

M4X01160: Engineering Design

2017/18 Lesson Plan

M4X01160 Schedule

	9:00 – 9:30	9:30 – 11:00	Break	11:30 – 1:00	Lunch	2:00 – 4:00
Monday	Introduction Overview of Day 01	L01: Sketch Modelling Basic Features - Extrude Boss - Extrude Cut - Edit Sketch / Feature		L02: Engineering Drawings		Formative Assessment Extrude Boss / Cut feature Edit features
Tuesday	Overview of Day 02	L03: Revolve & Sweeps Creating a Plane (dimensional and angle) to cut out Mirror components Material Properties		L04: Lofting		Formative Assessment Revolve tool Advanced (loft tool)
Wednesday	Overview of Day 03	L05: Assemblies Insert Components Mates		L06: Advanced Mates: Milling Example Limit range of motion		Formative Assessment Assemblies Advanced Assemblies
	9:00 – 10:30			11:00 – 1:00		2:00 – 4:00
Thursday	Q&A Examples		Assessment: Features			Assessment: Assemblies

Day 01	Monday 06 November 2017	
Time	Plan	Examples
9:00 – 9:30	Introduction and Overview of Lesson 01	
9.30 – 11.00 Basic Features	Introduction to Solidworks Sketch Modelling (10 minutes) - Units - Sketch Planes - Sketch, Relationships, and Dimensions Tutorial Components - Bracket and Base Bracket Basic Features (15 Minutes) Lego Brick 2 Pin - Extrude Boss / Cut Advanced Sketch Modelling (15 Minutes) Lego Brick 8 Pin - Linear Sketch Pattern - Mirror Entities - Offset Entities Advanced Sketch Modelling (30 Minutes) - Circular Sketch Pattern Circular Sketch Pattern Example Advanced Features (Minutes) - Edit Sketch / Features	Basic Features Show: Lego Block Tutorial Components Tutorial 01: SW Tutorial Parts (30 Minutes) Tutorial 02: Circular Patterns
11.00 – 11:30	Overview of Lesson 02	
11:30 – 1:00 Engineering Drawings	Reading Engineering Drawings Edit Feature Component (From the morning)	SW Tutorial: Introduction to Solidworks (1 hour) Plate with Circular Sketch Pattern - M4X011060 D01_L02_01 Eng Drawing - M4X011060 D01_L02_02 Eng Drawing - M4X011060 D01_L02_03 Eng Drawing
2:00 – 4:00 Formative Assessment	- Sketch Modelling - Extrude Boss / Cut feature - Edit features	

Guidelines	
Units: MMGS	
Naming and Saving the file	
Sketch Planes	
Drawing on a Plane	
Relationships and Dimensions	
Example 01: Lego Block	
Simple Way and Fast Way	
Extrude Boss	
Extrude Cut	
Extrude on Surface	
Linear Sketch Pattern	
Tutorial 02: Lesson 01: Parts	
Extrude Boss	
Shell	
Example 02: Editing Features	
Edit Dimensions and Features	
Extrude Boss	
Extrude Cut	
Edit Feature	

Day 02	Tuesday 07 November 2017	
Time	Plan	Examples
9:00 – 9:30	Introduction and Overview	
9.30 – 11.30 Advanced Features	- Revolve - Sweep - Creating a Plane (dimensional and angle) to cut out - Mirror components - Material Properties	SW Example: Candle Holder (30 minutes) SW Example: Radiator Sweep 3D Sketch (30 minutes)
12.00 – 1:00	- Lofting	SW Example: Hammer (30 minutes)
2:00 – 4:00 Formative Assessment	- Revolve tool - Advanced (loft tool)	

Day 2: Advanced Features

9 – 9.30 Overview of day 2

9.30 – 11.30 Advanced Features (2 hours)

- Revolve
- Sweep

SW Example: Candle Holder (30 minutes)

- Creating a Plane (dimensional and angle) to cut out
- Mirror components
- Material Properties

12:00 – 1:00: Advanced Capabilities

- Lofting

1:00 – 2:00: Lunch

Afternoon Session

2:00 – 4:00: Formative Assessment

- Revolve tool
- Advanced (loft tool)

Day 3: Assemblies

9 – 9.15 Overview of day 3

Morning – 9.15 – 10.30 (1 ½ hours)

- Assemblies
- Insert Components
- Mates

11.00 – 1pm

- Advanced Mates: Milling Example
- Limit range of motion

1pm – 2pm Lunch

2pm – 4pm

- Formative Assessment
- Assemblies
- Advanced Assemblies

Day 4: Assessment – 3 hours

Modelling – 1 ½ hours

Assessed on

- Accuracy to the engineering drawing provided
- Sketch features used
- Extrude Features used
- Ability to edit a component
- Apply a material to the component
- Centre of Gravity
- Mass

Advanced Modelling: Loft Component

Assessed on:

- Ability to create a plane
- Sketch on planes
- Loft

Assemblies – 1 ½ hours

3 levels of difficulty

Assessed on:

- Insert component
- Fix component
- Coincident Mates
- Concentric Mates
- Angled mates

Advanced Assemblies: TBC

- Range of motion

Monday

L01:

Sketch Modelling

- Sketch Planes
- Linear Sketch Pattern
- Circular Sketch Pattern
- Mirror Entities
- Offset Entities

Basic Features

- Extrude Boss
- Extrude Cut

Edit Sketch / Feature

L02:

Engineering Drawings