



Republic of the Philippines
SULTAN KUDARAT STATE UNIVERSITY
EJC Montilla, 9800 City of Tacurong
Province of Sultan Kudarat



COLLEGE OF INDUSTRIAL TECHNOLOGY
ADT 121A – MACHINE DRAFTING USING AUTOCAD

UNIVERSITY VISION

A leading University in advancing scholarly innovation, multi-cultural convergence, and responsive public service in a borderless Region.

UNIVERSITY MISSION

The University shall primarily provide advanced instruction and professional training in science and technology, agriculture, fisheries, education and other related fields of study. It shall also undertake research and extension services, and provide progressive leadership in its areas of specialization.

UNIVERSITY STRATEGIC GOALS

- a. Deliver quality service to stakeholders to address current and future needs in instruction, research, extension, and production
- b. Observe strict implementation of the laws as well as the policies and regulations of the University
- c. Acquire with urgency state-of-the-art resources for its service areas
- d. Bolster the relationship of the University with its local and international customers and partners
- e. Leverage the qualifications and competences in personnel action and staffing
- f. Evaluate the efficiency and responsiveness of the University systems and processes

PROGRAM OUTCOMES (PO) COMMON TO ALL PROGRAMS AND ITS RELATIONSHIPS TO INSTITUTIONAL OUTCOMES

A graduate of Sultan Kudarat State University can:	INSTITUTIONAL OUTCOMES (IO)						
	a	b	c	d	e	f	g
a. Articulate effectively and independently in multi-disciplinary and multi-cultural teams the latest development in the fields practiced such as Automotive, Architectural Drafting, Civil, Electrical, Electronics, Food and its allied discipline,	✓	✓		✓	✓	✓	✓
b. Lead in the promotion and preservation of Filipino historical and cultural heritage, social empowerment and environmental sustainability in a professional and ethical approach.	✓	✓	✓	✓	✓	✓	✓
c. Generate research-based information and technologies at par from international standards, and	✓	✓	✓	✓	✓	✓	✓
d. Promote and transfer knowledge and technologies for effective and efficient school-industry partnership	✓	✓	✓	✓	✓	✓	✓

COURSE CODE ADT 121A
 COURSE TITLE MACHINE DRAFTING USING AUTOCAD
 PREREQUISITE ADT 111
 CREDITS 3 units

5 COURSE DESCRIPTION

THIS COURSE PROVIDES A COMPREHENSIVE INTRODUCTION TO MACHINE DRAFTING PRINCIPLES AND PRACTICES USING AUTOCAD SOFTWARE. STUDENTS WILL LEARN TO CREATE AND INTERPRET TECHNICAL DRAWINGS OF MECHANICAL COMPONENTS AND ASSEMBLIES, ADHERING TO INDUSTRY STANDARDS. TOPICS INCLUDE GEOMETRIC CONSTRUCTION, ORTHOGRAPHIC PROJECTION, DIMENSIONING AND TOLERANCING, SECTION VIEWS, AUXILIARY VIEWS, AND THE USE OF STANDARD MACHINE ELEMENTS. EMPHASIS WILL BE PLACED ON DEVELOPING PROFICIENCY IN AUTOCAD COMMANDS AND TECHNIQUES NECESSARY FOR PRODUCING ACCURATE AND PROFESSIONAL-QUALITY ENGINEERING DRAWINGS.

6 COURSE LEARNING OUTCOMES (CLO) AND ITS RELATIONSHIPS TO PROGRAM OUTCOMES

At the end of the course, a student can:	Course Learning Outcomes (CLO)	Program Outcomes			
		a	b	c	d
a. Create accurate 2D machine drawings using AutoCAD.		✓			✓
b. Apply geometric construction techniques to solve drafting problems.		✓	✓		
c. Interpret and create orthographic, section, and auxiliary views.		✓		✓	
d. Apply dimensioning and tolerancing standards to mechanical drawings.		✓	✓	✓	✓
e. Draw standard machine components, including fasteners, threads, and gears.		✓		✓	
f. Produce detailed part drawings and assembly drawings for manufacturing.		✓	✓	✓	✓

7 COURSE CONTENTS

WEEK	CONTENT	INTENDED LEARNING OUTCOMES (ILOs)	TEACHING AND LEARNING ACTIVITIES (TLA)	OUTCOMES-BASED ASSESSMENT (OBA)	COURSE LEARNING OUTCOMES (CLOs)
1	Course Orientation SKSU VMGO, Classroom Policies, Course Overview, Course Requirements, Grading System	At the end of the Orientation, the Learners can: a. Discusses the University's VMGO, classroom policies, course overview, requirements, and grading system	Discuss the VMGO of the University, the classroom policies, scope of the course, course requirements and grading system		

	Course Introduction: a. AutoCAD User-Interface b. Basic Commands	At the end of the Lesson, the Learners can: a. Navigate the AutoCAD interface and identify key components. b. Use basic AutoCAD commands for drawing and editing.	a. Interactive Lecture b. Hands-on exercises in AutoCAD c. Demonstration of basic commands	a. Practical assessment of AutoCAD interface navigation. b. Completion of basic drawing exercises.	a b
4-5	Geometric Construction: a. Lines b. Circles c. Arcs d. Polygons	At the end of the Lesson, the Learners can: a. Apply geometric principles to construct accurate drawings. b. Use AutoCAD tools to create lines, circles, arcs, and polygons. c. Solve geometric construction problems using CAD techniques.	a. Lecture and demonstration b. Problem-solving exercises c. AutoCAD drawing assignments	a. Written quiz on geometric principles b. Practical assessment of AutoCAD drawing skills c. Evaluation of completed drawing assignments	a b
6-7	Orthographic Projection: a. Multiview Drawings	At the end of the Lesson, the Learners can: a. Explain the principles of orthographic projection b. Create Multiview drawings of simple machine parts. c. Interpret and visualize 3D objects from 2D orthographic views.	a. Lecture and examples b. Sketching exercises c. AutoCAD Multiview drawing projects	a. Quiz on orthographic projection principles b. Evaluation of sketching exercises c. Assessment of AutoCAD Multiview drawings	a c
8-9	Section Views: a. Cutting Plane Lines b. Hatching	At the end of the Lesson, the Learners can: a. Define and differentiate various types of section views. b. Create section views to reveal internal features of objects. c. Apply proper hatching techniques to indicate different materials.	a. Lecture and examples b. AutoCAD section view drawing assignments c. Interpretation of existing section view drawings	a. Quiz on section view types and conventions b. Assessment of AutoCAD section view drawings c. Evaluation of ability to interpret section views	a c
10	MIDTERM EXAM				

12	Dimensioning and Tolerancing: a. ANSI Standards	At the end of the Lesson, the Learners can: <ul style="list-style-type: none">a. Apply ANSI dimensioning standards to machine drawings.b. Specify tolerances to control part accuracy and fit.c. Use AutoCAD dimensioning tools effectively.	<ul style="list-style-type: none">a. Lecture and examplesb. Practice dimensioning exercisesc. AutoCAD dimensioning projects	<ul style="list-style-type: none">a. Quiz on ANSI dimensioning standardsb. Assessment of dimensioning accuracy in drawingsc. Evaluation of tolerance specifications	d
13-14	Auxiliary Views: a. Inclined and Oblique Surfaces	At the end of the Lesson, the Learners can: <ul style="list-style-type: none">a. Explain the purpose of auxiliary views.b. Create auxiliary views to show true shapes of inclined and oblique surfaces.c. Use AutoCAD to construct auxiliary views accurately.	<ul style="list-style-type: none">a. Lecture and demonstrationb. Problem-solving exercisesc. AutoCAD auxiliary view drawing assignments	<ul style="list-style-type: none">a. Quiz on auxiliary view principlesb. Assessment of accuracy in auxiliary view drawingsc. Evaluation of problem-solving skills	a c
15-16	Fasteners: a. Bolts b. Nuts c. Screws d. Rivets	At the end of the Lesson, the Learners can: <ul style="list-style-type: none">a. Identify and draw various types of fasteners.b. Apply standard conventions for representing fasteners in technical drawings.c. Use AutoCAD to create accurate fastener drawings.	<ul style="list-style-type: none">a. Lecture and examplesb. AutoCAD fastener drawing assignmentsc. Research on different fastener types and applications	<ul style="list-style-type: none">a. Quiz on fastener types and conventionsb. Assessment of AutoCAD fastener drawingsc. Evaluation of research findings	e
17-18	Threads and Gears: a. Representation in Drawings	At the end of the Lesson, the Learners can: <ul style="list-style-type: none">a. Draw and specify different types of threads in technical drawings.b. Represent gears and gear assemblies accurately.c. Use AutoCAD to create thread and gear drawings.	<ul style="list-style-type: none">a. Lecture and examplesb. AutoCAD thread and gear drawing assignmentsc. Study of gear terminology and applications	<ul style="list-style-type: none">a. Quiz on thread and gear representationb. Assessment of AutoCAD thread and gear drawingsc. Evaluation of understanding of gear terminology	e
19	FINAL EXAMINATION				

Total No. of Hours: 120

8 COURSE REQUIREMENTS AND COURSE POLICIES

COURSE REQUIREMENTS

Each student is required to:

1. Regularly attend and participate in class discussions and activities.
2. Complete all of assigned AutoCAD drawing exercises and projects.
3. Pass the major exams (midterm and final).
4. Adhere to drafting standards and conventions.

COURSE POLICIES

Attendance: A student will be marked late if he/she enters the class 5 minutes after start of class period. Any student who comes to class 15 minutes after the scheduled time or always late for three consecutive meetings shall be marked absent.

Missed work or exam: Any student who missed to submit a work assignment or to take a test should consult the concerned instructor for immediate compliance

Cheating and Plagiarism: Any student who committed any form of academic dishonesty (e.g., copy-paste plagiarism) shall be given disciplinary action provided in the SKSU Student's Handbook

Use of Technology: Cell phones should be turned off while the session is in progress. Using laptops, notebook PCs, smart phones, and tablets shall be allowed only when needed.

9 GRADING SYSTEM AND RUBRICS FOR GRADING

GRADING SYSTEM

Midterm Grade

Plates	45%
Examination	35%
Attendance/ Class Participation	15%
<u>Quizzes</u>	10%
TOTAL	100%

Final Grade

Plates	45%
Examination	35%
Attendance/ Class Participation	15%
<u>Quizzes</u>	10%
TOTAL	100%

RUBRICS FOR DRAWING ASSIGNMENTS

Criteria	Excellent (1.0)	Very Good (1.25)	Good (1.50)	Satisfactory (1.75)	Needs Improvement (2.0)	Poor (2.50)
Accuracy	Drawing is perfectly accurate and meets all specifications.	Drawing is mostly accurate with minor deviations.	Drawing has some inaccuracies but generally meets specifications.	Drawing contains several inaccuracies but is still recognizable.	Drawing is largely inaccurate and does not meet specifications.	Drawing is completely inaccurate and unusable.
Completeness	All required elements are present and correctly drawn.	Most required elements are present and correctly drawn.	Some required elements are missing or incorrectly drawn.	Many required elements are missing or incorrectly drawn.	Most required elements are missing or incorrectly drawn.	No required elements are present or correctly drawn.
Line Quality & Conventions	Line weights, types, and layering are used correctly and consistently.	Line weights, types, and layering are mostly correct and consistent.	Line weights, types, and layering have some inconsistencies.	Line weights, types, and layering are often incorrect and inconsistent.	Line weights, types, and layering are mostly incorrect and inconsistent.	Line weights, types, and layering are completely incorrect and inconsistent.
Dimensioning & Annotation	Dimensions and annotations are clear, accurate, and conform to standards.	Dimensions and annotations are mostly clear and accurate.	Dimensions and annotations have some errors or omissions.	Dimensions and annotations have many errors and omissions.	Dimensions and annotations are largely incorrect and incomplete.	Dimensions and annotations are missing or completely incorrect.
Overall Presentation	Drawing is neat, organized, and professional in appearance.	Drawing is generally neat and organized.	Drawing is somewhat messy or disorganized.	Drawing is messy and disorganized.	Drawing is very messy and difficult to understand.	Drawing is incomprehensible.

REFERENCES

- Sham Tickoo, Purdue University Calumet, & CADCIM Technologies. (2016). AutoCAD 2016 for mechanical design: A first course. CADCIM Technologies.
- Sham Tickoo, Purdue University Calumet, & CADCIM Technologies. (2020). AutoCAD 2020 for mechanical design: A first course. CADCIM Technologies.
- Sybex. (2011). AutoCAD 2012 and AutoCAD LT 2012: No experience required. John Wiley & Sons.
- Leach, J. (2018). AutoCAD 2019 beginning and intermediate. John Wiley & Sons, Inc.

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