



UTP SUMMER PROGRAMME
Expand Your Horizon, Enrich Your Mind



**UNIVERSITI
TEKNOLOGI
PETRONAS**

UTP INTENSIVE LEARNING PROGRAMME

Department of Chemical Engineering

DATE: 22nd May to 5th June 2016*

*For other dates, arrangements can be made with minimum 10 students

Sustainable Utilization of Biomass for Biofuel Production

Catalysis

* CHOOSE ONE TOPIC ONLY

Basics of Model Predictive Control

Sustainable Process Engineering

Sustainable Energy Generation From Low Grade Waste Heat: A Simulation Approach

Towards Reduction of CO₂ Emission

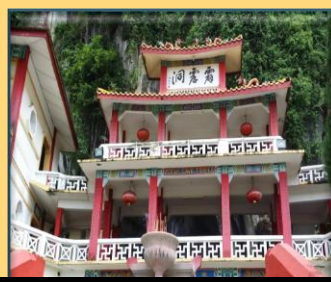
INCLUSIVE WITH:



Language & Dance



Ecotourism



Cultural & Heritage

FEATURES:

- ✓ RM30 per day meal allowance
- ✓ In-campus hostel
- ✓ Pick-up transfer (advance booking)

COST: USD 550 /person
(Inclusive of Tuition Fees, Homestay, Accommodation, Meals & Field Trip)

DEADLINE TO APPLY: 22nd March 2016

HOW TO APPLY:

<https://form.jotform.me/csimal/che-ilp>

Contact us at: CSIMAL, UNIVERSITI TEKNOLOGI PETRONAS

Tel +605-368 8381/8382 Fax +605-368 8386 csimal@petronas.com.my



Subtopics of Chemical Engineering Offered

Basics of Model Predictive Control

- Introduction and Overview
- Historical perspective
- Variations in algorithms
- Process and Prediction Models
- Cost functions
- Constraints
- Stability
- Optimization topics related to MPC (LP, QP, NLP)

Sustainable energy generation from low grade waste heat: A Simulation Approach

- Heat engines
- Power cycles
- Aspen Hysys
- Equation of State
- Properties of Organic Fluids
- Organic Rankine Cycles

Sustainable Process Engineering

- Introduction and Overview
- Sustainable development-key concepts and characteristics
- Waste minimization in process industry
- Waste treatment
- Safety evaluation
- Sustainability assessment

Catalysis

- Introduction to catalyst and its application
- Catalyst preparation method
- Catalyst characterization
- Catalyst testing

Towards reduction of CO2 emission

- Introduction and Overview
- Climate change and CO2 emission
- Capture technologies for CO2 emission – Membrane / Adsorption / Absorption
- CO2 utilization & economics

Sustainable utilization of biomass for biofuel production

- Introduction – Biomass and biofuel
- Biodiesel production
- Bioethanol production
- Biohydrogen/syngas production
- Other related biochemical production – e.g. glycerol upgrading
- Solid fuel production
- Catalyst development and catalytic reaction
- Life cycle assessment