



**UNIVERSITI TEKNOLOGI MARA**

**BSS506: COMPUTER AIDED DESIGN**

<b>Course Name (English)</b>	COMPUTER AIDED DESIGN <b>APPROVED</b>
<b>Course Code</b>	BSS506
<b>MQF Credit</b>	2
<b>Course Description</b>	Introduction to computers and communication technology. Topics include basic operations of a computer, information handling, computer graphics, CAD technology and computational processes.
<b>Transferable Skills</b>	<p>identify and apply the basic functions of operating systems, file naming conventional and directory structures, and Window Interface.</p> <p>a Apply of CAD technology in addressing issues of basic drawings and editing operations, objects, instancing and transformation, and the current development in CAD. Acquire a basic skill in using CAD drawing program (AutoCAD or equal) and communication skill for the profession.</p>
<b>Teaching Methodologies</b>	Lectures, Tutorial, Presentation, Computer Aided Learning
<b>CLO</b>	<p>CLO1 identify and apply the basic functions of operating systems, file naming conventional and directory structures, and Window Interface.</p> <p>CLO2 apply of CAD technology in addressing issues of basic drawings and editing operations, objects, instancing and transformation, and the current development in CAD.</p> <p>CLO3 acquire a basic skill in using CAD drawing program (AutoCAD or equal) and communication skill for the profession.</p>
<b>Pre-Requisite Courses</b>	No course recommendations
<b>Topics</b>	
<b>1. Introduction to Computer graphics</b> 1.1) Raster scan technology, Graphic memory, Bit map graphics, Vector graphics, Graphic primitives / databases, Vector generation algorithm, Vector drawing model	
<b>2. Computer Aided Design</b> 2.1) CAD application model, The concept and purpose of CAD programs, CAD graphic primitives and entities, CAD coordinates, Parameters of entities, Entity transformation operations, Entity Editing operations, CAD Layering, CAD objects and attributes, Object Libraries and instances	
<b>3. Laboratory tutorials</b> 3.1) Introduction to the AutoCAD Interface, Layout of the AutoCAD Screen, Command system, Understanding the concept of Coordinates	
<b>4. Basic 2D-CAD Exercises</b> 4.1) Preparing 2D drawing - Setting up work area, Specifying units, Measurement systems, Setting up drawing limits, Understanding scale factor. 4.2) 4.3) Setting drawing aids - Grid modes, snap mode 4.4) 4.5) Entity properties - Basic concept of layers, Colours, Line types and line scale, Text style, Block creation 4.6) 4.7) Drawing method - Draw toolbar - Lines, Arc, Circle, Polyline, Doughnut, Ellipse, Polygon, Rectangle, Block, Insert, Hatch, Text, Dimensioning 4.8) 4.9) Editing methods 4.10) Move, rotation, scaling, mirroring, array etc 4.11)	

- 4.12) Inquiry
- 4.13) List, Identity, distance, Area
- 4.14)
- 4.15) Plotting and Image handling techniques

**5. Enhance CAD exercises**

5.1) Storing and Linking Data with Graphics - Understanding the concept of attributes, Adding and Editing Blocks and Specifications, Extracting and Exporting Attribute Information, Accessing and linking to external database.

5.2)

5.3) Working With Preexisting Drawings and Raster Images - Tracing, Scaling and Scanning Drawings, Importing and Tracing Raster Images

5.4)

5.5) Getting and Exchanging data from Drawings - Finding area and location of an object or complex shapes, Exchanging CAD data with other programs, CAD drawing in desktop publishing, Combining data from different sources

**6. Test**

6.1) n/a

<b>Assessment Breakdown</b>	<b>%</b>
Continuous Assessment	100.00%

<b>Details of Continuous Assessment</b>	<b>Assessment Type</b>	<b>Assessment Description</b>	<b>% of Total Mark</b>	<b>CLO</b>
	Individual Project	Represent Presentation of a small design in the form of revit drawing format	50%	CLO2 , CLO3
	Lab Exercise	Finishing series of tutorial exercise work using user manual given	30%	CLO1 , CLO2
	Test	Finish small set of presentation drawing of small design given	20%	CLO2 , CLO3

<b>Reading List</b>	<b>Recommended Text</b>	<ul style="list-style-type: none"> <li>• Kerlow, I.V., Rosebush, J. (1994) 1994, <i>Computer Graphics for Designers and Artist</i>, International Thomson Publishing Company</li> <li>• Kalameja, Alan J 1996, <i>The Auto CAD Tutor for Engineering Graphics Realease 14</i>, Albany: Autodesk Press, 1996</li> <li>• IFAQ Information System Gmbtt, Karlsruhe . Munich; Hanser 1990, <i>CAD 2D: Introduction to Two – Dimensional Design/Prepared and Issued</i></li> <li>• Neeley D, Callori B. &amp; Santa FE 1993, <i>CAD and the Practice of Architecture: ASG Solutions: On Word Press.</i></li> <li>• Parid L. Geotsch Albany 1986, <i>CAD Applications, Architectural</i></li> <li>• Paul Arthur, London: Roger Page 1984, <i>CAD CAM in Education and Training</i></li> </ul>
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<b>Article/Paper List</b>	<b>Recommended Article/Paper Resources</b>	<ul style="list-style-type: none"> <li>• Senthil K. Chandrasegarana, Karthik Ramanian, b,Ram D. Sriramc,Imré Horváthd,Alain Bernarde, Ramy F. Harikf,Wei Gaoa 2013, The evolution, challenges, and future of knowledge representation in product design systems, <i>Computer-Aided Design</i>, Volume 45, Issue 2, February 2013, 204</li> <li>• Dazhong Wua, David W. Rosena,Lihui Wangb,Dirk Schaefera, 2015, Cloud-based design and manufacturing: A new paradigm in digital manufacturing and design innovation, <i>Computer-Aided Design</i>, Volume 59, February 2015</li> </ul>
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<b>Other References</b>	<ul style="list-style-type: none"> <li>• Website James A Walker<i>Career Fields That Use AutoCAD</i>, AutoCAD Career Fields, CAD.COM</li> <li>• Website CAD International<i>What is CAD?</i></li> </ul>
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