

## B-ENG Chemical Engineering stream

| <b>Year and Campus:</b>                    | 2011   |                |  |         |                            |                |  |                        |       |                       |                        |       |                      |                        |       |  |                  |       |                       |                     |       |                      |                        |       |         |                            |                |                                       |                        |       |                          |                                     |       |                                   |            |       |                                       |            |       |                               |            |       |
|--|--|----------------|--|---------|----------------------------|----------------|--|------------------------|-------|-----------------------|------------------------|-------|----------------------|------------------------|-------|--|------------------|-------|-----------------------|---------------------|-------|----------------------|------------------------|-------|---------|----------------------------|----------------|---------------------------------------|------------------------|-------|--------------------------|-------------------------------------|-------|-----------------------------------|------------|-------|---------------------------------------|------------|-------|-------------------------------|------------|-------|
| <b>Coordinator:</b>                        | Associate Professor Sandra Kentish   |                |  |         |                            |                |  |                        |       |                       |                        |       |                      |                        |       |  |                  |       |                       |                     |       |                      |                        |       |         |                            |                |                                       |                        |       |                          |                                     |       |                                   |            |       |                                       |            |       |                               |            |       |
| <b>Contact:</b>                            | <b>Email: <a href="mailto:sandraek@unimelb.edu.au">sandraek@unimelb.edu.au</a> (mailto:sandraek@unimelb.edu.au)</b>  |                |  |         |                            |                |  |                        |       |                       |                        |       |                      |                        |       |  |                  |       |                       |                     |       |                      |                        |       |         |                            |                |                                       |                        |       |                          |                                     |       |                                   |            |       |                                       |            |       |                               |            |       |
| <b>Overview:</b>                           | The Chemical Engineering stream of the Bachelor of Engineering (for students commencing in 2008 and later years).<br>See Bachelor of Engineering (B-ENG)   |                |  |         |                            |                |  |                        |       |                       |                        |       |                      |                        |       |  |                  |       |                       |                     |       |                      |                        |       |         |                            |                |                                       |                        |       |                          |                                     |       |                                   |            |       |                                       |            |       |                               |            |       |
| <b>Objectives:</b>                         | See Bachelor of Engineering (B-ENG)  |                |  |         |                            |                |  |                        |       |                       |                        |       |                      |                        |       |  |                  |       |                       |                     |       |                      |                        |       |         |                            |                |                                       |                        |       |                          |                                     |       |                                   |            |       |                                       |            |       |                               |            |       |
| <b>Structure &amp; Available Subjects:</b> | Completion of 400 points of study culminating in a design project and a research project in the final year.<br>The structure of the Bachelor of Engineering degree requires completion of specific subjects as part of this stream. The majority of subjects have one or more prerequisites and therefore the sequence in which subjects are taken is very important. It is unlikely that prerequisite waivers will be granted for these engineering subjects and therefore students should take care to select subjects in one study period that satisfy prerequisites for subjects in later study periods.   |                |  |         |                            |                |  |                        |       |                       |                        |       |                      |                        |       |  |                  |       |                       |                     |       |                      |                        |       |         |                            |                |                                       |                        |       |                          |                                     |       |                                   |            |       |                                       |            |       |                               |            |       |
| <b>Subject Options:</b>                    | <p>The following subjects are required for this stream of the Bachelor of Engineering.</p> <p><b>First Year (normally 100 points taken in Year 1)</b></p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>ENGR10004 Engineering Systems Design 1</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> <tr> <td>CHEM10003 Chemistry 1</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> <tr> <td>MAST10005 Calculus 1</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> <tr> <td>ENGR10003 Engineering Systems Design 2</td> <td>Not offered 2011</td> <td>12.50</td> </tr> <tr> <td>CHEM10004 Chemistry 2</td> <td>January, Semester 2</td> <td>12.50</td> </tr> <tr> <td>MAST10006 Calculus 2</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> </tbody> </table> <p>Plus</p> <ul style="list-style-type: none"> <li># Two breadth subjects (i.e. 25 credit points total)</li> </ul> <p>N.B.</p> <ul style="list-style-type: none"> <li># Students who have completed VCE Specialist Mathematics (or equivalent) are exempt from MAST10005 Calculus 1 and should therefore enrol in MAST10006 Calculus 2 and MAST10007 Linear Algebra.</li> <li># Students with a high level of achievement in mathematics may enrol in both MAST10008 Accelerated Mathematics 1 and MAST10009 Accelerated Mathematics 2 instead of both MAST10006 Calculus 2 and MAST10007 Linear Algebra.</li> </ul> <p><b>Second Year (normally 100 points taken in Year 2)</b></p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>CHEN20007 Chemical Process Analysis 1</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> <tr> <td>MAST10007 Linear Algebra</td> <td>Summer Term, Semester 1, Semester 2</td> <td>12.50</td> </tr> <tr> <td>CHEM20018 Reactions and Synthesis</td> <td>Semester 1</td> <td>12.50</td> </tr> <tr> <td>CHEN20008 Chemical Process Analysis 2</td> <td>Semester 2</td> <td>12.50</td> </tr> <tr> <td>CHEN20009 Transport Processes</td> <td>Semester 2</td> <td>12.50</td> </tr> </tbody> </table> |                |  | Subject | Study Period Commencement: | Credit Points: | ENGR10004 Engineering Systems Design 1 | Semester 1, Semester 2 | 12.50 | CHEM10003 Chemistry 1 | Semester 1, Semester 2 | 12.50 | MAST10005 Calculus 1 | Semester 1, Semester 2 | 12.50 | ENGR10003 Engineering Systems Design 2 | Not offered 2011 | 12.50 | CHEM10004 Chemistry 2 | January, Semester 2 | 12.50 | MAST10006 Calculus 2 | Semester 1, Semester 2 | 12.50 | Subject | Study Period Commencement: | Credit Points: | CHEN20007 Chemical Process Analysis 1 | Semester 1, Semester 2 | 12.50 | MAST10007 Linear Algebra | Summer Term, Semester 1, Semester 2 | 12.50 | CHEM20018 Reactions and Synthesis | Semester 1 | 12.50 | CHEN20008 Chemical Process Analysis 2 | Semester 2 | 12.50 | CHEN20009 Transport Processes | Semester 2 | 12.50 |
| Subject                                    | Study Period Commencement:   | Credit Points: |  |         |                            |                |  |                        |       |                       |                        |       |                      |                        |       |  |                  |       |                       |                     |       |                      |                        |       |         |                            |                |                                       |                        |       |                          |                                     |       |                                   |            |       |                                       |            |       |                               |            |       |
| ENGR10004 Engineering Systems Design 1     | Semester 1, Semester 2   | 12.50          |  |         |                            |                |  |                        |       |                       |                        |       |                      |                        |       |  |                  |       |                       |                     |       |                      |                        |       |         |                            |                |                                       |                        |       |                          |                                     |       |                                   |            |       |                                       |            |       |                               |            |       |
| CHEM10003 Chemistry 1                      | Semester 1, Semester 2   | 12.50          |  |         |                            |                |  |                        |       |                       |                        |       |                      |                        |       |  |                  |       |                       |                     |       |                      |                        |       |         |                            |                |                                       |                        |       |                          |                                     |       |                                   |            |       |                                       |            |       |                               |            |       |
| MAST10005 Calculus 1                       | Semester 1, Semester 2   | 12.50          |  |         |                            |                |  |                        |       |                       |                        |       |                      |                        |       |  |                  |       |                       |                     |       |                      |                        |       |         |                            |                |                                       |                        |       |                          |                                     |       |                                   |            |       |                                       |            |       |                               |            |       |
| ENGR10003 Engineering Systems Design 2     | Not offered 2011   | 12.50          |  |         |                            |                |  |                        |       |                       |                        |       |                      |                        |       |  |                  |       |                       |                     |       |                      |                        |       |         |                            |                |                                       |                        |       |                          |                                     |       |                                   |            |       |                                       |            |       |                               |            |       |
| CHEM10004 Chemistry 2                      | January, Semester 2  | 12.50          |  |         |                            |                |  |                        |       |                       |                        |       |                      |                        |       |  |                  |       |                       |                     |       |                      |                        |       |         |                            |                |                                       |                        |       |                          |                                     |       |                                   |            |       |                                       |            |       |                               |            |       |
| MAST10006 Calculus 2                       | Semester 1, Semester 2   | 12.50          |  |         |                            |                |  |                        |       |                       |                        |       |                      |                        |       |  |                  |       |                       |                     |       |                      |                        |       |         |                            |                |                                       |                        |       |                          |                                     |       |                                   |            |       |                                       |            |       |                               |            |       |
| Subject                                    | Study Period Commencement:   | Credit Points: |  |         |                            |                |  |                        |       |                       |                        |       |                      |                        |       |  |                  |       |                       |                     |       |                      |                        |       |         |                            |                |                                       |                        |       |                          |                                     |       |                                   |            |       |                                       |            |       |                               |            |       |
| CHEN20007 Chemical Process Analysis 1      | Semester 1, Semester 2   | 12.50          |  |         |                            |                |  |                        |       |                       |                        |       |                      |                        |       |  |                  |       |                       |                     |       |                      |                        |       |         |                            |                |                                       |                        |       |                          |                                     |       |                                   |            |       |                                       |            |       |                               |            |       |
| MAST10007 Linear Algebra                   | Summer Term, Semester 1, Semester 2  | 12.50          |  |         |                            |                |  |                        |       |                       |                        |       |                      |                        |       |  |                  |       |                       |                     |       |                      |                        |       |         |                            |                |                                       |                        |       |                          |                                     |       |                                   |            |       |                                       |            |       |                               |            |       |
| CHEM20018 Reactions and Synthesis          | Semester 1   | 12.50          |  |         |                            |                |  |                        |       |                       |                        |       |                      |                        |       |  |                  |       |                       |                     |       |                      |                        |       |         |                            |                |                                       |                        |       |                          |                                     |       |                                   |            |       |                                       |            |       |                               |            |       |
| CHEN20008 Chemical Process Analysis 2      | Semester 2   | 12.50          |  |         |                            |                |  |                        |       |                       |                        |       |                      |                        |       |  |                  |       |                       |                     |       |                      |                        |       |         |                            |                |                                       |                        |       |                          |                                     |       |                                   |            |       |                                       |            |       |                               |            |       |
| CHEN20009 Transport Processes              | Semester 2   | 12.50          |  |         |                            |                |  |                        |       |                       |                        |       |                      |                        |       |  |                  |       |                       |                     |       |                      |                        |       |         |                            |                |                                       |                        |       |                          |                                     |       |                                   |            |       |                                       |            |       |                               |            |       |

|  |                                     |       |
|--|-------------------------------------|-------|
| MAST20029 Engineering Mathematics          | Summer Term, Semester 1, Semester 2 | 12.50 |
| ENGR30001 Fluid Mechanics & Thermodynamics | Semester 1, Semester 2              | 12.50 |

Plus

# One breadth subject (i.e. 12.5 credit points total)

N.B.

# Students who have completed VCE Specialist Mathematics (or equivalent) and completed either both MAST10006 Calculus 2 and MAST10007 Linear Algebra or both MAST10008 Accelerated Mathematics 1 and MAST10009 Accelerated Mathematics 2 in Year 1 can replace MAST10007 Linear Algebra in the table above with a science elective.

# A science elective is any subject available as science credit in the Bachelor of Science course (B-SCI). Refer to that course entry for a full list of subjects. Science electives may have prerequisites.

### Third Year (normally 100 points taken in Year 3)

| Subject   | Study Period Commencement: | Credit Points: |
|---|----------------------------|----------------|
| CHEN30001 Reactor Engineering                   | Semester 1                 | 12.50          |
| CHEN30005 Heat and Mass Transport Processes     | Semester 1                 | 12.50          |
| CHEN90020 Chemical Engineering Management       | Semester 1                 | 12.50          |
| CHEN30014 Bioprocess Engineering                | Semester 1                 | 12.50          |
| CHEN30009 Process Dynamics and Control          | Semester 2                 | 12.50          |
| CHEN90007 Advanced Thermo & Reactor Engineering | Semester 2                 | 12.50          |
| CHEN90017 Process Engineering Case Studies      | Semester 2                 | 12.50          |

Plus one Chemical Engineering elective selected from:

| Subject                                | Study Period Commencement: | Credit Points: |
|--|----------------------------|----------------|
| CHEN90011 Bioenvironmental Engineering | Semester 2                 | 12.50          |
| BIEN30001 Bionanoengineering           | Semester 2                 | 12.50          |

### Fourth Year (normally 100 points taken in Year 4)

| Subject  | Study Period Commencement:          | Credit Points: |
|--|-------------------------------------|----------------|
| CHEN90012 Process Equipment Design                 | Semester 1                          | 12.50          |
| CHEN90013 Process Engineering                      | Semester 1                          | 12.50          |
| CHEN90018 Particle Mechanics and Processing        | Semester 1                          | 12.50          |
| CHEN90019 Advanced Heat & Mass Transport Processes | Semester 1                          | 12.50          |
| CHEN90022 Chemical Engineering Design Project      | Semester 2                          | 25             |
| CHEN90023 Chemical Engineering Research Project    | Summer Term, Semester 1, Semester 2 | 25             |

**Notes:**

Students who completed third year in 2010 will have taken BIEN30001 Bionanoengineering as a core subject instead of CHEN90017 Process Engineering Case Studies.

**Related Course(s):**

Bachelor of Engineering