



Internship AP degree in chemical and biotechnical science

About the study programme

The AP degree in Chemical and Biotechnical Science is a study programme lasting 2½ year. Students gain qualifications to conduct a wide range of laboratory work in many different trades such as the pharmaceutical and food industries, research laboratories, and the chemical industry. Students may find future employment in companies of all sizes in the public and private sectors.

The programme provides a broad theoretical and practical introduction to the field of laboratory work within the following subjects:

- Chemical engineering
- Biotechnology
- Quality assurance



Cphbusiness

Framework

After the third semester (1½ year) of the programme, students must take an internship in a company. Together, this internship and the final exam project constitute a one year, full-time internship. Abroad the internship is fully financed from the Danish Government and working hour is 37 pr. week. (In Denmark the internship is carried out as paid employment).

The internship company is not required to be pre-approved as an internship provider, but an internship agreement is made with an educational plan for the internship. The internship agreement must be approved by Cphbusiness. In addition, an employment contract is drawn up between the student and the company, in which Cphbusiness is not involved.

Shared agreements

There are also the following opportunities through shared agreements:

- The final exam project may be conducted at the school, in which case the internship will be approximately 10 months.
- Students can split their internship between several companies.

Structure of the internship

The internship must be organized so that students acquire knowledge, skills and competencies within in the following areas:

- Analysis technique
- Organisational conditions
- Work environment
- Quality assurance

Analysis techniques must constitute the main part of the internship period.

During the internship, students must achieve the following learning objectives in skills and competencies:

Skills

The student will get the skills to use:

- the laboratory's existing rules for the working environment, including the use of safety equipment and personal protective equipment
- the laboratory's existing quality assurance procedures for documentation of own work and quality assurance of analytical results, methods and equipment
- a broad range of the laboratory's analysis technique methods as well as evaluate and communicate laboratory observations and results to business partners

Competencies

The student will learn to:

- participate in academic and interdisciplinary collaboration
- manage routine laboratory tasks as well as optimisation and developmental situations in the laboratory
- acquire new knowledge, skills and competencies in relation to the laboratory field

The assignments of the intern

During the internship, students must fulfil their learning objectives by completing work assignments for the company. The internship period will be organized to take into account the background and the prior knowledge of the student.

The education is primarily fulfilled through instruction and by the integration of learning objectives into their work. Students participate in working with safety, the work environment, and quality assurance.

Exam project

The interns conclude their studies with an exam project that is based on a practical assignment. Most interns carry out their final exam project at their internship company as an extension of their placement. The exam project is a good opportunity for the company to, for example, get a particular area clarified or receive additional resources to a current development project.

Examples of projects include:

- A thorough clarification of a laboratory task
- Commissioning new equipment/a method
- Introduction of a new procedure/implementation of a procedure
- A defined portion of an existing research project



Division of responsibilities

The host company assigns a supervisor for the student. At the beginning of the internship, the company will work together with the student to develop an internship agreement training plan. The plan must ensure that the learning objectives of the internship are met. The internship coordinator from Cphbusiness can be consulted in preparing the plan if necessary. The final training plan must be approved by the internship coordinator at Cphbusiness.

The student must produce a written report on the internship period, which shows how the learning objectives of the internship were met.

Cphbusiness appoints an internship supervisor who acts as the student's sparring partner during the internship. The internship supervisor also act as a counsellor during the practical exam, and aid with the formulation of the student's problem statement for the final exam as well as act as the examiner on the student's exam project. The supervisor will also visit the student's place of work during the internship period.

Structure and themes of the study programme

1st semester

- Introduction and basic laboratory techniques: Fundamental laboratory techniques and craft, quality assurance, confidence intervals and safety in the chemical laboratory
- Analysis techniques and standardization: Spectrophotometry, chromatography, standards and Excel
- Microbiology: Detection and identification of micro-organisms and safety in the microbiological laboratory

2nd semester

- Genetic engineering: DNA / RNA techniques and cell cultivation
- Proteins and enzymes, purification and characterisation: Methods for the characterisation and purification of proteins and enzymes, the immune system and immunochemical techniques
- 2nd semester project: Independent project with content from the themes of the 2nd semester

3rd semester

- Drug manufacturing: Synthesis and purification of a drug, qualitative and quantitative characterisation. Qualification of equipment and validation of methods, and method adaptation and development. F- and t-tests
- 3. semester project: Project with and in-depth study of an optional subject with content from all the themes

4th semester

- Internship

5th semester

- Internship and final exam project



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The internship

Phase 1

- The student start the internship
- The company and the student develop an internship agreement / education plan
- The internship agreement / education plan is created in an electronic system within 14 days of the internship

Phase 2

- Cphbusiness approves the internship agreement education plan electronically
- The company approves the internship position electronically
- The student will be notified that the internship is approved by all parties

Phase 3

- The internship supervisor visits the student during the internship
- The internship supervisor assesses the internship report
- The internship supervisor provides council on the problem statement for the final exam project