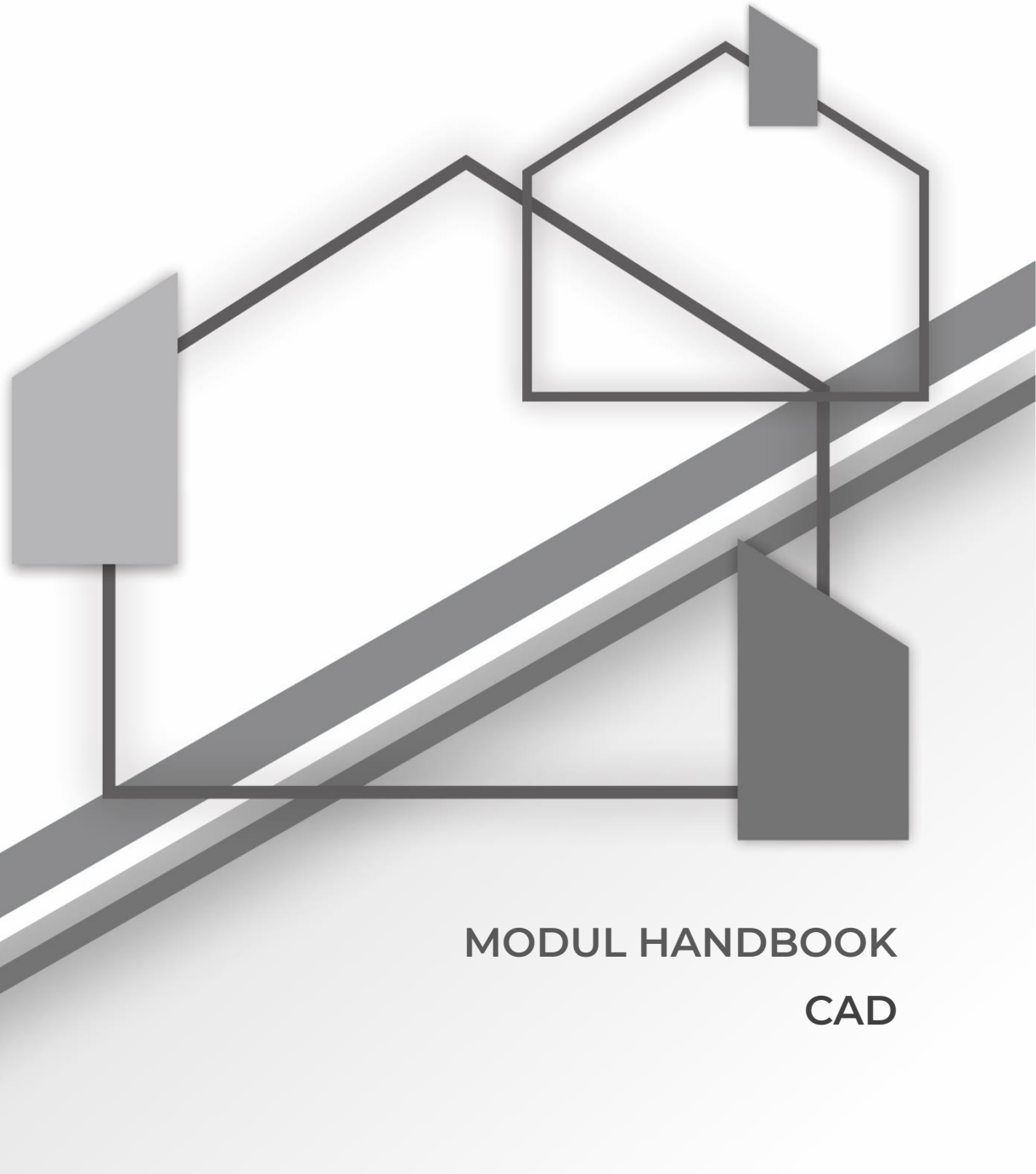




MODUL HANDBOOK CAD

Bachelor Degree Program
Department of Interior Design
Faculty of Creative Design and Digital Business

Institut Teknologi Sepuluh Nopember



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Description of Course Unit

Course unit title	Computer Aided Design
Course unit code	DI184308
Type of course unit (compulsory, optional)	compulsory
Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)	first cycle Bachelor
Year of study when the course unit is delivered (if applicable)	2 nd year
Semester/trimester when the course unit is delivered	Semester 3
Number of ECTS credits allocated	4,8 Credits
Name of lecturer(s)	Caesario Ari Budianto, ST., MT
Learning outcomes of the course unit	<ol style="list-style-type: none"> 1. Able to arrange the concept of interior design as an idea that will answer the design problem. 2. Able to create alternative and variant of interior design as implementation of design concept. 3. Able to communicate designs by making visualization of the design in the form of 2-dimensional and 3-dimensional images by manual and computer assisted (AutoCAD, InteriCAD, 3D Max, Sketch Up), as well as in the form of animation and mockups. 4. Able to prepare the budget plan and schedule of implementation of the interior project. 5. Able to formulate problem solving practical design functions based on the concept and theory of materials, structure, construction, utility, ergonomics and development management.
Mode of delivery (face-to-face, distance learning)	face-to-face
Prerequisites and corequisites (if applicable)	-
Course content	<ol style="list-style-type: none"> 1. Introduction to basic commands CAD: Modify, Shape, Rendering. 2. Introduction to how to create working drawings and print scale according to your needs. 3. Making 3D by using CAD. 4. How to calculate the area and volume of materials and material using CAD 2D.
Recommended or required reading and other learning resources/tools	<ol style="list-style-type: none"> 1. AutoCAD 2015, Autodesk Inc. Copyright 2015 tutorial. 2. Karlen, Mark. 2009. Space Planning Basics 3rd Edition. New York : Wiley. 3. Karlen, Mark. 2016. Space Planning Basics 4th Edition. New York : Wiley. 4. Kilmer, Kilmer. Construction Drawings and Details for Interiors 4th Edition. New York : Wiley. 5. Ed, William. 2023. Autodesk AutoCAD Certified User Study Guide. SDC Publications. 6. Fuller, Ramirez, Smith. 2023. Technical Drawing 101 with AutoCAD 2024. SDC Publications.

	<ol style="list-style-type: none"> 7. Schoonmaker, Stephen. 2022. The CAD Guidebook: A Basic Manual for Understanding and Improving Computer-Aided Design. CRC Press. 8. CADArtifex. 2017. 100 AutoCAD Exercises - Learn by Practicing: Create CAD Drawings by Practicing with these Exercises. CADArtifex. 9. CADFolks. 2019. AutoCAD 2020 Beginners Guide: AutoCAD Beginners Guide. 10. Shoukry, Pandey. 2020. Practical Autodesk AutoCAD 2021 and AutoCAD LT 2021: A no-nonsense, beginner's guide to drafting and 3D modeling with Autodesk AutoCAD. Packt Publishing.
Planned learning activities and teaching methods	Introductory lectures, practical lectures, hands-on practice, In direct practice
Language of instruction	Indonesia and English
Assessment methods and criteria	Assignment, Midterm Exam, and Final Exam

Learning Outcome (LO)

LO	Description
LO4	Able to present design outputs (process and design results) manually and/ or computer-assisted in 2D and 3D
LO5	Able to utilize environmental and maritime technology in the field of interior design
LO6	Able to utilize technology based on social and local culture in the field of interior design
LO8	Mastering practical design knowledge about Geometry, building, communication (drawing), methodologies and consequences in the field of interior design

Course Learning Outcome (CLO)

CLO	Description	Mapping of CLO to LO				Weight of CLO (%)
		LO4	LO5	LO6	LO8	
CLO1	Students are able to choose and determine the work order in making 2D drawings (technical drawings) effectively		x	x		15
CLO2	Students are able to choose and determine the work order in making 2D drawings (technical drawings) efficiently		x	x		15
CLO3	Students are able to understand and practice basic and advanced 3D modeling techniques		x	x		15
CLO4	Students are able to draw 2D technical drawings including: section and details, and are able to scale and print the result				x	25
CLO5	Students are able to synchronize 2D and 3D workflows	x				30

Assessment Plan

No.	Course Learning Outcomes*	Assessment Technique	Assessment Weight (%)
1.	CLO1 Students are able to choose and determine the work order in making 2D drawings (technical drawings) effectively	Interior Layout Drawing (Case Method)	15
2.	CLO2 Students are able to choose and determine the work order in making 2D drawings (technical drawings) efficiently	Furnitur Layout and Section Drawing (Case Method)	15
3.	CLO3 Students are able to understand and practice basic and advanced 3D modeling techniques	Sketchup 3D Modelling (Case Method)	15
4.	CLO4 Students are able to draw 2D technical drawings including: section and details, and are able to scale and print the result	Mid Semester Evaluation (Cognitive - Midterm Exam)	25
5.	CLO5 Students are able to synchronize 2D and 3D workflows	Final Exam: 2D CAD - Sketchup 3D (Case Method)	30
Total Assessment Weight			100

Learning Outcome Plan

Week	Sub Achievement-Subject Final Ability	Breadth (Learning Material)	Learning Method	Estimated Time	Students Learning Experience	Assessment Criteria and Indicator
1, 2	Cognitive, Applications: Students are able to use and master 2D software in creating work drawings to solve design problems	BRIEF (+ example of working drawings using cad), try basic CAD menu. Explanation of CAD software interface, Explanation of cartesian and polar coordinate system principles.	Introductory lectures, hands-on practice	2 L/M @ 150' Theory and practice	Able to create simple objects with the command 'line'	Knowing the interface display in AutoCAD like menus on: 1) menu on the software; 2) know the various panels in the software; 3) knowing AutoCAD navigation system; 4) use the coordinate system in drawing objects.
3	Cognitive, Applications: Students are able to draw simple objects using draw and modifier commands.	Introduction: 1) draw command; and 2) modifier command.	Introductory lectures, hands-on practice	50 'theory and practice + 100' practice Task 1.	Able to create simple objects with draw command and modifier commands.	Know the group and command functions, to create and modify objects
4, 5	Cognitive, Applications: Students understand system layers in AutoCAD, autoCAD dimension style, recognize object notation (Hatch).	Introduction: 1) hatch command, 2) dimension style, 3) design center.	Introductory lectures, hands-on practice Students learn to apply the command to AutoCAD.	2 L/M: 50 'theory and practice + 100' practice Task 2 – Floor Plan	(W4): Able to redraw Task 2 - Plan, correctly match the example and give the dimension. (W5): Be able to fill the notation on Task 2 - Plan, and set the lay out of the furniture on the floor plan.	Know how to draw Task 2 – Floor plan, using the command in AutoCAD, know how to use the design center facility.
6	Cognitive, Applications: Review material 5 weeks in advance,	Introduction : 1) draw command; dan 2) modifier	Introductory lectures, hands-on practice.	2 L/M: 50 'theory and practice + 100' practice	(W6): Able to redraw Task 3 - Furniture 1, fig.	Know how to draw Task 3 - Furniture 1, using the command in AutoCAD.

	apply layer and autoCAD command that has been given to the picture of furniture - interior.	command; 3) hatch command; 4) dimension style; 5) design center.	Students learn to apply the command to AutoCAD.	Task 3 - Furniture 1.	Looks and pieces fit the example; (W7): Be able to make details and give notation correctly and neatly	
7	Cognitive, Applications: Students are able to use the easiest and most efficient AutoCAD command in drawing Task 4 - Furniture 2 and Scale.	Introduction: 1) draw command; and 2) modifier command; 3) hatch command; 4) dimension style; 5) design center	Introductory lectures, hands-on practice. Students learn to apply the command to AutoCAD..	2 L/M : 50' theory and practice + 100 'practice Task 4 - Furniture 2 and Scale.	(W8: Able to redraw Task 4 - Furniture 2, see Appearance and snippet according to example: (W9): Able to create scaled drawings on Task 4 - Furniture 2, provide detail and notation correctly and tidy Able to print scalable working drawings using the drawing paper (A4 - A3).	Know how to use scale, on dimension style and image plot.

8	Cognitive, Applications: Students are able to redraw existing desk furniture and studio chairs, into the form of AutoCAD working gear properly and neatly	Introduction: 1) AutoCAD command already given; 2) how to measure the studio desk-chair furniture; 3) how to use existing data to get new data.	In direct practice, students redraw existing objects.	1 L/M : 150' practice.	Able to redraw with detail, neat and correct.	Know how to take advantage of AutoCAD commands to support furniture drawings.
9, 10	Cognitive, Applications: Students are able to create 3D modeling images of UTS tasks using AutoCAD.	Introduction: 1) 3D modeling command: boolean, unity, substract, extrude, etc	Introductory lectures and hands-on practice. Students learn to apply 3D modeling command in AutoCAD.	2 L/M: 50 'theory and practice + 100' Practice Task 5 - 3D modeling Studio Chairs Table.	Able to create a Studio Chair object, correctly and well, in 3D by using the 3D modeling command.	Know how to use 3D Modeling command in AutoCAD to support furniture drawing
11	Cognitive, Applications: Students are able to create drawings in lay out by using command paper space and space model.	Introduction: 1) layout explanation; 2) explanation of paper space and model space; 3) explanation make 3D image work into 2D (3 visible image + 1 perspective).	Introductory lectures and hands-on practice. Students learn to apply Task 5 to paper space, from 3D images to 2D and organize all tasks within Lay out.	1 L/M: 50 'theory and practice + 100' practice.	Able to create and organize images in layout and paper space format.	Know how to apply layout and paper space.
12, 13	Cognitive, Applications: Students are able to create 2D working drawings from the task of Design 1, in the form of floor plans and create 3D modeling residential walls on the Design 1.	Introduction: review draw, modifier and 3D modeling command.	Introductory and practical courses. Students learn to apply all the material in the previous week to design 2D interior design and build 3D modeling of the walls, and arrange in lay out.	2L/M: 50 'Theory and practice + 100' practice.	Able to create objects in 3D and arrange in layout format.	Know command solid model.

14, 15	Cognitive, Applications: Students are able to create 3D modeling drawings from Design 1 task, in the form of 1 furniture / aesthetic element selected using AutoCAD and make simple RAB for furniture.	Introduction: review draw, modifier and 3D modeling command, furniture cost estimation.	Introductory and practical courses. Students learn to apply all the material in the previous week to make 3D modeling Furniture and arrange in lay out. Students learn how to make a simple budget plan.	2L/M: 50 Theory and practice + 100 practice.	Able to create objects in 3D and arrange in layout format and make simple cost estimation calculations	Know how to make simple furniture cost estimation.
16						
16	Application: Students are able to perform tasks in accordance with existing orders and data.	Introduction : ---	Hands on practice	1L/M = 150'.	Being able to redraw precisely in limited time in 2D and 3D modeling images and set in layout format, giving dimension and notation	Find out the right way to redraw in 2D and 3D modeling images and set in layout format.

REFERENCES (max 5):

1. AutoCAD 2015, Autodesk Inc. Copyright 2015 tutorial.

Note:

1 credit= (50' L/M + 60' SL + 60' IL)/Week

IL = Independent Learning

T = Theory (knowledge)

L/M = Meeting (Lecture)

PS = Practical Simulation (3 hours/week)

P = Practice (Skillfulness aspect)

SL = Structured Learning

LP = Laboratory Practice (3 hours/week)