Chemical Engineering

Process Heat Transfer (CENG0009)

**Description**

**Aims:**
- To provide a broad study in the principles of steady and unsteady state heat transfer, heat transfer with phase change and radiation heat transfer;
- To develop skills in the design of practical heat transfer equipment with emphasis on improving efficiencies and the use of renewable energy sources.

**Learning Outcomes:**
On completion of this module students should:
- be able to understand the physical phenomena present in heat transfer processes;
- be able to calculate or estimate heat transfer coefficients;
- be familiar with the procedures for the design of heat transfer equipment;
- understand pressure drop and fouling factors in a heat exchanger;
- select an appropriate heat exchanger to meet the required heat transfer rate or heat transfer area.

**Synopsis:**
- Key mechanisms of heat transfer: conduction, convection and radiation
- Fourier's law; Conduction in cylindrical and spherical shells
- Derivation of heat conduction equations for transient and multidimensional cases
- Methods for solving 1-D transient heat conduction equation; lumped heat transfer coefficient;
- Forced convection; Natural convection; Correlations for heat transfer coefficient
- Thermal radiation; Radiation transfer through gases
- Evaporation and Boiling

**Key information**

- **Year:** 2020/21
- **Credit value:** 15 (150 study hours)
- **Delivery:** UG L5, Campus-based
- **Reading List:** View on UCL website
- **Tutor:** Prof Junwang Tang
- **Term:** Term 1
- **Timetable:** View on UCL website

**Assessment**

- Written examination (main exam period): 70.0%
- Coursework: 30.0%

**Find out more**

For more information about the department, programmes, relevant open days and to browse other modules, visit [ucl.ac.uk](http://ucl.ac.uk)
- Condensation; Film condensation
- Heat exchangers; Condensers and Reboilers; Logarithmic mean temperature difference
- Direct contact gas-solid exchangers
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Year: 2020/21
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Delivery: PGT L7, Campus-based
Reading List: View on UCL website
Tutor: Prof Junwang Tang
Term: Term 1
Timetable: View on UCL website

Assessment

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Coursework: 30.0%

Find out more

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Disclaimer: All information correct as of March 2020. Please note that aspects of the module may be subject to change. UCL will make best efforts to inform applicants of major changes.
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