



Faculty of Technology and Science

PROGRAMME STUDY PLAN
Master Programme in Packaging

Programme Code	TAPAC
Programme Approval	The Programme Study Plan was approved by the Faculty Board of Technology and Science on 21 Oct 2009 and is valid from the autumn semester of 2011 at Karlstad University.
Programme Title	Master Programme Packaging
ECTS Credits	120
Language of Instruction	Swedish and Norwegian or English
Degree Level	Master's
Degree Type	General
Prerequisites	A Bachelor of Science or Technology degree of 180 ECTS cr. in environment and energy engineering, innovation and design engineering, materials or mechanical engineering, or a BA in chemistry or equivalent.

General Information

The aim of the study programme is that students acquire advanced qualifications in the field of packaging with specialisation in one of the programme profile areas. The focus is on packaging functions such as value creation, communication, protecting and preserving properties and sustainable development. Packaging aspects such as user involvement, material, design, construction, logistics and recycling are treated. The programme concludes with one of the profile areas *Bio-based packaging*, *Consumer-based packaging development* or *Food and packaging*. In addition, students have the opportunity to design their *Individual profile*. The programme is offered in conjunction with the University of Life Sciences at Aas, east of Oslo.

Aims

In addition to the requirements specified for a Master's Degree in the Higher Education Ordinance (SFS 2006:1053), students should on completion of the programme be able to:

- give an account of the value-creating functions of packaging throughout its life cycle,
- choose a system for the analysis of packaging solutions and describe its consequences,
- carry out a development project in the field of packaging with the help of design processes,
- decide on a suitable production method and printing technique for a chosen packaging solution,
- give an account of the principles of graphic design and presentation and apply these to packaging design and lay-out,
- give an account of current innovations in the packaging field and identify the need for new solutions regarding functionality and demographic and resource-based development,
- seek information of and relate to current legislation pertaining to packaging.

Profile specific aims***Bio-based packaging***

Upon completion of the programme, students should be able to

- give an account of the bio-based materials and their properties used in different packaging applications
- explain and evaluate how different sub processes in paper production impact on the optical, physical and mechanical properties,
- plan a suitable test method for characterising packaging material based on cellulose fibre and to analyse and interpret data,
- demonstrate specialised knowledge in the coating and printing of cellulose fibre based packaging materials,
- explain and present the conversion processes used to produce biomaterial based packaging,
- select and compile the most important results and conclusions of science publications on bio-based packaging.

Consumer-based packaging development

Upon completion of the programme, students should be able to

- analyse and understand different consumer behaviour in relation to packaging,
- describe theories of consumer behaviour in the choice of products,
- apply the different components of the product, service and design processes to explicit and implicit consumer needs in a multidisciplinary team,
- carry out projects based on product, service and design processes in conjunction with a client.

Food and packaging

Upon completion of the programme, students should be able to

- define the packaging requirements for different edibles,
- define the packaging requirements for distribution of edibles,

- give an account of advantages and disadvantages in using different packaging and packaging solutions for different edibles,
- choose the appropriate packaging for given edibles and their distribution,
- discuss relevant and potential customer demands on packaging and how to meet them,
- communicate with packaging producers, packaging experts and users, with distributors, retailers and recycling facilities,
- give an account of environmental aspects of food packaging in terms of actual packaging and its function to protect foods,
- give an account of recycling requirements on packaging,
- participate in developing new packaging and packaging solutions,
- perform good research and development in the area of food packaging.

Programme Structure

The programme runs over four terms, the last including the degree project. The first two terms consist of required courses in the packaging field to allow students to be familiarised with subject areas relevant for developing new packaging solutions. In the third term, students choose a profile in one of the areas offered: *Bio-based packaging*, *Consumer-based packaging development* or *Food and packaging*.

The programme is offered by Karlstad University and the University of Life Sciences at Aas in conjunction. This means that different techniques of distance education will be used and also that short visits at a campus other than Karlstad will be required for mandatory programme components. Karlstad University is responsible for the profiles *Bio-based packaging* and *Consumer-based packaging development*. Some courses of the profile *Bio-based packaging* might be taught in English. The Aas University is responsible for *Food and packaging* for which the language of instruction is Norwegian. Students can also choose an *Individual profile* in conjunction with the programme director.

Programme Curriculum

Term 1

Introduction to packaging 10 ECTS cr

Pulp, paper and surface treatment engineering 10 ECTS cr

Design and sustainable development 10 ECTS cr

Term 2

Packaging design and production 5 ECTS cr

Packaging print and graphic design 5 ECTS cr

Polymer-based packaging materials 10 ECTS cr

Packaging of the future 5 ECTS cr

Optional course 5 ECTS cr

Term 3

Profile *Consumer-based packaging development*

User innovation 30 ECTS cr

This is a main field of study course for a degree with a Major in Industrial economy.

Profile *Bio-based packaging*

This profile includes course of 30 ECTS cr in the field of bio-based packaging and are required for a degree with a Major in Chemical engineering.

Profile *Food and Packaging*

Introduction to the food industry 5 ECTS cr

Product development 1 10 ECTS cr

Food technology for packaging students 10 ECTS cr

One of the courses:

Milk as raw product 5 ECTS cr

Fish and meat as raw products

Food plants 5 ECTS cr

These courses are required for a Master's degree at the University of Life Sciences at Aas.

Profile *Individual profile*

Students combine Master-level courses with a relevance to the packaging area.

Term 4

Degree project 30 ECTS cr.

For the profile *Consumer-based packaging development* the main field of study for the degree project is *Industrial economy*.

For the profile *Bio-based packaging development* the main field of study for the degree project is *Chemical engineering*

For the profile *Food and Packaging* the degree project must be carried out at the University of Life Sciences at Aas.

Degree

Master of Science

The student's choice of profile will determine the main field of study for the Master's degree.

For the profile *Consumer-based packaging development* the Major is *Industrial economy*.

For the profile *Bio-based packaging development* the major is *Chemical engineering*

Credit Transfer

According to the *Higher Education Ordinance* (Ch 6, § 12-14), students may transfer credits from previously completed university courses subject to approval. Transfer of credits for a course module, or university studies generally, is subject to the approval by the course examiner. Transfer of credits for a full course is subject to the approval by the Rector

Additional Information

Students are not allowed to start working on their Degree Project until they have completed programme courses totalling 60 ECTS cr.

The local regulations for undergraduate studies at Karlstad University stipulate the obligations and rights of students and staff.

The short visits to the University at Aas, Norway, might entail extra cost for students.