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The Faculty of Health, Science and Technology

Chemical Engineering

**Course syllabus**

**Introduction Essay in Chemical Engineering**

**Course code:** 2KTE002

**Course title:**  Introduction essay in chemical engineering

 *Introduktionsuppsats Kemiteknik*

**Subject**: Chemical engineering

**Credits:** 5

**Education cycle:** Third (doctoral)

**Syllabus approval**

The syllabus was approved by the Faculty of Health, Science and Technology on
25 September 2024, effective from the autumn semester 2024 at Karlstad University.

**Language of instruction**

English or Swedish.

**Entry requirements and selection**

Students must be admitted to the doctoral programme in chemical engineering. The course is aimed primarily at doctoral students at Karlstad University, and secondarily at doctoral students at other universities.

**Learning outcomes**

Upon completion of the course, the doctoral student should be able to:

* summarise and analyse literature related to the thesis project
* provide an overview of the general knowledge base and current forefront of research in the field of study
* provide an overview of the connection between the current field of research and sustainable development and society at large.

**Course content**

Instruction takes place in the form of independent work and supervision from the doctoral student’s main supervisor, assistant supervisor or another person appointed by the main supervisor.

**Reading list**

The reading list of the course mainly consists of research papers which are selected by the doctoral student following consultation with his or her main supervisor.

**Examination**

The examination consists of an essay written in English. The essay is presented at a seminar in the presence of the doctoral student’s supervisor and examiner as well as other interested parties.

**Grades**

One of the grades Pass (G) or Fail (U) is awarded in the examination of the course.

**Quality assurance**

A written evaluation is performed after the end of the course. The result of the evaluation is collated and made available in accordance with The Higher Education Ordinance, Chap. 1, Sect. 14.

**Course certificate**

Course certificates are issued upon request.

## **Goal matrix**

The course contributes to partial fulfilment of the goals marked with an X below.

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|   | **Doctor** |   |   |   | **Licentiate** |   |
|   | **Knowledge and understanding** |   |   |   | **Knowledge and understanding** |   |
| 1a | Broad knowledge and systematic understanding of the research field |  X |   | 1a | demonstrate knowledge and understanding of the research field |  X |
| 1b | Advanced and up-to-date specialised knowledge in a limited area of this field |  X |   | 1b | Current specialist knowledge in a limited area of this field |  X |
| 1c | Familiarity with research methodology in general and the methods of the specific field of research in particular |  X |   | 1c | Specialised knowledge of research methodology in general and the methods of the specific field of research in particular |  X |
|   | **Competence and skills** |   |   |   | **Competence and skills** |   |
| 2a | Capacity for scholarly analysis and synthesis as well as |  X |   | 2a | demonstrate the ability to identify and formulate issues with scholarly precision critically, autonomously and creatively |  X |
| 2b | to review and assess new and complex phenomena, issues and situations autonomously and critically |   |   | 2b | plan and use appropriate methods to undertake a limited piece of research and other qualified tasks within predetermined time frames in order to contribute to the formation of knowledge |   |
| 3a | demonstrate the ability to identify and formulate issues with scholarly precision critically, autonomously and creatively, and to |   |   | 2c | as well as to evaluate this work, |   |
| 3b | plan and use appropriate methods to undertake research and other qualified tasks within predetermined time frames and to review and evaluate such work |   |   | 3a | Demonstrate the ability in both national and international contexts to present and discuss research and research findings in speech and writing and in dialogue with the academic community | X  |
| 4 | demonstrate through a dissertation the ability to make a significant contribution to the formation of knowledge through his or her own research |   |   | 3b | society in general |   |
| 5a | Demonstrate the ability in both national and international contexts to present and discuss research and research findings authoritatively in speech and writing and in dialogue with the academic community | X  |   | 4 | demonstrate the skills required to participate autonomously in research and development work and to work autonomously in some other qualified capacity. |   |
| 5b | society in general |  |   |   |   |   |
| 6 | demonstrate the ability to identify the need for further knowledge and |   |   |  |   |   |
| 7 | demonstrate the capacity to contribute to social development and support the learning of others both through research and education and in some other qualified professional capacity |   |   |  |   |   |
|   | **Judgement and approach** |   |   |  | **Judgement and approach** |   |
| 8a | Demonstrate intellectual autonomy and disciplinary rectitude as well as |   |   | 5 | demonstrate the ability to make assessments of ethical aspects of his or her own research |   |
| 8b | the ability to make assessments of research ethics, and |   |   | 6 | demonstrate insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used |   |
| 9 | demonstrate specialised insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used. |   |   | 7 | demonstrate the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning. |   |