Chemical Engineering

Advanced Separation Processes (CENG0033)

Description

Aims:
The aim of this module is to extend the students' knowledge of basic fluid separation processes to more complex systems commonly found in the chemical processing industry. Students will develop:

- a thorough understanding of the underlying chemical & physical phenomena of the processes;
- a working knowledge of methods for design and operation of industrial separation units;
- a working knowledge of simulation tools applicable for the analysis and design; skills to propose energy efficient and sustainable design solutions.

Learning Outcomes:
On completion of this module students should:

- be able to understand the mass and heat transfer phenomena involved in complex fluid separation processes;
- be familiar with the procedures for the design of complex fluid separation equipment in the context of sustainability and sustainable development;
- be able to select an appropriate fluid separation process to meet a required separation performance;
- be able to apply conceptual design methods for simple and complex distillation columns;
- be able to simulate process flowsheets and mass transfer operations with an appropriate level of detail.

Synopsis:
To provide an understanding of the principles of complex fluid separation processes, as well as an ability to suggest energy efficient and sustainable design & operation alternatives thereof, such as:

- Extractive and azeotropic distillation

Key information

<table>
<thead>
<tr>
<th>Year</th>
<th>2019/20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit value</td>
<td>15 (150 study hours)</td>
</tr>
<tr>
<td>Delivery</td>
<td>PGT L7, Campus-based</td>
</tr>
<tr>
<td>Reading List</td>
<td>View on UCL website</td>
</tr>
<tr>
<td>Tutor</td>
<td>Prof Eva Sorensen</td>
</tr>
<tr>
<td>Term</td>
<td>Term 2</td>
</tr>
<tr>
<td>Timetable</td>
<td>View on UCL website</td>
</tr>
</tbody>
</table>

Assessment

- Written examination (main exam period): 60%
- Coursework: 40%

Find out more

For more information about the department, programmes, relevant open days and to browse other modules, visit ucl.ac.uk

Disclaimer: All information correct as of August 2019. Please note that aspects of the module may be subject to change. UCL will make best efforts to inform applicants of major changes.
- Process intensification including dividing wall columns, reactive and hybrid distillation
- Batch distillation
- Multi-component and reactive absorption
- Process selection
- Advanced chromatographic processes (e.g. Simulated Moving Bed)
- Cooling and evaporative crystallization
Advanced Separation Processes (CENG0033)

Description

Aims:
The aim of this module is to extend the students’ knowledge of basic fluid separation processes to more complex systems commonly found in the chemical processing industry. Students will develop:

- a thorough understanding of the underlying chemical & physical phenomena of the processes;
- a working knowledge of methods for design and operation of industrial separation units;
- a working knowledge of simulation tools applicable for the analysis and design; skills to propose energy efficient and sustainable design solutions.

Learning Outcomes:
On completion of this module students should:

- be able to understand the mass and heat transfer phenomena involved in complex fluid separation processes;
- be familiar with the procedures for the design of complex fluid separation equipment in the context of sustainability and sustainable development;
- be able to select an appropriate fluid separation process to meet a required separation performance;
- be able to apply conceptual design methods for simple and complex distillation columns;
- be able to simulate process flowsheets and mass transfer operations with an appropriate level of detail.

Synopsis:
To provide an understanding of the principles of complex fluid separation processes, as well as an ability to suggest energy efficient and sustainable design & operation alternatives thereof, such as:

- Extractive and azeotropic distillation

Key information

<table>
<thead>
<tr>
<th>Key information</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>2019/20</td>
</tr>
<tr>
<td>Credit value</td>
<td>15 (150 study hours)</td>
</tr>
<tr>
<td>Delivery</td>
<td>UGM L7, Campus-based</td>
</tr>
<tr>
<td>Reading List</td>
<td><a href="#">View on UCL website</a></td>
</tr>
<tr>
<td>Tutor</td>
<td>Prof Eva Sorensen</td>
</tr>
<tr>
<td>Term</td>
<td>Term 2</td>
</tr>
<tr>
<td>Timetable</td>
<td><a href="#">View on UCL website</a></td>
</tr>
</tbody>
</table>

Assessment

- Written examination (main exam period): 60%
- Coursework: 40%

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)
- Process intensification including dividing wall columns, reactive and hybrid distillation
- Batch distillation
- Multi-component and reactive absorption
- Process selection
- Advanced chromatographic processes (e.g. Simulated Moving Bed)
- Cooling and evaporative crystallization