Innovations in Engineering Education: Unique opportunities for guest students

PolyU

-**Integrated Engineering Programme for Inbound Exchange Students**
-**University Facilities in 3D printing**

H.C. Man
Dean, Faculty of Engineering
hc.man@polyu.edu.hk

THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

FACULTY OF
ENGINEERING
工程學院
WHERE CONCEPTS BECOME REALITY

Opening Minds • Shaping the Future
啟迪思維・成就未來

Why do inbound students come to PolyU to do Engineering?

Just normal engineering subjects? –no difference if they take them at home

Pick up some cultural knowledge at leisure time?

What else can we offer them?

………

Introduction

'The Integrated Engineering Programme for Inbound Exchange Students'

- a structured programme designed for engineering inbound exchange students to study discipline-related engineering subjects offered by the hosting engineering division/departments and elective subjects from other deepartments.

A certificate will be issued to students upon successful completion of this programme with GPA>2.0 for each subject.

Intended Learning Outcomes

After completion of this programme, the inbound exchange students will be able:

1. to complete relevant engineering subjects that are related to their disciplines and matched with their own programme outcomes at their own institutions.

2. to acquire enhanced regional knowledge and cultural and/business development experience related to Hong Kong/China.

Credit Requirements

Core (compulsory) subjects	9 credits
Electives	6 - 9 credits

Subject List

Core (compulsory) subjects 9 credits

Any 3 subjects offered by one of the hosting engineering division/departments.

Constituent division/departments of the Faculty of Engineering

- Aeronautical and Aviation engineering (AAE) (new, up to 2nd year only)
- Biomedical Engineering (BME)
- Computing (COMP)
- Electrical Engineering (EE)
- Electronic and Information Engineering (EIE)
- Industrial and Systems Engineering (ISE)
- Mechanical Engineering (ME)

(a) Electives

Any 2-3 subjects offered by other departments as indicated below (for 2017/18).

Subject code	Subject title	Offering Department	Level	Credits	Offering semester
AF2602	Global Economic Environment	AF	2	3	1 & 2
CBS1151	Chinese I (for Non-Chinese speaking students)	CBS	1	3	1 & 2
CBS1152	Chinese II (for Non-Chinese speaking students)	CBS	1	3	1 & 2
CBS1153	Elementary Cantonese (Taught in English)	CBS	1	3	1 & 2
CBS2151	Chinese III (for Non-Chinese speaking students)	CBS	2	3	1 & 2
CBS2152	Chinese Literature – Linguistics And Cultural Perspectives (for Non-Chinese speaking students)	CBS	2	3	1 & 2
CBS2153	Intermediate Cantonese (Taught in English)	CBS	2	3	1 & 2
CBS2154	Chinese IV (for Non-Chinese speaking students)	CBS	2	3	1 & 2
CBS3153	Chinese Reading and Writing (for Non-Chinese speaking students)	CBS	3	3	1
CC305	Modern Chinese History and Culture	CC	3	3	2
CC315	Cultural Contact between China and the West	CC	3	3	1
MM4121	Human Resource Management in China	MM	4	3	2
MM4721	Marketing Management in China	MM	4	3	1

Application Procedures

1) The inbound exchange students should register the required subjects.

2) Send the completed application form (www.polyu.edu.hk/iao/study-se-programmes.php) to Faculty of Engineering within 10 days after the end of the add/drop period of the semester concerned for processing.

University Facilities in 3D printing Purposes and Objectives

- to provide all-round support for PolyU researchers and students in applying various types of 3D printing technologies to excel their research works and academic study.

Open to all students
-Design, submit, print, collect, charged at material costs.
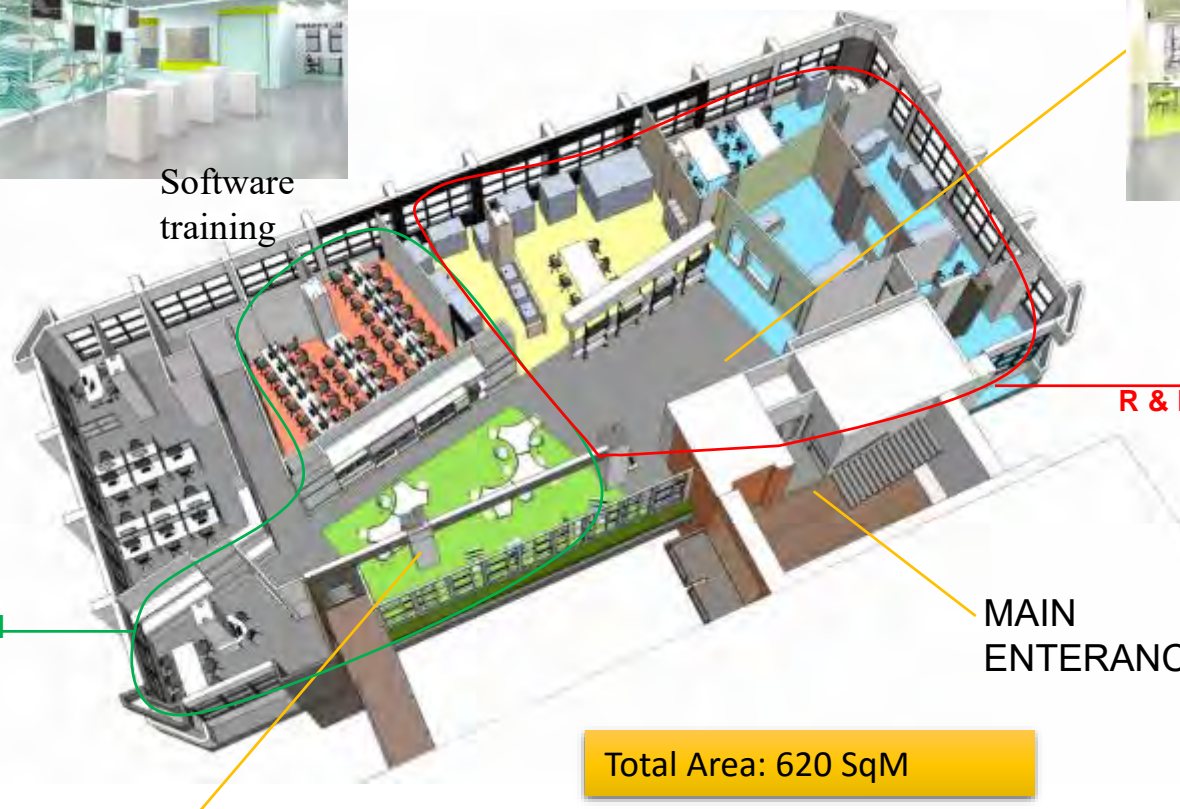-no experience? Join the training class first.

URF3DP

Software training

DISPLAY AREA

R & D machines

CREATIVE LEARNING & PROJECT INCUBRATION AREA

MAIN ENTERANCE

Total Area: 620 SqM

LEARNING & TEACHING AREA

	Equipment/ Software	Technology	Material
1	2 sets of SLM280 (1 twin laser and 1 dual laser system) & 1 set of SLM125	SLM	Titanium Alloy, Nickel based super alloy, Aluminum alloy,
2	1 set of FDM 900MC & 1 set of FDM 450MC	FDM/FFF	Plastic filament, ABS, PC, PPSF, UTLEM, Nylon
3	1 set of ObJet Connex J750 Multi-Color, Multi-Material 3D Printer	PolyJet Colour Jetting	Multi-colour and Multi-hardness Composite material
4	1 set of Optomex AJ-300 printed electronic system	Direct Write Method	Silver ink
5	1 set of Bioplotter	FDM	Hydroxyapatite, PLLA, PLGA, PCL
6	1 set of Envisiontec Perfactory4	DDP	Epoxy Resin, Wax,
7	25 set of MakerBot Replicators and 5 nos of MakerBot Replications Z18s	FDM	PLA Plastic filament
8	1 set of High precision 3D Scanning System and 1 set of Hand held Scanner	3D Scanning	N/A
9	Magic RP, Mimic innovation suit and Solidthinking	3D Printing software	N/A

Overview

1 set of High precision 3D Scanning System and 1 set of Hand held Scanner
- Resolution: 2448 x 2050
- 3D point distance in μm: 18 – 190 depends on the field-of-view
- Sensor positioning: tripod or sensor stand with manual rotation and tilt axis

1 set of THOR Wireless Hand Held Scanner
- Resolution: 2mm
- Capable to capture texture
- Scan distance: 0.8 – 1.5m
- Field-of-view: 0.7mm x 0.9
- 3D point distance in μm: 18 – 190 depends on the field-of-view

2 sets of SLM280 & 1 set of SLM125
- Build platform: 125mm x 125mm x 125mm
- Layer thickness: 20 -75 micron
- Min feature size: 140 micron
- Max Scan speed: 10m/s
- Inert gas protect: Argon
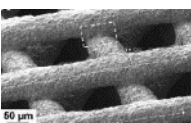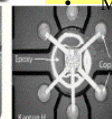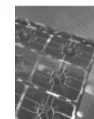- Material: Ti alloy, Al alloy, Stainless Steel, CoCr Alloy, inconel, etc.

1 set of FDM 900MC & 1 set of 450MC
- Build platform: FDM900MC 914mm x 609mm x 914mm; FDM450MC 400mm x 350mm x 400mm
- Layer thickness: 0.127mm
- Biocompatible material: ABS M30i, PC ISO
- High Performance Thermoplastic: PEI, PES, PPU and TPU
- Semi-Crystalline Material: PA, PEKK, PPS, PP, PE, PEEK
- Composite: CF-PA, GF-PP, CF-PEKK, CF-PEI, CF-PET

1 set of 3D-Bioplotter
- Build platform: 150mm x 150mm x 140mm
- Heatable & coolable building platform
- Layer thickness: 0.08 to 0.32mm
- 5 exchangeable dispensing cartridges
- Low temp dispensing head
- Heatable and coolable dispending head (2 °C – 70 °C)
- UV curing head (365nm)
- Material: Hydroxyapatite, PLLA, PLGA, PCL,etc.

1 set of ObJet Connex J750 Multi-Color, Multi-Material 3D Printer
- Over 360,000 colours
- Material ranging from rigid to flexible and opaque to transparent
- Water soluble support
- Layer thickness: down to 14 micron
- Build Size: 490mm x 390mm x 200mm
- Accuracy: 20-85 microns for features below 50 mm; up to 200 microns for full model size (for rigid materials only)

1 set printed electronic 3D Printer
- Direct Write Method
- Pneumatic Atomizer & Ultrasonic Atomizer
- Nozzle head: 100,150,200,250,300um
- Working Area: 300mm x 300mm
- 50mm Z-axis Automated Control
- Vision System
- Material: Silver ink

25 sets of Desktop 3DP and 5 sets of Large Desktop 3DP
- Build volume: 252x200x150mm & 300mm x 305mm x 457mm
- Material: PLA filament
- Nozzle dia: 0.4mm
- Layer thickness: 0.1mm

30 sets Desktop 3D printers for UG students
25 sets of Desktop 3DP and 5 sets of Large Desktop 3DP

>MakerBot Replicators

>Build volume: 252x200x150mm

>Material: PLA filament

>Nozzle dia: 0.4mm

>Layer thickness: 0.1mm

>MakerBot Replications Z18s

>Build volume: 300mm x 305mm x 457mm

>Material: PLA filament

>Nozzle dia: 0.4mm

>Layer thickness: 0.1mm

3D Haptic Devices & software
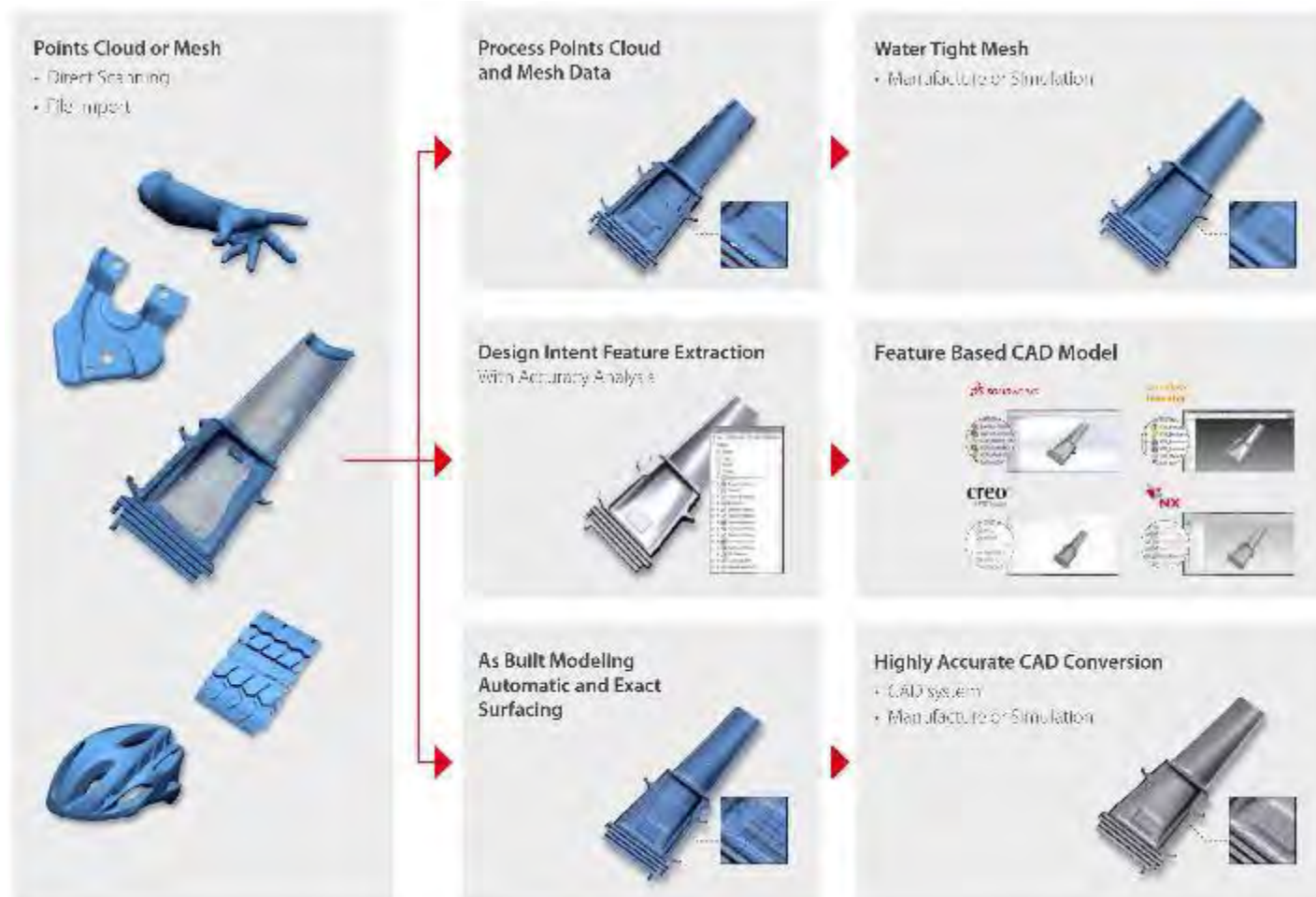
3 sets of 3D Systems Digital Sculpting Devices

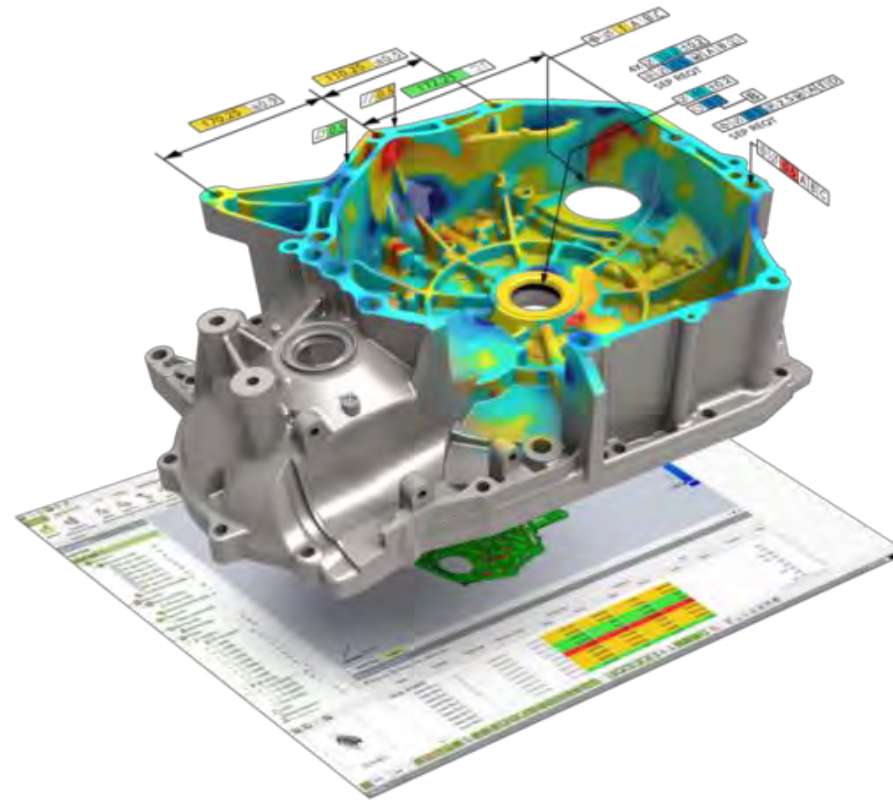> Hand Movement pivoting at wrist

> Position resolution 0.084mm

http://www.3dsystems.com/shop/touch

20 sets of Geomagic Design X Reverse Engineering software

20 sets of Geomagic Control Metrology & Inspection software
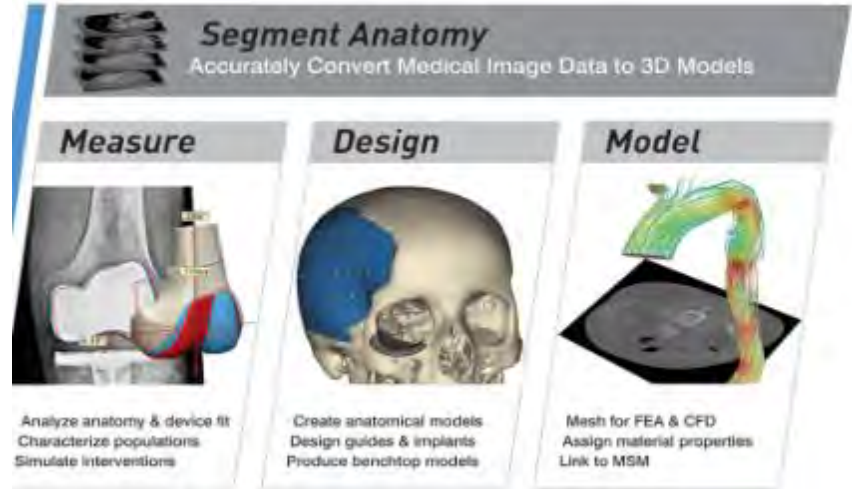

http://geomagic-control.com/

Software

Magic RP

> Most well-known 3D printing software for manipulation of the digital data

Mimic Innovation suit

> A completed set of tools developed for bio-medical professional to perform various kind of image processing operations

Solidthinking

> An user friendly software to help design structure parts with relatively short period of time.

solidThinking

Details and Contacts

For details (e.g. subject syllabi), please visit:
www.polyu.edu.hk/iao/study-se-programmes.php

Contact of Faculty of Engineering

Email: denquiry@polyu.edu.hk

Tel: (852)2766-5064