

INTERNSHIP

AP DEGREE IN CHEMICAL AND BIOTECHNICAL SCIENCE

About the study programme

The AP degree in Chemical and Biotechnical Science is a 2½ year study programme. 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 both small- and medium-sized companies in the public and private sectors.

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

- Chemical engineering
- Biotechnology
- Quality assurance
- Occupational health and safety



cphbusiness

COPENHAGEN BUSINESS ACADEMY

Framework

After the third semester (1½ year) of the study programme, students must do 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 by the Danish government, and the work load is 37 hours a week. (In Denmark the internship is carried out as paid employment). It is no requirement that the company must be pre-approved as an internship provider, but an internship agreement is worked out 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 share 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:

- Workplace organization and culture
- Safety/the work environment
- Quality assurance
- Laboratory techniques and craft

Laboratory techniques must make up approximately 70% of the work-time; the other three areas should amount to around 10% each. During the internship, students must achieve the following learning objectives in the fields of skills and competencies:

Skills

The student is able to:

- Adapt to workplace norms, behaviours and values
- Select applicable personal protective equipment
- Document their own work in accordance with quality assurance procedures, including registration and notation in accordance with the allotted requirements
- Use a wide variety of the workplace's analytical approaches and methods

Competencies

The student is able to:

- Cooperate and communicate with the various stakeholders associated with the laboratory

- Plan and carry out laboratory work in a safe and environmentally sound manner
- Assist with the preparation of workplace protocols and assessments
- Assist with maintaining and developing the company's quality assurance procedure
- Assist with the company's validation of equipment and methods
- Plan, implement and evaluate their own work

The interns' assignments

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 students' backgrounds and prior knowledge. 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

Interns complete their studies with an exam project that is based on a practical assignment. Most interns carry out their final exam at their internship company as an extension of their placement. The exam project is a good opportunity for the company, for example, to get a particular area clarified, or receive additional resources for 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 commencement of the internship, the company will work together with the student to develop an internship agreement training plan. The plan must ensure that the objectives of the internship are met. The internship coordinator from Cphbusiness can be consulted in preparing the plan, if need be. The 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. They 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 and safety in chemistry and microbiology laboratories
- Analysis techniques: Spectrophotometry, chromatography, standards and Excel
- Microbiology: Detection and identification of micro organisms

2nd Semester

- Chemical synthesis and purity determination: Qualitative and quantitative characterisation of synthesized products
- Statistics: Confidence intervals, F- and t-tests
- Protein purification and immunochemical techniques: Proteins, methods for the characterisation and purification of proteins, the immune system and immunochemical techniques
- Fermentation and enzyme technology: Enzymes, and methods for the purification and characterisation of enzymes
- 2nd semester project: Independent project with content from the themes of the 1st and 2nd semesters

3rd Semester

- Chemistry techniques: Qualification of equipment, validation of methods, and method adaptation and development
- Biotechnology: DNA/RNA techniques and cell cultivation
- Elective: Project with and in-depth study of an optional subject within chemistry or biotechnology

4th Semester

- Internship

5th Semester

- Internship and final exam project

The internship

Phase 1

- The internship company and the student define a number of tasks for the internship period.
- The student's internship company and the tasks are registered electronically.



Phase 2

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



Phase 3

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

