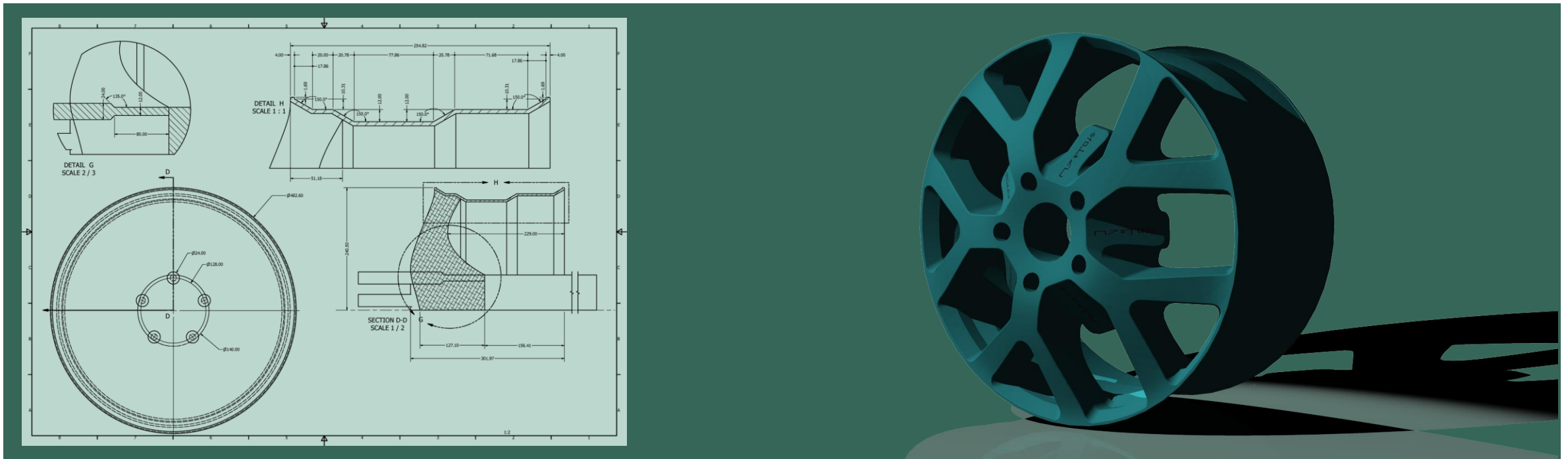


IDE3301 OVER VIEW OF COMPUTER AIDED INDUSTRIAL DESIGN

DR. PALANG WONGTANASUPORN



OVER VIEW OF COMPUTER AIDED INDUSTRIAL DESIGN

Computer Aided Industrial Design (CAID) is a subset of Computer-Aided Design (CAD) that includes software that directly helps in product development. Within CAID programs designers have the freedom of creativity, but typically follow a simple design methodology:

- Creating sketches, using a stylus
- Generating curves directly from the sketch
- Generating surfaces directly from the curves

The end result is a 3D model that projects the main design intent the designer had in mind. The model can then be saved in STL format to send it to a rapid prototyping machine to create the real-life model. CAID helps the designer to focus on the technical part of the design methodology rather than taking care of sketching and modelling then contributing to the selection of a better product proposal in less time.

This subject provides the opportunity for students to explore, in theoretical and practical terms, an introduction to 3D CAD computing as a design practice, and to investigate the problem solving potential of technologically mediated product design through 3D modelling.



LESSON 1 FUNDAMENTAL TECHNOLOGY, PRINCIPLE AND THEORY IN CAID

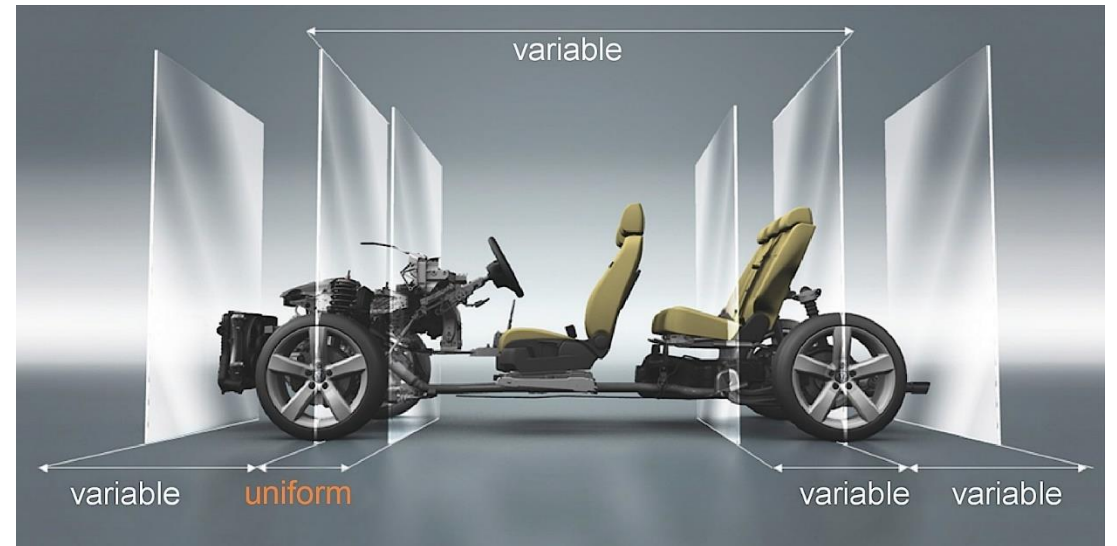
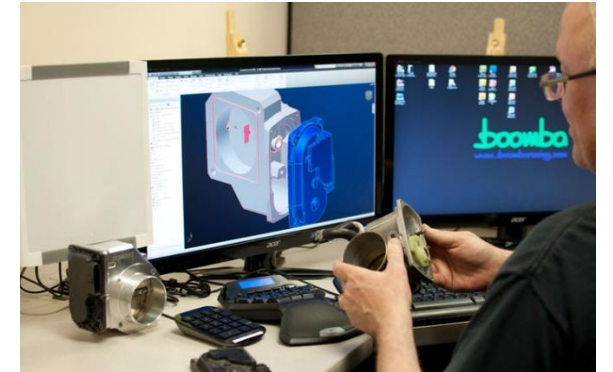
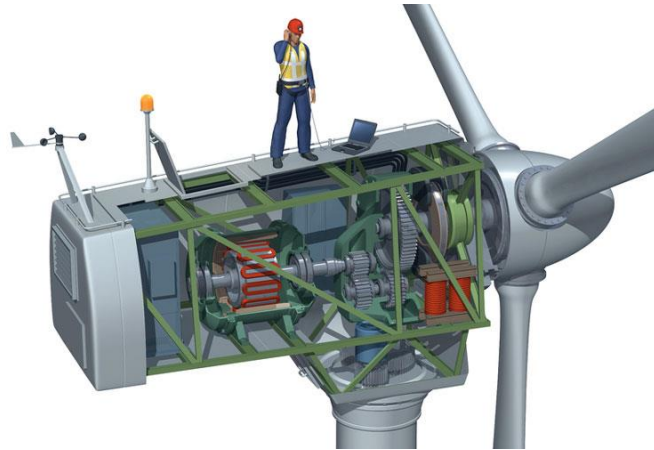
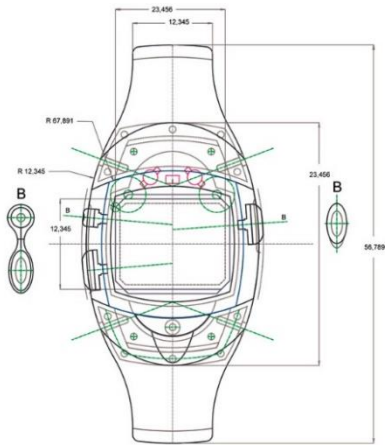
IDE3310 COMPUTER AIDED INDUSTRIAL DESIGN (WEEK 2)

Topic

- 1.1 What is Computer Aided Industrial Design?
- 1.2 Computer and the revolution of design industry
- 1.3 Importance of Computer Aided Industrial Design
- 1.4 Categories of CAD
- 1.5 Fundamental knowledge for CAID users
- 1.6 Summary



USING CAD FOR ENHANCING ACCURACY IN WORK

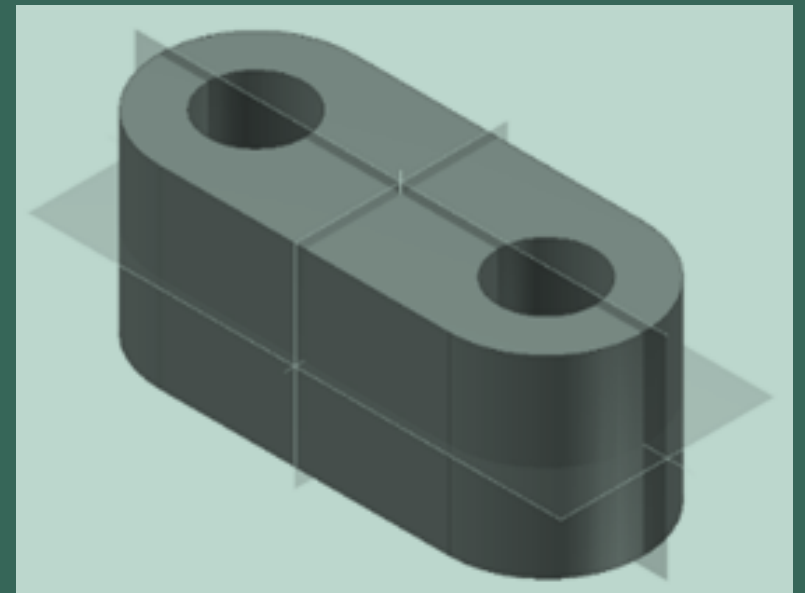


LESSON 2 CAD KICK START

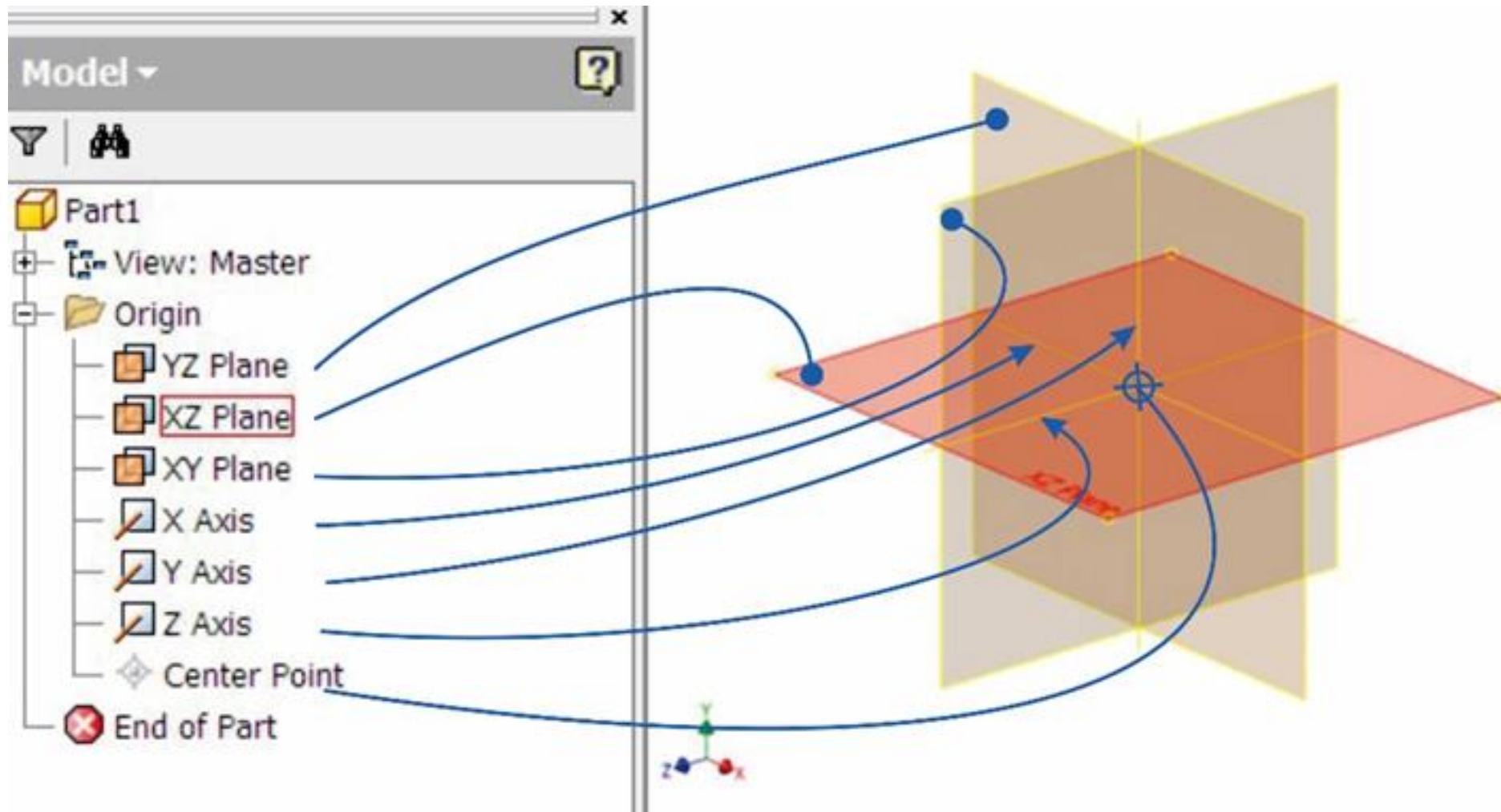
IDE3310 COMPUTER AIDED INDUSTRIAL DESIGN (WEEK 3-4)

Topic

- 2.1 Fundamental tools for 2D sketch
- 2.2 Draw Feature for 2D sketch
- 2.3 Constrain feature
- 2.4 Pattern feature
- 2.5 Modify feature
- 2.6 Insert feature
- 2.7 Format feature
- 2.8 Dimensioning
- 2.9 Summary



FUNDAMENTAL WORKING FEATURE

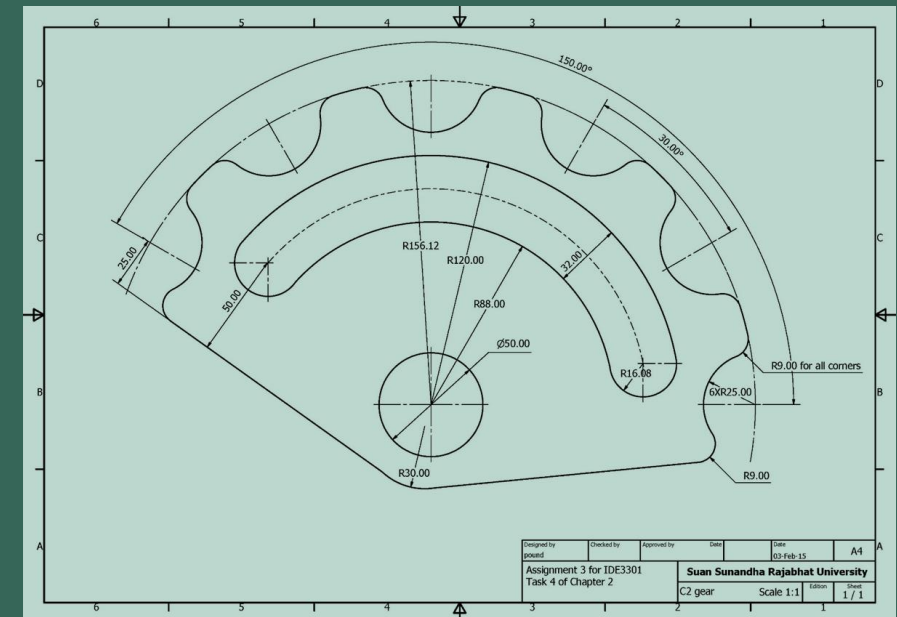


LESSON 3 2D SKETCHING

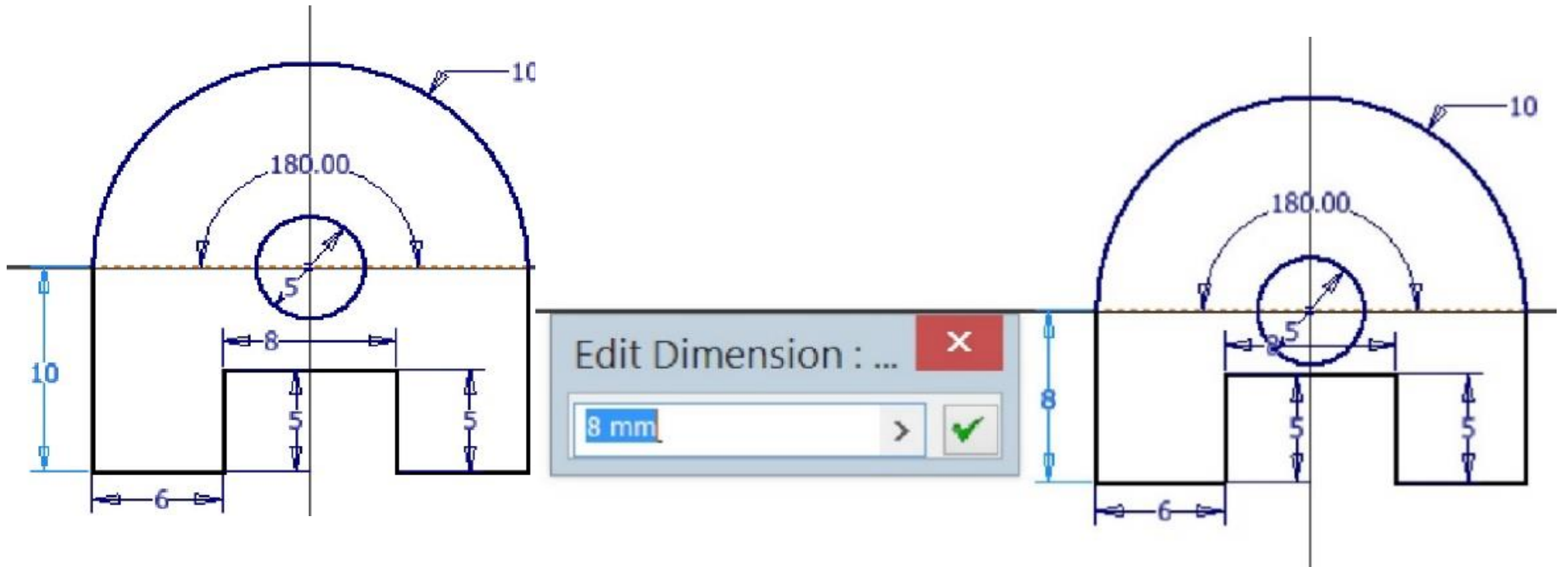
IDE3310 COMPUTER AIDED INDUSTRIAL DESIGN (WEEK 5-6)

Topic

- 3.1 What is Constraint
- 3.2 Edit Sketch and feature
- 3.3 Extrude Feature
- 3.4 Summary



EDIT SKETCH



LESSON 4 EXTRUDE OPERATION

IDE3310 COMPUTER AIDED INDUSTRIAL DESIGN (WEEK 8-9)

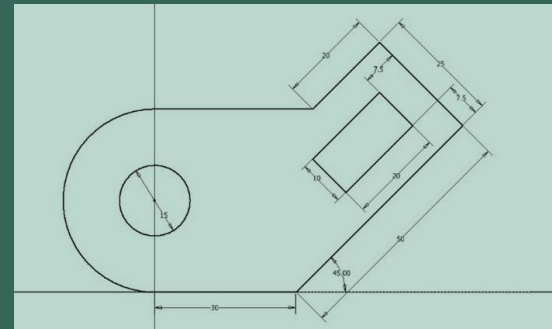
Topic

4.1 Concept of extrusion

4.2 Extrude operation and feature

4.3 Preparing sketch

4.4 Summary



ผลลัพธ์ของชิ้นงานจากการใช้คำสั่ง EXTRUDE ผ่าน OPERATION ที่ต่างกัน

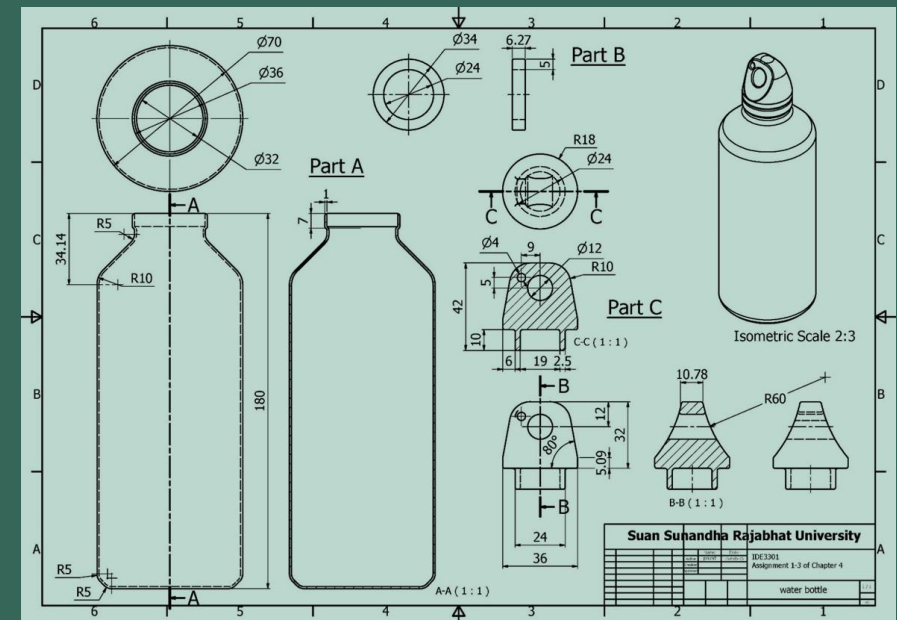
ผลลัพธ์				
Operation	<p align="center">Join</p> <p align="center">การเพิ่มเนื้อของชิ้นงาน</p>	<p align="center">Cut</p> <p align="center">การตัดเนื้อ ออกจาก ชิ้นงาน</p>	<p align="center">Intersect</p> <p align="center">จะเหลือเนื้อที่ ตัดกันไว้</p>	<p align="center">New Solid</p> <p align="center">ใช้สร้าง Solid Body ใหม่</p>

LESSON 5 การสร้างชิ้นงาน 3 มิติ ด้วยวิธี REVOLVE และ SWEEP

IDE3310 COMPUTER AIDED INDUSTRIAL DESIGN (WEEK 10-11)

Topic

- 5.1 Concept of Revolving
- 5.2 Revolve operation and feature
- 5.3 Preparing sketch and axis
- 5.4 Summary



LESSON 6 การสร้างชิ้นงาน 3 มิติ ด้วยวิธี LOFT และ EMBOSS

IDE3310 COMPUTER AIDED INDUSTRIAL DESIGN (WEEK 12-13)

Topic

6.1 Concept of Loft

6.2 Fundamental knowledge of Loft operation

6.4 Loft in practice

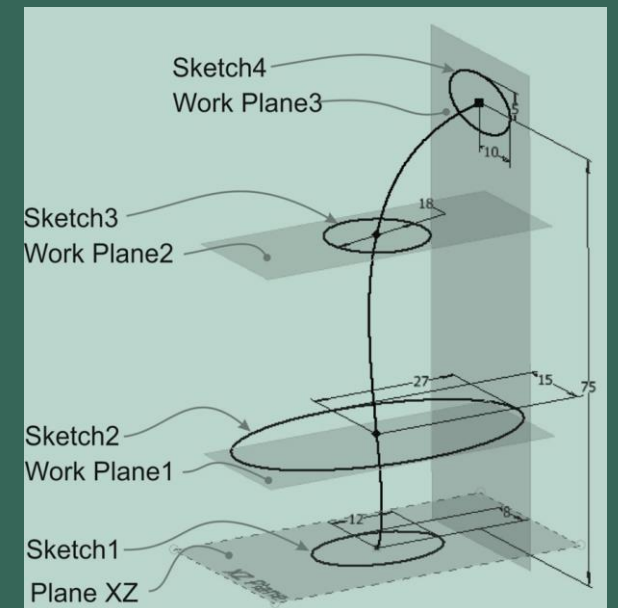
5.5 Fundamental knowledge and Concept of Decal

6.6 Decal in practice

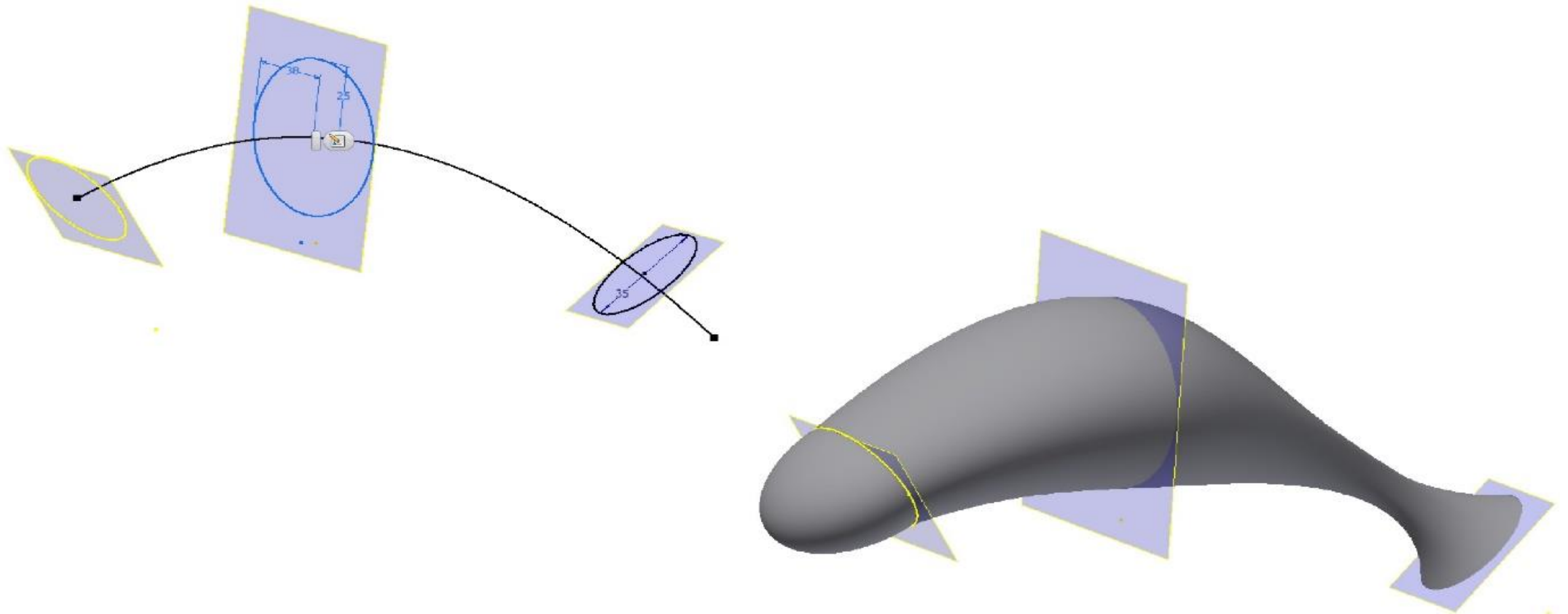
6.7 Concept of Emboss

6.8 Fundamental knowledge and Concept of Emboss

6.9 Summary



การใช้งาน LOFT รูปประกอบการใช้ LOFT สร้างชิ้นงานเป็น SOLID BODY



LESSON 7 การสร้างชิ้นงาน 3 มิติ ด้วยวิธี **PATTERN**

IDE3310 COMPUTER AIDED INDUSTRIAL DESIGN (WEEK 14)

Topic

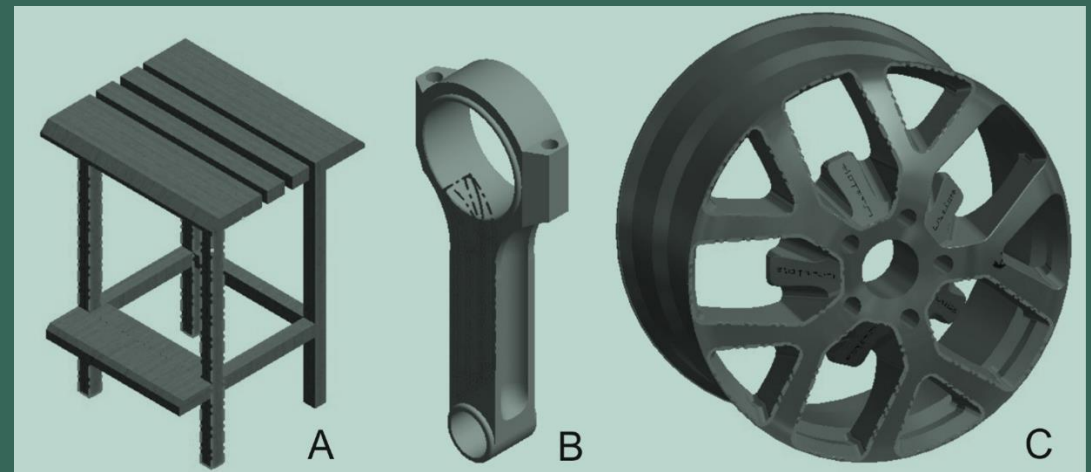
7.1 Fundamental knowledge and Concept of Pattern

7.2 Rectangular Pattern

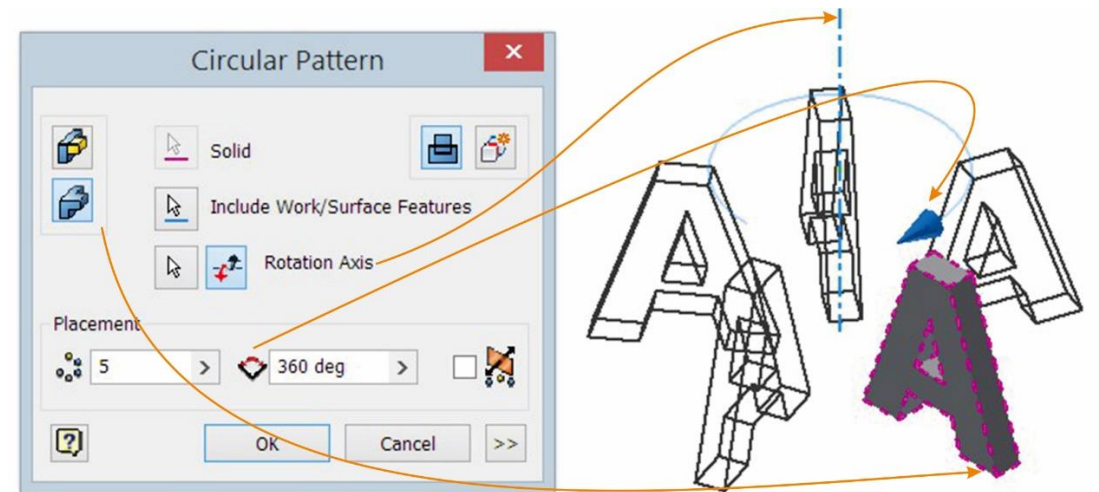
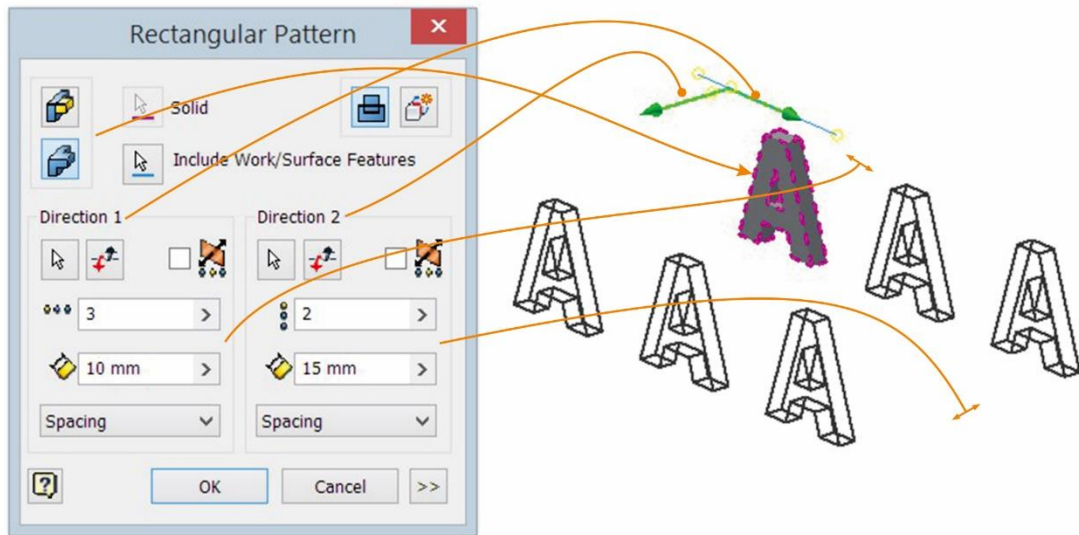
7.3 Circular Pattern

7.4 Mirror

7.5 Summary



RECTANGULAR PATTERN & CIRCULAR PATTERN

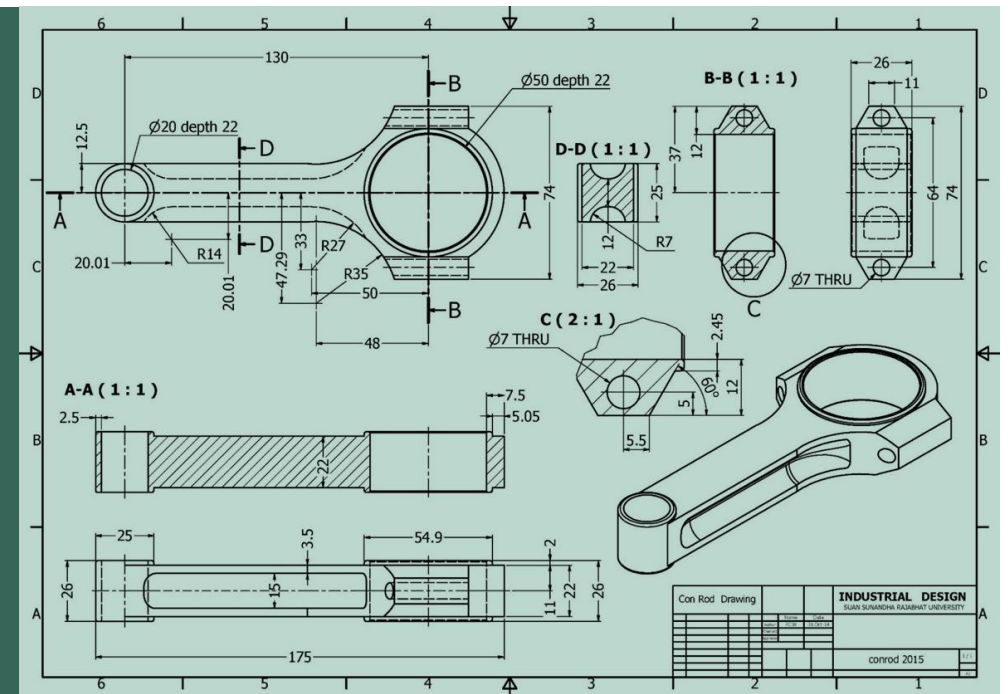


LESSON 8 MULTIVIEW PROJECTION

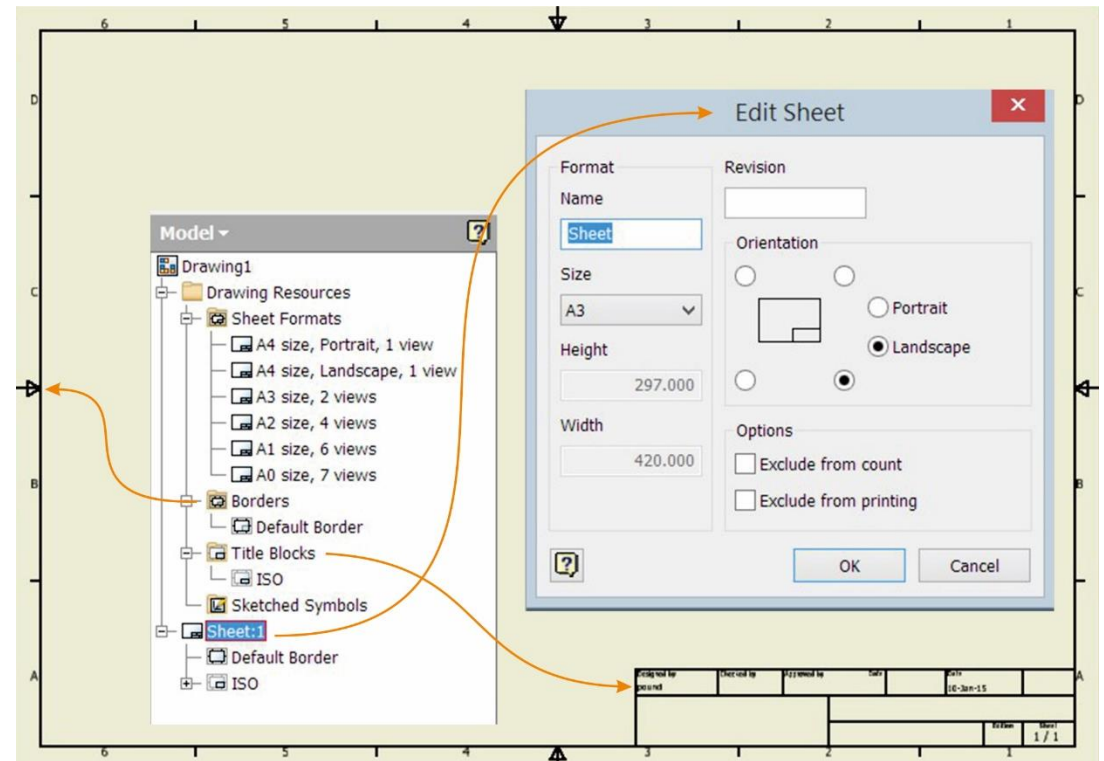
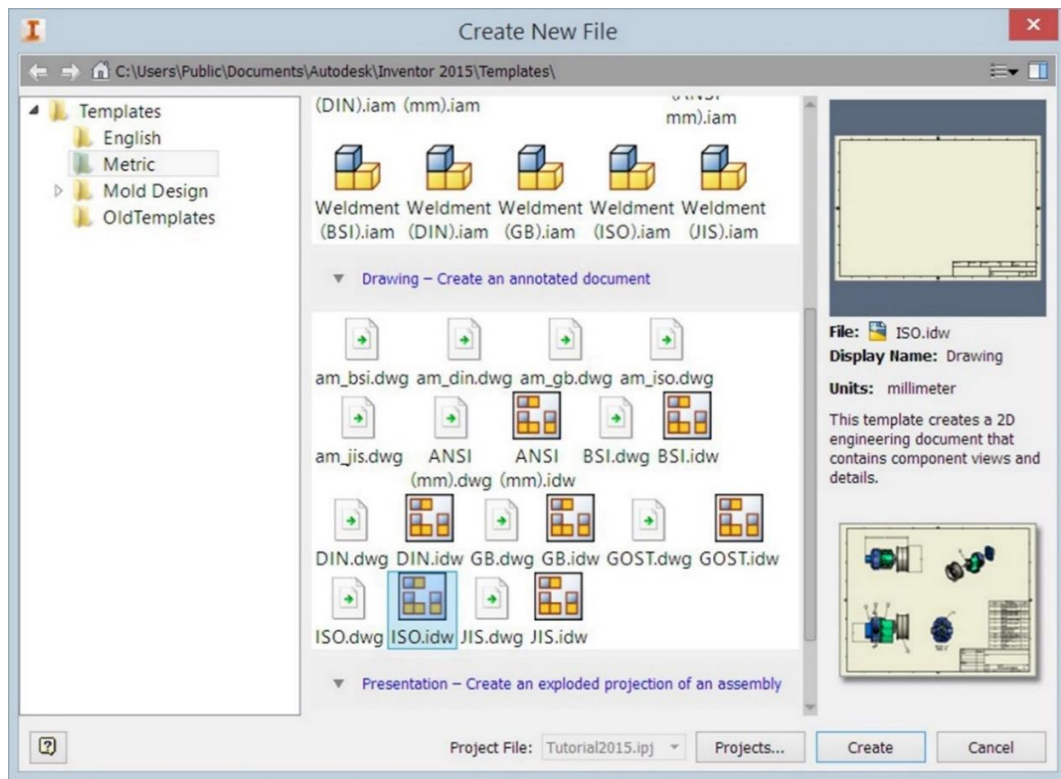
IDE3310 COMPUTER AIDED INDUSTRIAL DESIGN (WEEK 15)

Topic

- 8.1 Difference between .dwg and .idw
- 8.2 Drawing Resources
- 8.3 Drawing Standard
- 8.4 Drawing Tools
- 8.5 Multi view projection in practice
- 8.6 Dimensioning
- 8.7 Using drawing symbol
- 8.8 Summary



DRAWING TEMPLATE



LESSON 9 FINITE ELEMENT ANALYSIS (FEA)

IDE3310 COMPUTER AIDED INDUSTRIAL DESIGN (WEEK 16)

Topic

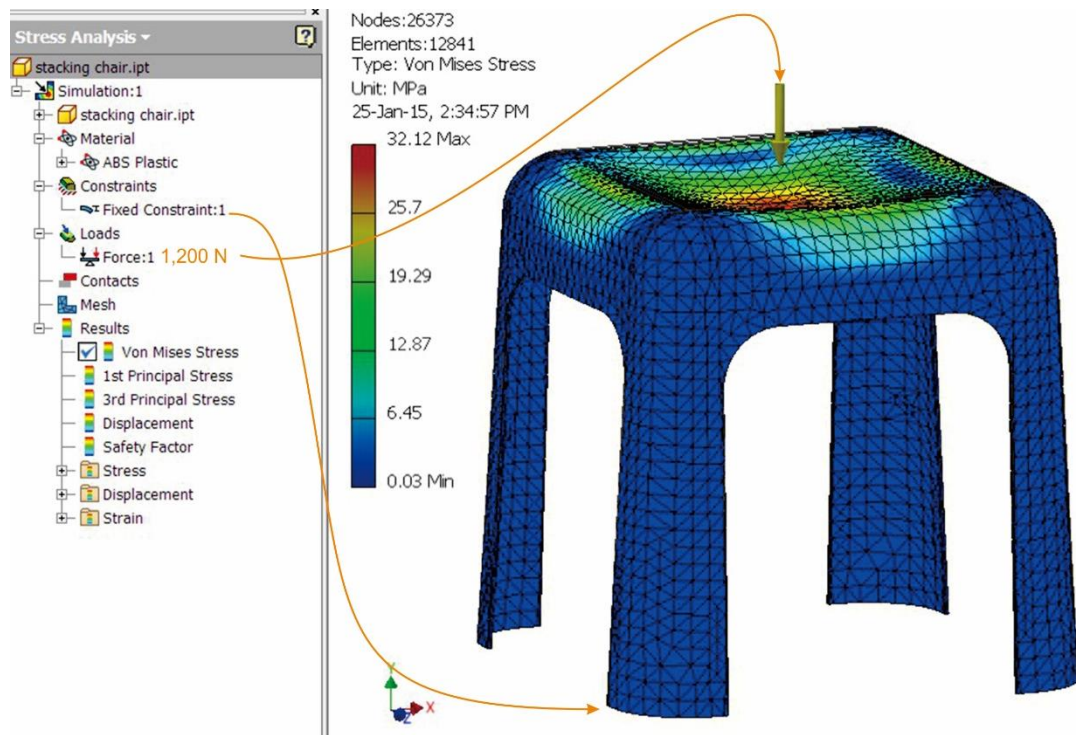
9.1 Stress Analysis

9.2 Command and feature for Stress Analysis

9.3 Summary



STRESS ANALYSIS



System requirements for Autodesk Inventor 2022

System Requirements for Autodesk® Inventor® 2022 Windows	
Operating System	64-bit Microsoft® Windows® 10. See Autodesk's Product Support Lifecycle for support information.
CPU	Recommended: 3.0 GHz or greater, 4 or more cores Minimum: 2.5 GHz or greater
Memory	Recommended: 32 GB RAM or more Minimum: 16 GB RAM for less than 500-part assemblies
Disk Space	Installer plus full installation: 40 GB
Graphics	Recommended: 4 GB GPU with 106 GB/S Bandwidth and DirectX 11 compliant Minimum: 1 GB GPU with 29 GB/S Bandwidth and DirectX 11 compliant See the Certified Hardware

System requirements for Autodesk Inventor 2022

Display Resolution	<p>Recommended: 3840 x 2160 (4K); Preferred scaling: 100%, 125%, 150% or 200%</p> <p>Minimum: 1280 x 1024</p>
Pointing Device	<p>MS-Mouse compliant Productivity: 3DConnexion SpaceMouse®, driver version 10.7.0 or later.</p>
Network	<p>Internet connection for web install with Autodesk® Desktop App, Autodesk® collaboration functionality, web downloads, and licensing.</p> <p>Network license manager supports Windows Server® 2016, Windows Server 2019 and the Windows 10 desktop versions listed above.</p>
Spreadsheet	<p>Full local install of Microsoft® Excel 2016 or later for workflows that create and edit spreadsheets. Inventor workflows that read or export spreadsheet data do not require Microsoft® Excel. See Inventor Excel Requirements for more information.</p> <p>Office 365 subscribers must ensure they have a local installation of Microsoft Excel.</p> <p>Windows Excel Starter®, OpenOffice®, and browser-based Office 365 applications are not supported.</p>
Browser	Google Chrome™ or equivalent
.NET Framework	.NET Framework Version 4.8 or later. Windows Updates enabled for installation.