MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**الرسمEngineering Drawing / الهندسي**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CYBT109**				
ECTS Credits	**8**				
SWL (hr/sem)	**200**				
Module Level			**Semester of Delivery**	1	
Administering Department	Cybersecurity Technical Engineering / قسم الأمن تقنيات هندسة السيبراني		**College**	Technical Engineering College of Computer and AI - Kirkuk / التقنية الكلية كركوك - الاصطناعي والذكاء للحاسوب الهندسية	
Module Leader	Dr. Academic Leader		**e-mail**	leader@ntu.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**		Ph.D. in Engineering / Computer Graphics
Module Tutor	Tutor Name		**e-mail**	tutor@ntu.edu.iq	
Peer Reviewer Name	Reviewer Name		**e-mail**	reviewer@ntu.edu.iq	
Scientific Committee Approval Date	01/09/2024		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	High School Geometry & Mathematics / الهندسة أساسيات	**Semester**	Prep

Co-requisites module	Computer-Aided Design (CAD) / Computer Graphics	**Semester**	2 & 3

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	This module aims to provide engineering students in Cybersecurity Technical Engineering with the fundamental principles of technical drawing, spatial visualization, geometric constructions, orthographic projections, sectional views, dimensioning techniques, isometric projections, and basic computer-aided drafting (CAD) software tools for 2D engineering design.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Understand international technical drawing standards (ISO/ANSI), lines, scales, lettering, and geometric constructions. Visualize 3D geometric shapes and construct multi-view orthographic projections (First Angle and Third Angle projections). Construct pictorial drawings including isometric and oblique projections from orthographic views. Apply standard dimensioning rules, tolerances, symbols, and annotations to engineering drawings. Create sectional views (full, half, and offset sections) to reveal internal features of components. Develop basic assembly drawings and bill of materials (BOM). Utilize Computer-Aided Drafting (AutoCAD) software to create, edit, layer, and print 2D technical drawings.
Indicative Contents المحتويات الإرشادية	The module will cover the following key areas: Introduction to Engineering Drawing: Instruments, Line Types, Drawing Sheets, Lettering, Scales, and ISO Standards Geometric Construction: Tangency, Arcs, Polygons, and Conic Sections Orthographic Projection Theory: Principal Planes of Projection, First and Third Angle Projection Systems Multi-view Drawing: Drawing Front, Top, and Side Views of Complex 3D Geometries Pictorial Drawing: Isometric Projections, Isometric Scales, Oblique Drawings, and Circle Construction in Isometric Sectional Views: Full Section, Half Section, Offset Section, and Hatching Conventions Dimensioning Principles: Rules of Dimensioning, Datum Selection, and Annotations Introduction to Computer-Aided Design (AutoCAD): User Interface, Draw Commands, Modify Tools, and Snap Settings CAD Layering, Text Formatting, Dimensioning Styles, and Hatching Techniques Assembly Drawings: Orthographic Assembly, Parts List / Bill of Materials (BOM), and Plotting/Printing

Learning and Teaching Strategies استراتيجيات التعلم والتعليم

Strategies	The module will employ a combination of strategies including: Lectures: To present theoretical concepts of projections, sectioning rules, dimensioning standards, and CAD principles. Interactive Demonstrations: Live drawing demonstrations on drawing boards and CAD software interfaces. Practical Drawing Studio / CAD Lab Sessions: Hands-on manual drawing board practice and AutoCAD computer lab exercises. Assignments & Classwork: Individual drawing sheets (manual drafting) and computer CAD drafting projects. Tutorials: Group and individual feedback on drafting accuracy, line weights, and projection correctness. Mid-term and final exams: To evaluate theoretical knowledge, spatial visualization, manual drafting, and CAD practical skills. Preparatory Week: To give students time to revise and clarify any drafting difficulties before the final exam.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	5% (5)	5, 10	LO #1, 3 and 5
	Assignments	2	5% (5)	2, 12	LO #2, 4 and 6
	Projects / Lab.	1	10% (10)	Continuous	LO #7
	Report	1	10% (10)	13	LO #3, 5 and 7
Summative assessment	**Midterm Exam**	2 hr	20% (20)	8	LO #1 - 4
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Engineering Drawing: Role of Graphics in Engineering, Drawing Instruments, Sheet Layouts, and Line Standards.
Week 2	Lettering and Geometric Construction: Freehand Lettering, Scale Concepts, Constructing Tangents, Arcs, and Polygons.
Week 3	Orthographic Projection Theory: Principal Planes of Projection, Projection of Points and Lines.
Week 4	Orthographic Projection of Solids: Multi-view Projection Systems (First Angle vs Third Angle Projections).
Week 5	Multi-view Drawing Practice: Constructing Front, Top, and Side Views from 3D Geometric Objects.
Week 6	Pictorial Projections I: Isometric Projection Principles, Isometric Axes, and Isometric Circles/Curves.
Week 7	Pictorial Projections II: Oblique Projections (Cavalier and Cabinet Projections) and Isometric Drawing from Views.
Week 8	Mid-term Exam (الفصل منتصف اختبار) & Sectional Views I: Concept of Sectioning, Cutting Plane Lines, Full Section Views.
Week 9	Sectional Views II: Half Sections, Offset Sections, Revolved Sections, and Hatching Conventions.
Week 10	Dimensioning Principles: Standard Rules, Dimension Lines, Extension Lines, Leaders, Parallel and Chain Dimensioning.
Week 11	Tolerances & Fasteners: Representation of Threaded Fasteners, Bolts, Nuts, Screws, and Basic Tolerancing.
Week 12	Introduction to AutoCAD: User Interface, Coordinate Systems, Draw Commands (Line, Circle, Arc, Rectangle).
Week 13	AutoCAD Editing & Modification: Move, Copy, Rotate, Scale, Trim, Extend, Fillet, Chamfer, Offset, and Array Tools.
Week 14	AutoCAD Layers & Annotation: Layer Properties, Line Types, Text Formatting, Dimension Styles, and Hatching.
Week 15	Assembly Drawings: Assembly Concepts, Exploded Views, Bill of Materials (BOM), Title Block, Layouts, and Plotting.
Week 16	Course Review, CAD Portfolio Submission & Final Examination (النهائي الاختبار).

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Studio/Lab 1: Drawing Board Setup, Freehand Lettering, Line Types Exercises, and Sheet Title Block Preparation.
Week 2	Studio/Lab 2: Geometric Construction Exercises: Tangent Lines, Tangent Arcs, Inscribed Polygons, and Ellipses.
Week 3	Studio/Lab 3: Manual Drafting of Orthographic Projections (Three-View Drawings) of Given 3D Machine Components.
Week 4	Studio/Lab 4: Manual Drafting of Isometric Drawings from Given Orthographic Views.
Week 5	Studio/Lab 5: Drafting Sectional Views (Full and Half Sections) and Applying Standard Hatching.
Week 6	Studio/Lab 6: AutoCAD Practical Lab: 2D Geometry Drawing, Layer Management, Dimensioning, and Hatching Exercises.
Week 7	Studio/Lab 7: Revision, CAD Portfolio Assessment, Practical CAD Examination, and Course Evaluation.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Giesecke, F. E., Mitchell, A., Spencer, H. C., Hill, I. L., Dygdon, J. T., & Novak, J. E. (2016). "Technical Drawing with Engineering Graphics" (15th ed.). Peachpit Press.	Yes
Recommended Texts	Bhatt, N. D. (2014). "Engineering Drawing" (53rd ed.). Charotar Publishing House.	Yes
Websites	Yes	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors

	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.