-39	40-49	50-59	60-74	75-100
	Grade		(F)	(D,D+)	(C-,C,C+)	(B-,B,B+)	(A-,A,A+)
	CLO1: To familiarize with the equipment and materials for drafting	Assignment Studio work Quizzes Test Examination	Fail to: - familiarize with the equipment and materials for draftingand their use - Know Line - conventions types and use - Familiar with Drawing sheet size ; based on ISO "A" Series and BS 308, formatting and scaling	Poor to: - familiarize with the equipment and materials for draftingand their use - Know Line - conventions types and use - Familiar with Drawing sheet size ; based on ISO "A" Series and BS 308, formatting and scaling	Satisfactory to: - familiarize with the equipment and materials for draftingand their use - Know Line - conventions types and use - Familiar with Drawing sheet size ; based on ISO "A" Series and BS 308, formatting and scaling	Good to: - familiarize with the equipment and materials for draftingand their use - Know Line - conventions types and use - Familiar with Drawing sheet size ; based on ISO "A" Series and BS 308, formatting and scaling	Excellent to: - familiarize with the equipment and materials for draftingand their use - Know Line - conventions types and use - Familiar with Drawing sheet size ; based on ISO "A" Series and BS 308, formatting and scaling
	CLO2: To understand the theoretical and practical aspects of basics of engineering drawing	Assignment Studio work Quizzes Test Examination	Fail to: - Know Geometrical Construction - of straight, parallel and perpendicular lines, angles, triangle , square,	Poor to: - Know Geometrical Construction - of straight, parallel and perpendicular lines, angles, triangle , square,	Satisfactory to: - Know Geometrical Construction - of straight, parallel and perpendicular lines, angles, triangle , square,	Good to: - Know Geometrical Construction - of straight, parallel and perpendicular lines, angles,	Excellent to: - Know Geometrical Construction - of straight, parallel and perpendicular lines, angles,

			polygon, hexagon, circle, arch and tangent to a circle, ellipse , parabolic and hyperbolic • Know development of simple shapes based on prisms, cylinders, pyramids and cone. • Know methods of construction of parallel line development, radial line development and triangulation • Understand and know to draw First angle and Third angle orthographic projections • Understand and know to draw Isometric drawings • Understand sectioning and know sectional views in first angle and third angle	polygon, hexagon, circle, arch and tangent to a circle, ellipse , parabolic and hyperbolic • Know development of simple shapes based on prisms, cylinders, pyramids and cone. • Know methods of construction of parallel line development, radial line development and triangulation • Understand and know to draw First angle and Third angle orthographic projections • Understand and know to draw Isometric drawings • Understand sectioning and know sectional views in first angle and third angle	polygon, hexagon, circle, arch and tangent to a circle, ellipse , parabolic and hyperbolic • Know development of simple shapes based on prisms, cylinders, pyramids and cone. • Know methods of construction of parallel line development, radial line development and triangulation • Understand and know to draw First angle and Third angle orthographic projections • Understand and know to draw Isometric drawings • Understand sectioning and know sectional views in first angle and third angle	triangle , square, polygon, hexagon, circle, arch and tangent to a circle, ellipse , parabolic and hyperbolic • Know development of simple shapes based on prisms, cylinders, pyramids and cone. • Know methods of construction of parallel line development, radial line development and triangulation • Understand and know to draw First angle and Third angle orthographic projections • Understand and know to draw Isometric drawings • Understand sectioning and know sectional	triangle , square, polygon, hexagon, circle, arch and tangent to a circle, ellipse , parabolic and hyperbolic • Know development of simple shapes based on prisms, cylinders, pyramids and cone. • Know methods of construction of parallel line development, radial line development and triangulation • Understand and know to draw First angle and Third angle orthographic projections • Understand and know to draw Isometric drawings • Understand sectioning and
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			projection	projection	projection	views in first angle and third angle projection	know sectional views in first angle and third angle projection
CLO3: To understand and familiarize with the CAD System (Micro Station)	Assignment Studio work Quizzes Test Examination	Fail to: • Know how to use the MicroStation • Know how to create a design file and selecting the right seed files. • Understand the command window and the use of graphic tools accessed through the main palette.	Poor to: • Know how to use the MicroStation • Know how to create a design file and selecting the right seed files. • Understand the command window and the use of graphic tools accessed through the main palette.	Satisfactory to: • Know how to use the MicroStation • Know how to create a design file and selecting the right seed files. • Understand the command window and the use of graphic tools accessed through the main palette.	Good to: • Know how to use the MicroStation • Know how to create a design file and selecting the right seed files. • Understand the command window and the use of graphic tools accessed through the main palette.	Excellent to: • Know how to use the MicroStation • Know how to create a design file and selecting the right seed files. • Understand the command window and the use of graphic tools accessed through the main palette.	
CLO4: To understand the theoretical and practical aspects of the basics of architectural drawing, structural drawing and civil engineering drawing	Assignment Studio work Quizzes Test Examination	Fail to: • Understand Layout, elevation and plan of the building and other important features • Understand simple reinforced concrete structures and steel structures in building	Poor to: • Understand Layout, elevation and plan of the building and other important features • Understand simple reinforced concrete structures and steel structures in building	Satisfactory to: • Understand Layout, elevation and plan of the building and other important features • Understand simple reinforced concrete structures and steel structures in building	Good to: • Understand Layout, elevation and plan of the building and other important features • Understand simple reinforced concrete structures and steel structures in building	Excellent to: • Understand Layout, elevation and plan of the building and other important features • Understand simple reinforced concrete structures and steel structures in building	

			construction such as floor slab, beam, column, retaining wall, staircase etc. • Understand Civil engineering drawing • of earthwork road, drainage system etc.	construction such as floor slab, beam, column, retaining wall, staircase etc. • Understand Civil engineering drawing of earthwork road, drainage system etc.	construction such as floor slab, beam, column, retaining wall, staircase etc. • Understand Civil engineering drawing of earthwork road, drainage system etc.	construction such as floor slab, beam, column, retaining wall, staircase etc. • Understand Civil engineering drawing of earthwork road, drainage system etc.	construction such as floor slab, beam, column, retaining wall, staircase etc. • Understand Civil engineering drawing of earthwork road, drainage system etc.
	CLO5: To produce simple architectural drawing, structural drawing and civil engineering drawings using a micro station.	Assignment Studio work Quizzes Test Examination	Fail to: • Know to produce architectural, structural and civil engineering drawings using a microstation	Poor to: • Know to produce architectural, structural and civil engineering drawings using a microstation	Satisfactory to: • Know to produce architectural, structural and civil engineering drawings using a microstation	Good to: • Know to produce architectural, structural and civil engineering drawings using a microstation	Excellent to: • Know to produce architectural, structural and civil engineering drawings using a microstation

15.	Mapping of the Programme Objectives to the Programme Learning Outcomes										
Programme Learning Outcomes (PLO) Programme Objectives (PO)	PLO1: Ability to acquire and apply knowledge of science and engineering fundamentals;	PLO2: Acquired in-depth technical competence in civil engineering discipline;	PLO3: Ability to undertake problem identification, formulation and solution;	PLO4: Ability to utilize systems approach to design and evaluate operational performance;	PLO5: Understanding of the principles of design for sustainable development;	PLO6: Understanding of professional ethics, Islamic values, social, cultural, global and environmental responsibilities of a professional engineer and commitment to them;	PLO7: Ability to communicate effectively, not only with engineers but also with the community at large;	PLO8: ability to function effectively as an individual;	PLO9: Ability to function effectively in group with the capacity to be a leader or manager;	PLO10: Recognizing the need to undertake lifelong learning, and possessing /acquiring the capacity to do so;	PLO11: ability to become Entrepreneur;
	PEO1: To produce graduates with proficient knowledge and competency in various areas in Civil/ Electrical/ Mechanical Engineering	✓	✓	✓							
	PEO2: To produce graduates with professional, generic attributes to meet the present and future global demands.				✓	✓	✓		✓	✓	
	PEO3: To produce graduates with Islamic humanistic values and reinvention skills to meet the requirement of a dynamic environment. These skills include Civil Intelligence, Moral Intelligence, Self-Reliance and Communication Skills						✓	✓	✓		✓

16.	Mapping of the course Learning Outcome to the Programme Outcome										
Programme Learning Outcomes (PLO) Course Learning Outcome (CLO)	PLO1: Ability to acquire and apply knowledge of science and engineering fundamentals;	PLO2: Acquired in-depth technical competence in civil engineering discipline;	PLO3: Ability to undertake problem identification, formulation and solution;	PLO4: Ability to utilise systems approach to design and evaluate operational performance;	PLO5: Understanding of the principles of design for sustainable development;	PLO6: Understanding of professional ethics, Islamic values, social, cultural, global and environmental responsibilities of a professional engineer and commitment to them;	PLO7: Ability to communicate effectively, not only with engineers but also with the community at large;	PLO8: ability to function effectively as an individual;	PLO9: Ability to function effectively in group with the capacity to be a leader or manager;	PLO10: Recognising the need to undertake lifelong learning, and possessing /acquiring the capacity to do so;	PLO11: ability to become Entrepreneur;
	CLO1: To familiarize with the equipment and materials for drafting	✓									
	CLO2: To understand the theoretical and practical aspects of basics of engineering drawing	✓									
	CLO3: To understand and familiarize with the CAD System (Micro Station)	✓	✓	✓							
	CLO4: To understand the theoretical and	✓	✓	✓							

	practical aspects of the basics of architectural drawing, structural drawing and civil engineering drawing											
	CLO5: To produce simple architectural drawing, structural drawing and civil engineering drawings using a micro station	✓	✓	✓								

17. Content outline of the course/module and the SLT per topic						
	Details	SLT (Hour)				
		L	T	P	IS	Total
Topic 1	Introduction - Equipment and material for drafting; drawing media, 't' square, triangles, bow compass, dividers, drafting pencils with different grades of hardness etc. - Line conventions ; types and used - Drawing sheet size ; based on ISO "A" Series and BS 308, formatting and scaling	1	-	3	2	6
Topic 2	Geometrical Construction - A straight, parallel and perpendicular lines - An angle, bisect, dividing angle and copy angle - A triangle , square, polygon, hexagon - A circle, arch and tangent to a circle - An ellipse , parabolic and hyperbolic	1	-	3	2	6
Topic 3	Developments - Developments of simple shapes based on prisms, cylinders, pyramids and cone. - Methods of construction ; parallel line development, radial line development and triangulation	1	-	3	2	6
Topic 4	Orthographic Projection - First angle and third angle orthographic projection and symbols - Arrangement of views and hidden lines - Dimensioning - Symbols and abbreviations in drawing.	2	-	6	4	12
Topic 5	Isometric Drawing - Reference and selection of view - Drawing of inclined edges and angles - Circular shape - To draw isometric drawing based on orthographic view	2	-	6	4	12

	Topic 6	Sectioning - Introduction : a sectional view in first and third angle projection of simple components - Types of sectioning: full section, half section etc. - Cutting plane: types, views, selection and detailing	1	-	3	2	6
	Topic 7	Introduction to the Microstation (CAD System) - How to use the MicroStation - Creating a design file and selecting the right seed files. - Understand the command window and the use of graphic tools accessed through the main palette.	1	-	3	2	6
	Topic 8	Draughting - Preparation of border and title block for a drawing sheet. - Site plan drawing and common related terminology.	1	-	3	2	6
	Topic 9	Architectural Drawing - Layout, elevation and plan of the building and other important features, the used of space and materials for a floor, wall, ceiling, roof, stair etc. - Produce a drawing using a microstation	1	-	3	2	6
	Topic 10	Structural drawing - Simple reinforced concrete structure and steel structure in building construction such as floor slab, beam, column, retaining wall, staircase etc. - Produce a drawing using a microstation	2	-	6	4	12
	Topic 11	Civil engineering drawing - Drawing of earthwork road, drainage system etc. - Produce a drawing using a microstation	1	-	3	2	6
Total (Hour)			14	-	42	28	84
18.	Main references supporting the course - Technical Drawing with Engineering Graphics (14th Edition) by Frederick E. Giesecke, Ivan L. Hill, Henry C. Spencer and Alva Mitchell (Jan 7, 2011) - Understanding Construction Drawings by Mark W. Huth (May 7, 2009)						
	Additional references supporting the course Construction Drawings and Details for Interiors: Basic Skills by Rosemary Kilmer and W. Otie Kilmer (Apr 13, 2009)						
19.	Other additional information All materials will be available to the students in the library.						