

# Computer Aided Design

## *DESCRIPTION OF COURSE UNIT*

Program Studi Sarjana (S1) Desain Produk  
*Bachelor of Industrial Design (BOLD)*  
2018-2023



**Description of Course Unit**  
**according to the ECTS User's Guide 2015**

Course unit title	Computer Aided Design
Course unit code	DP184412
Type of course unit	Compulsory
Level of course unit	First cycle Bachelor
Year of study when the course unit is delivered	2 <sup>nd</sup> year
Semester/trimester when the course unit is delivered	4 <sup>st</sup> semester
Number of ECTS credits allocated	6,4 ECTS Credits
Name of lecturer	Ari Dwi Krisbianto, S.T., M.Ds.
Learning outcomes of the course unit	1) Students can implement drawing organization using layer and color destination methods. 2) Students can create detailed and complete attributes for drawings. 3) Students can use basic commands for quick drawing
Mode of delivery	face-to-face
Prerequisites and co-requisites	-
Course content	<p>This course delves into the deepening of knowledge and skills that must be possessed by a Product Designer. The purpose of this course is to implement spatial understanding in students, to read and create drawings for ready-to-produce products, provide insights into the role of technical drawings in the design process, and introduce rapid prototyping. The course also train students to produce digital working drawings using digital plotting methods.</p> <ol style="list-style-type: none"> <li>1) Drawing organization using layer and color destination methods, as well as detailed and complete drawing attributes.</li> <li>2) Basic commands for quick drawing.</li> <li>3) Methods in object selection and object snap facilities in the drawing process.</li> <li>4) Coordinates and unit measures as reference for drawing sheets.</li> <li>5) Philosophy and interface of AutoCAD.</li> </ol>

Recommended or required reading and other learning resources/tools	<ul style="list-style-type: none"> <li>• AutoCAD 2009, Autodesk Inc, copyright 2009</li> <li>• AutoCAD 2008, Autodesk Inc, copyright 2008</li> </ul>
Planned learning activities and teaching methods	Case Method; Team Based Learning
Language of instruction	Indonesia
Assessment methods and criteria	Assignment, Project, Midterm Evaluation and Final Evaluation

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Course Details

DP184412

Computer-Aided Design

Computer-Aided Design

4 credits

Coordinator: Ari Dwi Krisbianto, S.T., M.Ds.

Course Form

Course Type

Minimum Passing Grade

:

:

:

Tidak Ada

C

Course Description

Mata kuliah yang mempelajari dan mempraktikkan ketrampilan mewujudkan desain berbasis pada perangkat lunak komputer. Menggunakan perangkat lunak parametrik dan metode workflow untuk tujuan simulasi bentuk, analisis, presentasi dan perencanaan proses manufaktur.

Courses that learn and practice the skills of realizing design based on computer software. Using parametric software and workflow methods for simulation, analysis, presentation and manufacturing process planning.

LO

CLO

Assessment & Evaluation Plan

Lesson Plan

Learning Outcomes Charged by the Course

Mohon untuk mengecek kurikulum yang lain juga pada pilihan di bawah ini (lalu klik **Tampilkan**). Kemudian mohon pastikan centang CPL telah sesuai dengan yang dibutuhkan oleh CPMK.

Curriculum:


Kurikulum 2018 S-1 Desain Produk

Show

No.	Description
<input type="checkbox"/>	1. Mampu menyusun konsep desain dengan mengidentifikasi sumber masalah, menganalisis, dan mensintesis kebutuhan dengan mempertimbangkan aspek estetika, kenyamanan dan keselamatan pengguna pada suatu produk <i>Able to develop design concepts by identifying problem sources, analyzing, and synthesizing needs by considering aesthetic, comfort and user safety aspects of a product</i>
<input checked="" type="checkbox"/>	2. Mampu merancang sistem produk dan benda produk berdasarkan penguasaan metoda desain, cara produksi dan sistem distribusi, untuk menghasilkan produk yang dapat dipertanggungjawabkan terhadap kaidah desain, dampak pada lingkungan hidup, dan isu-isu sosial budaya <i>Able to design product systems and product objects based on mastery of design methods, production methods and distribution systems, to produce products that can be accounted for by design principles, impacts on the environment, and socio-cultural issues</i>
<input checked="" type="checkbox"/>	3. Mampu membuat model untuk menyelesaikan masalah desain yang kompleks secara kreatif berdasarkan prinsip-prinsip desain dan rekayasa, dengan mempertimbangkan faktor ekonomi, keamanan, keselamatan, dan kelestarian lingkungan <i>Able to create models to solve complex design problems creatively based on design and engineering principles, taking into account economic, security, safety, and environmental sustainability factors</i>
<input checked="" type="checkbox"/>	4. Melakukan kolaborasi dalam bidang kerja yang multi disiplin dengan memanfaatkan pengetahuan dan kemampuan desainnya <i>Collaborating in multi-disciplinary work areas by utilizing design knowledge and skills</i>
<input type="checkbox"/>	5. Memahami konsep teoretis desain: 1. fungsi, 2. estetika, 3. ekonomi, 4. sosial dan, 5. teknologi secara umum <i>Understand the theoretical concepts of design: 1. function, 2. aesthetics, 3. economy, 4. social and, 5. technology in general</i>
<input type="checkbox"/>	6. Ketrampilan presentasi lisan, tulisan dan multimedia dan teknologi presentasi secara umum <i>Oral, written and multimedia presentation skills and general presentation technology</i>
<input checked="" type="checkbox"/>	7. Ketrampilan rekabentuk dan visualisasi 2 dan 3 matra secara mendalam <i>Design skills, 2 and 3 dimension visualization in depth</i>
<input type="checkbox"/>	8. Prinsip dan metodologi desain secara mendalam <i>Design principles and methodologies</i>
<input type="checkbox"/>	9. Konsep user centered design secara mendalam <i>The concept of user centered design in depth</i>
<input type="checkbox"/>	10. Sejarah dan perkembangan desain produk secara mendalam <i>The history and development of product design in depth</i>
<input type="checkbox"/>	11. Wawasan budaya dan perkembangan tren secara mendalam <i>Insight into culture and trend developments in depth</i>
<input checked="" type="checkbox"/>	12. Prinsip dan isu terkini dalam teknologi manufaktur secara umum <i>Current principles and issues in manufacturing technology in general</i>
<input type="checkbox"/>	13. Bisnis dan pemasaran, kewirausahaan, kode etik dan HAKI (Hak atas Kekayaan Intelektual) secara umum <i>Business and marketing, entrepreneurship, code of ethics and IPR (Intellectual Property Rights) in general</i>
<input type="checkbox"/>	14. Konsep dan prinsip pelestarian lingkungan secara umum <i>Environmental conservation concepts and principles in general</i>

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LO CLO Assessment &amp; Evaluation Plan Lesson Plan

## Course Learning Outcomes

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Curriculum: Kurikulum 2018 S-1 Desain Produk

Show

Code	Description of CLO	Mapping of CLO to LO					Weight of CLO
		LO 2	LO 3	LO 4	LO 7	LO 12	
CLO-1	Mahasiswa mampu mengetahui dan memutuskan untuk menggunakan alat desain dengan bantuan komputer yang tepat untuk aplikasi studi dan perancangan selanjutnya serta mendapat gambaran secara profesional berdasarkan sistem operasi yang kompatibel, fitur unik dan faktor ekonomi <i>Students are able to know and decide to use appropriate computer-aided design tools for further study and design applications and get a professional overview based on compatible operating systems, unique features and economic factors</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	40%
CLO-2	Mahasiswa mampu memahami antar muka aplikasi. <i>Students are able to understand the application interface.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5%
CLO-3	Mahasiswa mampu membuat bentuk geometris dari gambar acuan <i>Students are able to create geometrical representation from reference images</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	15%
CLO-4	Mahasiswa mampu menentukan ukuran, toleransi dan pecah komponen pasangan. <i>Able to determine the size, tolerance, paired components and assembling.</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15%
CLO-5	Mahasiswa mampu menyediakan informasi komponen dan perakitan dengan pendekatan logika geometri dan faktor teknis. <i>Students are able to provide component and assembly information with a geometrical logic approach and technical factors.</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	15%
CLO-6	Mahasiswa mampu menggunakan aplikasi-aplikasi pendukung terkini untuk pengukuran dan pembacaan bentuk lebih presisi. <i>Students are able to use the latest supporting applications for more precise measurement and reading of shapes.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	10%
Total Weight		18%	36%	9%	27%	9%	100%

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LO CLO Assessment & Evaluation Plan Lesson Plan

## Assessment &amp; Evaluation Plan

No.	Evaluation Plan	CLO-1	CLO-2	CLO-3	CLO-4	CLO-5	CLO-6	Total Weight
1	Tugas benchmarking aplikasi/software Assignment: Software benchmarking Kognitif - Tugas   Cognitive - Assignment	5%	0%	0%	0%	0%	0%	5%
2	Primitif dan ekstrusi Primitive and extrude Studi Kasus   Case Method	10%	1%	0%	0%	0%	0%	11%
3	Proses surface Surfacing process Studi Kasus   Case Method	5%	1%	0%	10%	0%	0%	16%
4	Fitur khusus: Surface flattening Special feature: Surface flattening Studi Kasus   Case Method	5%	1%	5%	0%	0%	0%	11%
5	Reverse Engineering: Pengukuran langsung Reverse engineering: Direct measuring Studi Kasus   Case Method	5%	1%	0%	0%	5%	0%	11%
6	Reverse engineering: Fotogrametri Reverse engineering: Photogrammetry Studi Kasus   Case Method	0%	0%	0%	0%	5%	5%	10%
7	Video animasi produk Product animation Hasil proyek   Team-based Project	10%	1%	10%	5%	5%	5%	36%
TOTAL Target		40%	5%	15%	15%	15%	10%	100%
		40%	5%	15%	15%	15%	10%	100%



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## Lesson Plan

Weeknum	Course Material	Learning Method	
1	Introduksi: Membangun motivasi, pandangan dan wawasan <i>Introduction: Building motivation, views and insights</i>	Non SCL	 
2	Persiapan gambar (setting) Dimensi, 2D (unit, grid, snaps...), add cut out holes, 3D (basic solid construction), operasi boolean <i>Drawing preparation (settings) Dimensions (unit, grid, snaps...), 2D(create lines, rad, part contours...), add cut out holes, 3D (basic solid construction), boolean operation</i>	Metode SCL lainnya	 
3	Organisasi gambar. Olah bentuk primitif (primitive forms) dan transformasi gambar 2D menjadi 3D <i>Drawing organization. Primitive exploration and transform 2D shape into 3D</i>	Case method	 
4	Lines, surface exploration and reverse <i>Lines, surface exploration and reverse</i>	Case method	 
5	Solid geometry and transform <i>Solid geometry and transform</i>	Case method	 
6	Analisis geometri <i>Geometry analyzes</i>	Case method	 
7	Geometri surface <i>Surface geometry</i>	Case method	 
8	Fitur khusus (flatten surface, orient, flow along curve-surface...) <i>Special features (flatten surface, orient, flow along curve-surface...)</i>	Case method	 
9	Logika geometri, proses assembling, detail <i>Geometry logics, assembling process, details</i>	Case method	 
10	Aplikasi untuk render, render tools (preview, light, material properties, drafting...) <i>Render engines, render tools (preview, light, material properties, drafting...)</i>	Team-based project	 
11	Gambar operasional dan urai. Reverse engineering melalui pengukuran nyata <i>Operational drawing and explode. Reverse engineering by real measurements</i>	Case method	 
12	Reverse modeling (photogrammetry) <i>Reverse modeling (photogrammetry)</i>	Case method	 
13	Animations, environments, supporting properties/parts <i>Animations, environments, supporting properties/parts</i>	Team-based project	 
14	Render animation settings <i>Render animation settings</i>	Team-based project	 
15	Telaah ulang dari ideasi menuju persiapan manufaktur <i>From sketch to production</i>	Team-based project	 
16	Animasi untuk proses operasional dan presentasi <i>Animations for operational processes and presentations</i>	Team-based project	 

Bahasa Indonesia

English

Choose method

