

# Chemical Biology, M Sc in Engineering

300 credits

Civilingenjör i kemisk biologi - med valbar utgång till  
naturvetenskaplig kandidat

6CKEB

Valid from: 2015 Spring semester

**Determined by**

Board of Studies for Chemistry, Biology  
and Biotechnology

**Date determined**

## Entry requirements

### Degree in Swedish

Civilingenjör 300 hp och Teknologie master 120 hp alt. Naturvetenskaplig kandidat, 180 hp

## Curriculum

### Semester 4 (Spring 2017)

| Course code     | Course name                 | Credits | Level | Timetable module | ECV |
|-----------------|-----------------------------|---------|-------|------------------|-----|
| <b>Period 1</b> |                             |         |       |                  |     |
| TATA83          | Calculus, several variables | 6       | G1X   | 1                | C   |
| TFKE43          | Spectroscopy and Kinetics   | 6       | G1X   | 3                | C   |
| TFYY55          | Physics                     | 6*      | G2X   | 2                | C   |
| <b>Period 2</b> |                             |         |       |                  |     |
| NBIC52          | Molecular Genetics          | 6       | G2X   | 2                | C   |
| TFKE36          | Biochemistry 2              | 6       | G2X   | 1/4              | C   |
| TFYY55          | Physics                     | 6*      | G2X   | 3                | C   |
| TPTE06          | Industrial Placement        | 6       | G1X   | -                | E   |

### Semester 5 (Autumn 2017)

| Course code     | Course name                      | Credits | Level | Timetable module | ECV |
|-----------------|----------------------------------|---------|-------|------------------|-----|
| <b>Period 1</b> |                                  |         |       |                  |     |
| TFKE37          | Biological Measurements          | 6       | G2X   | -                | C   |
| TFKE38          | Gene Technology                  | 3       | G2X   | -                | C   |
| TFKE39          | Project Course; Chemical Biology | 6       | G2X   | -                | C   |
| <b>Period 2</b> |                                  |         |       |                  |     |
| TFKE17          | Physical Chemistry               | 6       | G1X   | 3                | C   |
| TFTB45          | Bioinformatics                   | 3       | G2X   | 1                | C   |
| TSRT03          | Biological Automatic Control     | 6       | G2X   | 4                | C   |

## Semester 6 (Spring 2018)

| Course code     | Course name  | Credits | Level | Timetable module | ECV |
|-----------------|--|---------|-------|------------------|-----|
| <b>Period 1</b> |  |         |       |                  |     |
| TAMS28          | Mathematical Statistics, First Course                        | 6       | G2X   | 4                | C   |
| TBMT37          | Models in System Biology                                     | 2       | G2X   | 3                | C   |
| TFKE46          | Protein Chemistry  | 6       | A1X   | 1/2              | C   |
| TFKE55          | Protein Engineering and Project Management, Bachelor Project | 16*     | G2X   | 1/2              | C   |
| <b>Period 2</b> |  |         |       |                  |     |
| TFKE55          | Protein Engineering and Project Management, Bachelor Project | 16*     | G2X   | 1/2/3/4          | C   |

## Semester 7 (Autumn 2018)

*Specialisation: Industrial Biotechnology and Production*

| Course code     | Course name                                | Credits | Level | Timetable module | ECV |
|-----------------|--|---------|-------|------------------|-----|
| <b>Period 1</b> |  |         |       |                  |     |
| TANA21          | Scientific Computing                       | 6       | G1X   | 3                | C/E |
| TAOP88          | Engineering Optimization                   | 6       | G2X   | 1                | C/E |
| TATM38          | Mathematical Models in Biology             | 6       | A1X   | 3                | C/E |
| TEAE01          | Industrial Economics, Basic Course         | 6       | G1X   | 2                | E   |
| TGTU91          | Oral and Written Communication             | 6       | G1X   | 2                | E   |
| THEN18          | English                                    | 6*      | G1X   | 4                | E   |
| THFR05          | Communicative French                       | 6*      | G1X   | 4                | E   |
| THSP05          | Spanish                                    | 6*      | G1X   | 4                | E   |
| THTY05          | German                                     | 6*      | G1X   | 4                | E   |
| TKMJ31          | Biofuels for Transportation                | 6       | A1N   | 1                | E   |
| TVCB12          | Genome Analysis                            | 6       | A1X   | 4                | E   |
| TVMB17          | Immunobiology and Immunological Techniques | 6       | G2X   | 1/2              | E   |
| <b>Period 2</b> |  |         |       |                  |     |
| TAMS38          | Experimental Design and Biostatistics      | 6       | A1X   | 3                | C   |
| TFYA32          | Industrial Biotechnology                   | 6       | A1X   | 1                | C   |
| TFKE30          | Analytical Chemistry                       | 6       | G1X   | 4                | E   |
| THEN18          | English                                    | 6*      | G1X   | 4                | E   |
| THFR05          | Communicative French                       | 6*      | G1X   | 4                | E   |
| THSP05          | Spanish                                    | 6*      | G1X   | 4                | E   |
| THTY05          | German                                     | 6*      | G1X   | 4                | E   |
| TKMJ24          | Environmental Engineering                  | 6       | G1N   | 3                | E   |
| TMMS07          | Biomechanics                               | 6       | A1X   | 4                | E   |

*Specialisation: Protein Science and Technology*

| Course code     | Course name                                | Credits | Level | Timetable module | ECV |
|-----------------|--|---------|-------|------------------|-----|
| <b>Period 1</b> |  |         |       |                  |     |
| TFKE57          | Proteomics                                 | 6       | A1X   | 3                | C   |
| TANA21          | Scientific Computing                       | 6       | G1X   | 3                | C/E |
| TAOP88          | Engineering Optimization                   | 6       | G2X   | 1                | C/E |
| TEAE01          | Industrial Economics, Basic Course         | 6       | G1X   | 2                | C/E |
| TFKE33          | Life Scientific Research Review            | 6*      | A1X   | 4                | E   |
| TGTU91          | Oral and Written Communication             | 6       | G1X   | 2                | E   |
| THEN18          | English                                    | 6*      | G1X   | 4                | E   |
| THFR05          | Communicative French                       | 6*      | G1X   | 4                | E   |
| THSP05          | Spanish                                    | 6*      | G1X   | 4                | E   |
| THTY05          | German                                     | 6*      | G1X   | 4                | E   |
| TVMB17          | Immunobiology and Immunological Techniques | 6       | G2X   | 1/2              | E   |
| <b>Period 2</b> |  |         |       |                  |     |
| TAMS38          | Experimental Design and Biostatistics      | 6       | A1X   | 3                | C   |
| TFKE35          | Biostructural Technologies                 | 6       | A1X   | 2                | C   |
| TFKE33          | Life Scientific Research Review            | 6*      | A1X   | 4                | E   |
| TFKE48          | Biomolecular Disease Processes             | 6       | A1X   | 1                | E   |
| TFYA32          | Industrial Biotechnology                   | 6       | A1X   | 1                | E   |
| TGTU49          | History of Technology                      | 6       | G1X   | 3                | E   |
| THEN18          | English                                    | 6*      | G1X   | 4                | E   |
| THFR05          | Communicative French                       | 6*      | G1X   | 4                | E   |
| THSP05          | Spanish                                    | 6*      | G1X   | 4                | E   |
| THTY05          | German                                     | 6*      | G1X   | 4                | E   |

## Semester 8 (Spring 2019)

### *Specialisation: Industrial Biotechnology and Production*

| Course code     | Course name   | Credits | Level | Timetable module | ECV |
|-----------------|---|---------|-------|------------------|-----|
| <b>Period 1</b> |   |         |       |                  |     |
| TFTB32          | Design of Biotechnical Process and Production Systems, Project Course | 6*      | A1X   | 1                | C   |
| TMMT03          | Biotechnical Production Systems                                       | 6       | A1X   | 3                | C   |
| TMQU46          | Quality Management  | 6       | G2X   | 4                | C   |
| TBMI26          | Neural Networks and Learning Systems                                  | 6       | A1X   | 2                | E   |
| TFYA85          | Alternative Energy Sources and their Applications                     | 6       | G2X   | 4                | E   |
| TGTU01          | Technology and Ethics   | 6       | G1X   | 1                | E   |
| TSRT07          | Industrial Control Systems  | 6       | A1X   | 2                | E   |
| <b>Period 2</b> |   |         |       |                  |     |
| NKED20          | Drug Discovery and Pharmaceutical Development                         | 6       | A1X   | 2                | C   |
| TFTB32          | Design of Biotechnical Process and Production Systems, Project Course | 6*      | A1X   | 1                | C   |
| TFTB39          | Biotechnology Manufacturing   | 6       | A1X   | 3/4              | C   |
| NKED82          | Biomolecular Design   | 6       | A1X   | 1                | E   |

*Specialisation: Protein Science and Technology*

| Course code     | Course name  | Credits | Level | Timetable module | ECV |
|-----------------|--|---------|-------|------------------|-----|
| <b>Period 1</b> |  |         |       |                  |     |
| TFKE58          | Applied Structural Biology                         | 6*      | A1X   | 3                | C   |
| TFTB34          | Biosensor Technology                               | 6       | A1X   | 2                | C   |
| TMQU46          | Quality Management                                 | 6       | G2X   | 4                | C/E |
| NBID64          | Molecular Physiology and Cell Signaling Mechanisms | 6       | A1X   | 2                | E   |
| TBMI26          | Neural Networks and Learning Systems               | 6       | A1X   | 2                | E   |
| TFTB35          | Surface Science                                    | 6       | A1X   | 1                | E   |
| TFYA85          | Alternative Energy Sources and their Applications  | 6       | G2X   | 4                | E   |
| TGTU01          | Technology and Ethics                              | 6       | G1X   | 1                | E   |
| TSRT07          | Industrial Control Systems                         | 6       | A1X   | 2                | E   |
| <b>Period 2</b> |  |         |       |                  |     |
| TFKE58          | Applied Structural Biology                         | 6*      | A1X   | 4                | C   |
| TFKE61          | Industrial Enzyme Technology                       | 6       | A1X   | 3                | C   |
| NKED20          | Drug Discovery and Pharmaceutical Development      | 6       | A1X   | 2                | C/E |
| NKED82          | Biomolecular Design                                | 6       | A1X   | 1                | C/E |
| TGTU83          | Philosophy of Science                              | 6       | G1X   | 4                | E   |



## Semester 9 (Autumn 2019)

### *Specialisation: Industrial Biotechnology and Production*

| Course code     | Course name                               | Credits | Level | Timetable module | ECV |
|-----------------|---|---------|-------|------------------|-----|
| <b>Period 1</b> |   |         |       |                  |     |
| TEIO94          | Entrepreneurship and Idea Development     | 6*      | G2X   | 3                | C   |
| TDDC76          | Programming and Data Structures           | 8*      | G2X   | 2                | E   |
| TEIO90          | Innovation Management                     | 6       | A1X   | 2                | E   |
| TFTB46          | Advanced Bioinformatics                   | 6       | A1X   | 2                | E   |
| TFYA47          | Surfaces and Interfaces                   | 6       | A1X   | 2                | E   |
| TRTE18          | The Biogas Process                        | 6       | A1X   | 1                | E   |
| TSRT62          | Modelling and Simulation                  | 6       | A1X   | 3                | E   |
| TVMB26          | Molecular Virology                        | 6       | A1X   | 1                | E   |
| <b>Period 2</b> |   |         |       |                  |     |
| TEIO94          | Entrepreneurship and Idea Development     | 6*      | G2X   | 4                | C   |
| TAOP61          | Optimization of Realistic Complex Systems | 6       | A1X   | 3                | E   |
| TDDC76          | Programming and Data Structures           | 8*      | G2X   | 2                | E   |
| TGTU04          | Leadership                                | 6       | G2X   | 2                | E   |
| TGTU49          | History of Technology                     | 6       | G1X   | 3                | E   |
| TMQU12          | Lean Production                           | 6       | A1X   | 2                | E   |
| TVCB13          | Stem Cell Engineering                     | 6       | A1X   | 3                | E   |

*Specialisation: Protein Science and Technology*

| Course code     | Course name                               | Credits | Level | Timetable module | ECV |
|-----------------|---|---------|-------|------------------|-----|
| <b>Period 1</b> |   |         |       |                  |     |
| TEIO94          | Entrepreneurship and Idea Development     | 6*      | G2X   | 3                | C   |
| TFTB46          | Advanced Bioinformatics                   | 6       | A1X   | 2                | C   |
| TATM38          | Mathematical Models in Biology            | 6       | A1X   | 3                | C/E |
| TEAE01          | Industrial Economics, Basic Course        | 6       | G1X   | 2                | C/E |
| TSRT62          | Modelling and Simulation                  | 6       | A1X   | 3                | C/E |
| TRTE18          | The Biogas Process                        | 6       | A1X   | 1                | E   |
| TVMB26          | Molecular Virology                        | 6       | A1X   | 1                | E   |
| <b>Period 2</b> |   |         |       |                  |     |
| TEIO94          | Entrepreneurship and Idea Development     | 6*      | G2X   | 4                | C   |
| TGTU04          | Leadership                                | 6       | G2X   | 2                | C/E |
| TAOP61          | Optimization of Realistic Complex Systems | 6       | A1X   | 3                | E   |
| TFKE30          | Analytical Chemistry                      | 6       | G1X   | 4                | E   |
| TFYA30          | Supramolecular Chemistry                  | 6       | A1X   | 2                | E   |
| TKMJ24          | Environmental Engineering                 | 6       | G1N   | 3                | E   |
| TVCB13          | Stem Cell Engineering                     | 6       | A1X   | 3                | E   |

**Semester 10 (Spring 2020)**

*Specialisation: Industrial Biotechnology and Production*

| Course code     | Course name                      | Credits | Level | Timetable module | ECV |
|-----------------|----------------------------------|---------|-------|------------------|-----|
| <b>Period 1</b> |                                  |         |       |                  |     |
| TQXX33          | Degree project - Master's Thesis | 30*     | A1X   | -                | C   |
| <b>Period 2</b> |                                  |         |       |                  |     |
| TQXX33          | Degree project - Master's Thesis | 30*     | A1X   | -                | C   |

*Specialisation: Protein Science and Technology*

| Course code     | Course name                      | Credits | Level | Timetable module | ECV |
|-----------------|----------------------------------|---------|-------|------------------|-----|
| <b>Period 1</b> |                                  |         |       |                  |     |
| TQXX33          | Degree project - Master's Thesis | 30*     | A1X   | -                | C   |
| <b>Period 2</b> |                                  |         |       |                  |     |
| TQXX33          | Degree project - Master's Thesis | 30*     | A1X   | -                | C   |

ECV = Elective / Compulsory /Voluntary

\*The course is divided into several semesters and/or periods