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Founded in 1859 as the only Norwegian agricultural post-graduate college, the Norwegian University of Life Sciences (UMB) is now recognised as a leading international centre of knowledge, focused on higher education and research within environmental- and biosciences. UMB focuses specifically on:

- biology
- food
- environment
- land use and natural resource management

UMB together with other research institutes established in Ås make up Norway’s largest bio-science cluster and provides state-of-the-art knowledge on a broad range of disciplines.
UMB’s Vision Statement is

Through education and research, the Norwegian University of Life Sciences (UMB) shall contribute to sustaining the livelihood of present and future generations.

UMB’s Main Objectives are:

- to be a major player in the field of life sciences, focusing on the core disciplines: biology, food and environmental science, land use and natural resource management, as well as associated aesthetic and technical subjects;
- to actively contribute to business development and continue to strengthen the scientific basis for agriculture, aquaculture and other industries based on the utilisation of natural resources.

Education

High professional quality, a high degree of teacher-student interaction and a pleasant social and physical environment characterise education at UMB.

About 240 of the 650 courses at the Bachelor and Master level are taught in English, as well as many PhD level courses. 8 Master level programmes are conducted fully in English. Besides theoretical and scientific education, emphasis is placed on practical training. Taking part of the studies abroad is encouraged in most programmes. For the public and private sector, the Continuing Education Programme offers relevant on-line, research-based courses. All students at UMB are offered housing in the first year of study and dormitories are located within walking distance of campus. Excellent student facilities include 70 different associations and clubs, a student welfare organisation, sports centre, floodlit skiing track and access to the national rowing facility nearby. Since the Norwegian government subsidizes tuition at Bachelor and Master level, students need only to cover their own cost of living expenses. A few scholarships are available for students from developing countries.

Admission

For admission procedures, applications and details on scholarships, see the UMB website (English language option).
Cost of Living

The following estimated costs are for a single student for one semester of 5 months. We would like to point out that this is a minimum budget.

Accommodation NOK 11,000
Food/household NOK 15,000
Books NOK 4,000
Clothing NOK 3,500
Phone NOK 2,000
Local transport NOK 1,000
Semester fee NOK 240
Sports club NOK 300
Student society NOK 200
Leisure NOK 2,500
Total/semester NOK 39,740

If you are staying for a full academic year you should expect to spend 80,000,- on a minimum budget. According to government statistics the average student in Norway spends approx 7,000 - 9,000,- pr. month while studying.

Student Services

UMB is committed to provide students with services to enable them to take full advantage of the opportunities the university and Norway have to offer:

- An extensive orientation programme is offered in August, followed by a weekend trip to a national park in September and a follow-up gathering in November.
- Counseling services including private and confidential consultations provided by qualified professionals to deal with personal or academic issues.
- Guaranteed accommodation on campus (subject to timely application by the student).
**Research**

**Research at UMB** includes basic research and applied research, providing a foundation for education, research training and research geared towards the private sector. Research is focused mainly on Environmental Sciences, Food Science, Biotechnology, Aquaculture and Business Development and has a strong interdisciplinary and international approach. There is a strong link between research and the above-mentioned study programmes; students at Master- and PhD level are often actively involved in many of UMB’s research activities.

**Research is also** carried out in cooperation with the research institutes established at Ås. Together, the university and the institutes represent the largest research environment within life sciences in Norway. UMB is also active through national alliances with other institutions and through institutional partnerships with universities in developing countries. UMB’s health-related research is linked to healthy food, clean water and the environment, and the many related challenges in developing countries.

**International activities**

UMB has exchange agreements with more than 80 universities worldwide, including six Nordic, 44 European and eight North American institutions. Institutional partnerships with universities in developing countries are carried out mainly through the Department of International Environment and Development Studies/Noragric. The objectives of UMB’s cooperation with universities abroad include building strong academic networks, facilitating international exchange and contributing to competence building with universities in the South.
UMB DEPARTMENTS AND CENTRES

DEPARTMENTS
• Department of Animal and Aquacultural Sciences
• Department of Chemistry, Biotechnology and Food Science
• Department of Ecology and Natural Resource Management
• Department of Economics and Resource Management
• Department of Landscape Architecture and Spatial Planning
• Department of Mathematical Sciences and Technology
• Department of Plant and Environmental Sciences
• Department of International Environment and Development Studies, Noragric

CENTRES
• Aquaculture Protein Centre
• Animal Production Experimental Centre
• Centre for Plant Research in Controlled Climate
• Centre for Continuing Education
• Centre for Integrative Genetics

LOCATION
The Norwegian University of Life Sciences is located at Ås, approximately 35 km south of Oslo. The campus park is one of the largest neoclassic parks in Norway and covers some 150 acres. It is used for educational and research purposes as well as for recreation. Easy and fast public transportation from Oslo or Gardermoen International airport is available by train or bus.
- The Norwegian Nobel Committee has challenged the world to broaden the understanding of peace: there can be no peace without equitable development; and there can be no development without sustainable management of the environment in a democratic and peaceful space, said Peace Price Winner Wangari Maathai. She visited UMB and Noragric in February 2005.
Bachelor
Development Studies

Why study Development Studies?

- To learn about a world with increasing competition for resources and markets
- To understand the origin of poverty and conflicts
- To learn about possible actions to improve equity and sustainability
- To experience a different part of the world and get firsthand experience of development problems

What am I studying? Development Studies is an interdisciplinary field where academic depth is achieved through insight into different but complementary fields. The study programme seeks to develop basic knowledge within different disciplines, such as ecology, earth science, land use planning, economics and anthropology, and to analyse development issues in an interdisciplinary way.
The programme focuses on the following development issues:

- Poverty, aid and economics
- Interactions between human and ecological systems
- Conflicts and access to resources

Some courses are taught in English and some in Norwegian. However, one study plan with an emphasis on tropical ecology is available for students without proficiency in Norwegian.

One semester abroad will be arranged at universities in developing countries offering applied courses in rural and urban development. Tuition fees at foreign universities are not covered by UMB/Noragric, but are partly covered by the Norwegian State Educational Loan Fund for eligible students. Noneligible students may choose to fulfil the course requirements at UMB.

**Admission** Applicants with Norwegian secondary education and foreign applicants who meet the Norwegian language requirement, must apply through ‘Samordna Opptak.’

Foreign applicants who do not meet the Norwegian language requirement should apply directly to UMB (procedure available at www.umb.no, deadline March 1). Foreign applicants must meet the minimum requirements for entrance into higher education in Norway and fulfill the English language requirement.

**Opportunities after graduation** The bachelor’s programme may qualify for jobs with Norwegian and international development organisations. Supplemented by pedagogic training, the education may qualify of jobs in the education system.

The programme provides a good basis for further studies. With a bachelor’s degree in Development Studies you can seek admission to the following master’s programmes at UMB:

- Development Studies
- International Environment Studies
- Agroecology

The degree may also qualify for similar studies at other universities. With certain course combinations during the bachelor’s programme, students may qualify for other master’s programmes at UMB and elsewhere.

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**For more information?**

- Information about application and general questions about the study:
  Students Information Office.
  P.O.Box 5003, 1432 Ås, Norway
  tlf.: +47 94 96 61 00
  e-mail: opptak@umb.no
  internett: http://www.umb.no/sit

- More information about the courses:
  Study coordinator Noragric,
  tlf: +47 64 96 53 41,
  e-mail: noragric-bachelorinfo@umb.no
  http://www.umb.no/
### Study Programme Structure*

#### Development Studies - 180 ects

<table>
<thead>
<tr>
<th>Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Core courses</strong></td>
<td></td>
</tr>
<tr>
<td><strong>eds105</strong></td>
<td>Introduction to Development Studies</td>
</tr>
<tr>
<td><strong>eds110</strong></td>
<td>Social Anthropology</td>
</tr>
<tr>
<td><strong>eds270</strong></td>
<td>Development Aid and Politics</td>
</tr>
<tr>
<td><strong>eds225</strong></td>
<td>Linking Ecological and Social Resilience</td>
</tr>
<tr>
<td><strong>eds280</strong></td>
<td>Land Rights: An Introduction to Theory, Applications, and Policy</td>
</tr>
<tr>
<td><strong>eds275</strong></td>
<td>Writing Seminar</td>
</tr>
<tr>
<td><strong>ecol110</strong></td>
<td>Tropical Ecology and Development</td>
</tr>
<tr>
<td><strong>utv1sem</strong></td>
<td>Exchange</td>
</tr>
<tr>
<td><strong>b15frie-nor</strong></td>
<td>Independent work</td>
</tr>
<tr>
<td><strong>Optional courses</strong></td>
<td>65</td>
</tr>
<tr>
<td><strong>One of:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>eds115</strong></td>
<td>Social Science Statistics and Methods</td>
</tr>
<tr>
<td><strong>stat100</strong></td>
<td>Statistics</td>
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<tr>
<td><strong>One of:</strong></td>
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<tr>
<td><strong>ecn110</strong></td>
<td>Innføring i samfunnsøkonomi - mikro</td>
</tr>
<tr>
<td><strong>ecn111</strong></td>
<td>Introduction to Economics - Micro</td>
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<tr>
<td><strong>One of:</strong></td>
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<tr>
<td><strong>phi100</strong></td>
<td>Examen Philosophicum</td>
</tr>
<tr>
<td><strong>phi101</strong></td>
<td>Examen Philosophicum - seminarversjon</td>
</tr>
<tr>
<td><strong>b15frie-nor</strong></td>
<td>Independent work</td>
</tr>
</tbody>
</table>

*We reserve the right to make changes*
Why study Agroecology? A master in agroecology is the right study for you if:

- you are concerned about the sustainability of agriculture and food systems
- a broader understanding of agriculture is desired
- environmental and resource stewardship is important to you
- you want to work in international teams solving complex problems
- you want to link knowledge to personal growth
- you want to make a difference

What can you use this qualification for? The programme prepares students for a wide range of positions related to conventional and organic agriculture and food, e.g., within the advisory service, development projects, industry sales and technical support, management of agricultural and natural resources, environmental protection, and education.
**Contents of the programme?**  The programme starts with a full semester (30 credits) introduction to the structure and functioning of agroecosystems, methodologies for describing, analysing and improving such systems, and skills for individual and group-based learning. In this semester there is a holistic and interdisciplinary approach to current issues in farming and food systems. The didactic approach is experience-based learning supported by lectures, seminars and supervision related to project work on real-life cases. The evaluation of your own learning is an integral part of the learning process. The evaluation emphasises your ability to develop action competency by linking theory and practice and is based on written group reports and individual assignments, your contribution to the class, and oral exams.

After the first semester, you can develop an area of concentration on various topics constituting 30 or 60 credits. The programme offers many options for individual tailoring of the students’ subject profiles and for studying abroad at universities that cooperate with UMB. The study programme concludes with a master degree thesis constituting either 30 or 60 credits. Writing a 60 credits thesis, you have to take a special syllabus consisting of 5 credits.

**Study programme structure?**  The sustainability of farming and food-related activities is important worldwide. This part of society - the agroecosystem - is complex, multifunctional and rapidly changing. Therefore there is a need for people with a holistic and scientific basis to analyse and improve such activities. In a diverse learning process, you will gain knowledge about agronomic, ecological, economic and social aspects of activities related to farming and food, you will develop action skills and communication abilities, and you will deal with attitudes and values.

Your learning will take place in lectures, seminars, group work, real-life case studies with an interdisciplinary approach, and through reflection on links between real-life situations and theory. Your agroecological knowledge and skills will in large part be obtained through case studies involving the comparison of ecological (organic) and conventional food production as well as local and global food systems. This will help you to understand the long-term agronomic, economic, social and environmental impacts of different strategies.

**Requirements**  Applicants must demonstrate English language ability in accordance with the UMB regulations for programmes taught in English. Applicants must hold a Bachelor’s degree or equivalent qualification from university-level studies in agriculture, ecology, biology or a relevant social science.
Study programme structure*

Agroecology - 120 ects

<table>
<thead>
<tr>
<th>Courses</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Core courses</td>
<td></td>
</tr>
<tr>
<td>pae302 Agroecology and Farming Systems</td>
<td>15</td>
</tr>
<tr>
<td>pae303 Agroecology and Food Systems</td>
<td>15</td>
</tr>
<tr>
<td>m30-ipm Master thesis</td>
<td>30</td>
</tr>
<tr>
<td>m60-ipm ** Master thesis</td>
<td>60</td>
</tr>
</tbody>
</table>

* we reserve the right to make changes
**writing a 60 credits thesis, you have to take a special syllabus consisting of 5 credits

The Master’s degree study programme is planned in conjunction with the relevant study coordinator. Further information on the structure of the programme can be found on this Master’s programme’s web page.

For more information?

- Information about application and general questions about the study:
  Students Information Office.
  P.O.Box 5003, 1432 Ås, Norway
  tlf.: +47 94 96 61 00
  e-mail: opptak@umb.no
  internett: http://www.umb.no/sit

- More information about the courses:
  Study coordinator Ingrid F. Bugge
  tlf.: +47 64 96 55 25
  e-mail: ingrid.bugge@umb.no

Former student

Kjartan Åsebo
Inspector at advanced level in secondary school

“My job as an inspector is very all-round. It is very meaningful to work with young people. People should be happy and be able to develop. I chose UMB because of the options available in the study programme and because UMB was the only one in Norway that offered the education I wanted. An English Master’s degree gave me that something extra. I have had considerable use of the contact net from my study period, and my studies have given me a good knowledge in the subjects I teach. The strong emphasis put on methods have been of considerable practical use in my work.”

Kjartan Åsebo is responsible for the programme use of natural resources. His work involves teaching, administrative responsibilities and responsibility for the farm and the boarding school.
Why study Aquaculture?

- Aquaculture is an area with great potential and strongly influenced by new thinking
- The industry is still developing new species, products and technology
- UMB has long traditions in education and research in aquaculture with experts in breeding, nutrition/quality and production techniques

What can you use this qualification for?

- Challenging position as, for example, general manager in a fish farm, person responsible for quality of the whole production process, establishing new species, etc.
- Resource person/middle leader in the industry producing feed, in fish breeding, sales or administration.
- Higher education as a researcher in an international arena.
**What will I learn?**  The Master’s degree programme in aquaculture at UMB gives you many opportunities! The programme can give you broad and interdisciplinary strengths or specialisation in a subject that you are particularly interested in. The lectures are mainly given in English. You study obligatory courses in fish breeding, fish nutrition, special course in aquaculture and planning and design of aquacultural plants. At the same time you can choose courses in breeding, nutrition, environmental engineering, product quality, logistics and economy preferably combined with one or two semesters abroad.

**Programme content**  If you do not have a Bachelor’s degree in aquaculture from UMB, or have taken little breeding and nutrition or other courses, it is necessary to take these subjects in addition to be qualified for the programme. Obligatory subjects are advanced courses in breeding and nutrition, production technology for new species, experimental design, aquaculture special course and design of equipment for Norwegian aquaculture facilities. You write your Master’s thesis in the last spring semester.

**Admission requirements**  Bachelor’s degree with 180 credits. The 180 credit shall include minimum: 10 credits in Mathematics, 10 credits in chemistry/physics, 10 credits in statistics and 60 credits in biology courses.

**Study programme structure**  The Master’s degree study programme is planned in conjunction with the relevant study coordinator. Further information on the structure of the programme can be found on this Master’s programme’s webpage.

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**For more information?**

- Information about application and general questions about the study:
  Students Information Office.
  P.O.Box 5003, 1432 Ås, Norway
  tlf.: +47 94 96 61 00
  e-mail: opptak@umb.no
  internett: http://www.umb.no/sit

- More information about the courses:
  Study coordinator
  Marit Ensby
  tlf.: 64 96 51 26
  e-post: marit.ensby@umb.no
  Megumi Ohta Fog
  tlf.: 64 96 51 54
  e-post: megumi.fog@umb.no
**Study programme structure***

### Aquaculture - 120 ects

<table>
<thead>
<tr>
<th>Courses</th>
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<tbody>
<tr>
<td><strong>Core courses</strong></td>
<td></td>
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<tr>
<td>akx300 Aquaculture, Special Course</td>
<td>5</td>
</tr>
<tr>
<td>ake310 Aquaculture Nutrition</td>
<td>10</td>
</tr>
<tr>
<td>aka310 Fish Breeding, Reproduction and Gene Technology</td>
<td>10</td>
</tr>
<tr>
<td>tat350 Planning and Design of Intensive Fish Farms</td>
<td>10</td>
</tr>
</tbody>
</table>

**Proposal to optional courses related to aquaculture (35 credits)**

| Breeding | |
| aca250 Organisation of Breeding Programme in Aquaculture | 5 |
| hfa300 Animal Breeding Plans | 10 |
| hfa301 Calculation of Breeding Values | 10 |
| hfa303 Biological Aspects of Animal Breeding | 5 |

| Nutrition | |
| hfe202 Concentrate Feed | 5 |
| hfe203 Animal Nutrition, Selected Topics | 5 |
| hfe303 Nutrition and Optimisation of Diets for Monogastric Animals | 10 |
| hfe305 Feed Manufacturing Technology | 10 |
| hfe306 Advanced Feed Manufacturing Technology | 5 |
| hfe307 Feed Production Planning and Management | 15 |
| hfe308 Feed Optimisation for Different Species | 10 |

| Technology and Environment | |
| tat220 New Species in Norwegian Fish Farming | 5 |
| tat230 Design of Equipment for Norwegian Aquaculture Facilities | 10 |
| tat310 Aquaculture Engineering, Main Topic | 15 |
| tht280 Ecologically Engineered Systems for Waste Water and Waste Treatment | 10 |
| tht310 Ecological and Conventional Systems for Treatment of Water | 15 |
| fmi310 Environmental Pollutants and Ecotoxicology | 15 |

| Various courses | |
| hfx206 Product Quality, Meat and Fish | 5 |
| hfx207 Introduction to Animal Production and Fish Farming in Development Countries | 5 |
| hfm200 Molecular Genetics in Animal and Aquacultural Production | 5 |
| hfx300 Experimental Design and Analysis in Animal Science and Aquaculture | 5 |

*We reserve the right to make changes*

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**Former Student**

**Norvald Soleng**
Sales Engineer
Sterner Fish Tech AS

"My education from UMB gave me a broad foundation in a special field (aquaculture) as well as knowledge in several subjects (such as business management, logistics and biology). This is a perfect combination in my job as I mainly work with aquaculture related subjects but at the same time I am also involved in all aspects of running a commercial company.

I work with the sale of technical equipment for the breeding industry which requires contact with customers and producers both in and outside Norway.

I chose UMB based on recommendations from former students, as well as the fact that I could take a 5-year programme in aquaculture at UMB. The possibility of taking part of the programme abroad was an important aspect for me and I spent one year at James Cook University in Townsville, Australia."
Master

Mathematical Sciences - Computational Biology

Why study Computational Biology at the UMB?

- You will learn how complex biological systems can be studied, modelled and understood using mathematical methods and techniques from physics and computer science.

- You will learn how these subjects help find solutions to some of the major medical and environmental issues of our times.

- You want a modern Master of Science-degree.

- You want an education that enables you to contribute towards a sustainable future for our planet.

Where will you work? You’ll be qualified for positions in industry, research, consulting firms, public services and many other workplaces. Some students enrol in a PhD-programme or choose a career as a high-school teacher.
CONTENTS OF THE PROGRAMME? One of the most rapidly growing research fields today is the modelling of life processes in plants, animals, humans and ecosystems using methods from mathematically oriented sciences such as mathematics, physics, computer science and statistics. In this programme you learn how such models are constructed and used to improve the interpretation of experimental data.

The topics you can choose for your thesis originate from active experimental and theoretical research activities at UMB, for example, (1) how molecules carrying our genetic information cooperate within cells to give an organism its specific characteristics, (2) how single cells function and how groups of cells cooperate, (3) how complex natural patterns such as the tree structure of roots and sedimentation processes are generated and influenced by the environment, and (4) how thousands of millions of nerve cells can cooperate to make us think.

The methods you will use include a wide variety of mathematical techniques such as (i) detailed mathematic analysis of simplified models, (ii) statistical modelling based on experimental data, (iii) computer intensive simulations of extensive and biologically realistic models and (iv) algorithmic modelling based on modern statistical physics.

REQUIREMENTS:

- Candidates should have academic qualifications at the B.Sc. level, totalling 180 credit points. Your B.Sc. must include at least 80 credit points in one of the following subjects: mathematics, physics, computer science or statistics. Generally however, 50 additional credit points within these four subjects are required.
- Your major at the B.Sc. level can, in some cases, limit your choice of specialization in your Master programme.
- Applicants must document knowledge of English at a level equivalent to the requirements set by the TOEFL test, with results approved by the International Student Office at UMB.

You will find more information about research activities and possible topics for your Master thesis at www.umb.no/imt/mastermatematiskeant耐alfag

PROGRAMME STRUCTURE: You will complete courses corresponding to 60 credit points within the subjects of your specialization. These courses prepare you for your thesis which you will work on during the last year of the programme. Up to date computer software and information technology will be used throughout the programme.

For more information?

- Information about application and general questions about the study:

  Students Information Office.
  P.O.Box 5003, 1432 Ås, Norway
  phone: +47 94 96 61 00
  e-mail: opptak@umb.no
  internett: http://www.umb.no/sit

- More information about the courses:
  Study coordinator Linda Malmberg

  phone: +47 64 96 55 25
  e-mail: studieveileder-matematiskerealfag@umb.no
Master

Development and Natural Resource Economics

Why study Development and Natural Resource Economics?

• you obtain a solid basis in economic theory and economic reasoning, with a specialisation in development and natural resource economics.

• you get knowledge, training and practical experience in economic methodologies, as a bridge between theories and policy-relevant and real-world problems.

• you get the opportunity to study one semester at a University in Africa and to do fieldwork in a developing country.

What can you use this qualification for? Graduates of this programme may work at teaching and research institutions, in national ministries or regional departments of agriculture, forestry, environment and development planning, or in international organizations and development/environment NGOs. Many also continue onwards with PhD studies.
Programme objectives  The programme is addressed to students who are interested in the interaction between development, environment and economy, and want to study in an international environment. There is a great need for policy-oriented economists who are able to integrate and apply knowledge from resource-, environmental-, agricultural- and development economics. This Master programme provides students with tools to address questions such as:

- Why are some countries poor and some rich?
- Why have some countries experienced much faster economic growth than others?
- Why is the environment being degraded when almost everyone agrees that this is bad?
- Why are resources exploited in an unsustainable way?
- How is poverty and economic growth linked to the environment?
- How should policies change to accommodate environmental poverty concerns?

This Master programme gives a solid basis in economic theory and methodology, while maintaining an applied profile. The programme has a special emphasis on management of natural resources, poverty and rural development, and the link to national policies and trade. This gives you a deeper insight into the links between the wellbeing of rural people, their natural resource base, and the underlying causes of poverty and environmental degradation.

Course content  The programme takes two years of full time studies. Three semesters are used for course work, where the second semester can be taken at a University in Africa. The last semester is dedicated to writing a thesis based on research in a developing country. Thesis fieldwork (2-3 months) is done between the 2nd and 3rd semester.

The course is offered by the Department of Economics and Resource Management at the Norwegian University of Life Sciences (UMB). The department has a strong teaching and research record both within development and resource economics. The department and university offer a stimulating and informal intellectual environment. The courses emphasize student participation, with exercises, group work, and hands-on experience with modern analytical tools and computer and reading rooms. The social environment is good, with 40-45 international Master and PhD students in the department.

Who can apply?  A Bachelor or equivalent degree with a major or concentration in economics (minimum of 60 credits). The maximum for annual enrolment is 25. See further requirements on page www.umb.no

For more information?

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  Students Information Office.
  P.O.Box 5003, 1432 Ås, Norway
  phone: +47 94 96 61 00
  e-mail: opptak@umb.no
  internett: http://www.umb.no/sit

- More information about the courses:
  Study coordinator Lise Thoen
  phone: +47 64 96 56 82
  e-mail: Lise.thoen@umb.no
**Study programme structure**

**Development and Natural Resource Economics - 120 ects**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandatory courses</td>
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</tr>
<tr>
<td>Research Methods in Development Economics</td>
<td></td>
</tr>
<tr>
<td>Master Thesis</td>
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</tr>
<tr>
<td>Microeconomics</td>
<td></td>
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<tr>
<td>Econometrics</td>
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<tr>
<td>Resource and Environmental Economics</td>
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<tr>
<td>Development and Environment Economics</td>
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<tr>
<td>Development Economics, Macro</td>
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<tr>
<td>Development Economics, Micro</td>
<td></td>
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<tr>
<td>Decision Modelling</td>
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<tr>
<td>Compulsary courses</td>
<td></td>
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<tr>
<td>Environmental Accounting and Management</td>
<td>5</td>
</tr>
<tr>
<td>Project Evaluation and Environmental Evaluation</td>
<td>10</td>
</tr>
<tr>
<td>Commodities and International Economics</td>
<td>15</td>
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<tr>
<td>Market Analysis</td>
<td>15</td>
</tr>
<tr>
<td>Environmental and Resource Economics</td>
<td>10</td>
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</tbody>
</table>

* The programme structure and content will be fully reviewed before the academic year 2007/2008. Please see [www.umb.no](http://www.umb.no) for updated information.

**Former student**

**Marianne Aasen**
Research Assistant CICERO-Centre for International Climate and Environmental Research – Oslo

**Why did you choose UMB for your studies?**
Because I wanted to study environment, resource- and development economics. UMB’s programmes in these topics were more appealing than what e.g. the University of Oslo has to offer. UMB’s reputation concerning the international aspect of its education and good exchange possibilities made the choice easy.

**Were any of the courses particularly useful to you?**
I benefit from my background in environment- and development economics on a daily basis. It requires fresh and creative thinking, asking questions about what we know and how the subject of economics is relevant to environmental challenges.
**Master Development Studies**

**Why Development Studies?**
- Because you want to contribute towards a just, more equitable, peaceful and sustainable world
- Because you want to learn more about development theory and action, globalisation, north-south issues, poverty, conflict, rights and environmental sustainability
- Because you want to study at a university in a developing country as part of the study programme

**What can you use this qualification for?**  
Graduates can seek employment in a wide array of international and domestic settings, including work for non-governmental organisations, positions in multilateral and bilateral aid organisations, careers in research and education, and in journalism and national politics.
What will I learn?  You will learn about the causes and mechanisms involved in human development in different contexts and at various scales. The programme focuses on the interests, institutional settings, and politics that shape social relations and local livelihoods in developing countries. After graduation, you will be able to:

- Understand and analyse complex issues related to poverty, human development, wealth creation, social justice and equality
- Assess and identify relevant policies and interventions
- Undertake studies that link development theories with practical issues.

Progression  Study plans are individually tailored to meet each student’s interests. The programme provides extensive freedom of choice. The first semester includes a 15-credit core course in development theory and policy, supplemented by basic courses in communication, social anthropology, and resource economics. In the following semesters, you will take more advanced courses. A course in research methodology is mandatory. You will be able to take a course in rural development and project management at Makerere University in Uganda or Tribhuvan University in Nepal. This is normally followed by fieldwork for your thesis in a developing country. The final spring will mostly consist of thesis writing.

Requirements  To be admitted, you need a bachelor’s degree, a Norwegian cand. mag. degree, or an equivalent degree in a relevant field, for example political science, education, anthropology, sociology, resource management, economics, or journalism.

For more information?

- Information about application and general questions about the study:
  Students Information Office (SiT)
  P.O.Box 5003, 1432 Ås, Norway
  phone: +47 94 96 61 00
  e-mail: opptak@umb.no
  internett: http://www.umb.no/sit

- More information about the courses:
  Noragric, the Department of International Environment and Development Studies
  P.O. Box 5003, 1432 Aas, Norway
  phone: +47 64 96 52 00
  e-mail: noragric@umb.no
  http://www.umb.no/noragric
  e-mail: noragric-masterinfo@umb.no
My job is to motivate and inspire others to take on voluntary work. I spread information on the Child and the Human Rights Declaration.

“I chose to study at UMB because I am very concerned about international politics. I am particularly interested in the North/South question and human rights. At UMB you have the possibility of practising what you have learned during fieldwork. The combination of knowledge and practice was important for Save the Children Norway.

The student environment was very good. I have good contact with friends all over the world since my study period. I miss Ås and the good environment.

It is important to get involved and to show interest. Being active in the organisations and the student environment counts a great deal.”
Master

ECOLOGY

Why study Ecology?

• You will become familiar with the state-of-the-art ecological theories within your specialisation and how you can contribute to increasing future ecological knowledge

• Ecological knowledge is necessary in order to manage and conserve biological diversity, locally as well as globally

What can you use this qualification for? You will be qualified for work in national or international research conservation, NGOs, UN organisations, advisory or managerial positions within natural resources or environmental management, the opportunities also include jobs in protected areas, in ministries and regional/local offices and environmental/rural/agro development agencies.
Contents of the programme  The duration of the study is two years, starting in August. During your first year you will attend a variety of interesting courses, while an individual research project is the main focus the second year. The teaching will often require interactive participation by the students through presentations, short thematic reviews, term papers and discussion sessions.

This study will give you

• A thorough understanding of ecological principles
• An overview of central ecological theories
• Principles of conservation biology
• Insight into human effects on natural systems
• Knowledge of field- and analytical methods in ecology

The students select either the General Ecology or the Tropical Ecology and Management of Natural Resources specialisation. A range of courses is available for both specialisations. In General Ecology you focus on behaviour and population ecology, pollination and reproductive biology, plant ecophysiology, ecological entomology, plant systematics or molecular evolution and genetics. The Tropical Ecology specialisation emphasise species adaptations to the diverse set of tropical ecosystems and the dilemmas associated with the conservation of biodiversity and the alleviation of poverty. Both specialisations also focus on how ecological knowledge can be appropriately used in natural resource management and in environmental policy.

Requirements  The applicants must have obtained a Bachelor’s degree, or its equivalent, in natural sciences (e.g. biology, ecology, natural resource management, agricultural or environmental sciences).

The study program is under revision and the requirements may be subjected to change.
**Study programme structure:**
The Master’s degree study programme is planned in conjunction with the relevant study coordinator. Further information on the structure of the programme can be found on this Master’s programme’s web page.

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**For more information**

- Information about application and general questions about the study:
  Students Information Office (SiT)
  tlf.: +47 64 96 61 00
  e-mail: opptak@umb.no
  internett: http://www.umb.no/sit

- More information about the study programme:
  Study Coordinator: Espen Arestøl
  tlf.: +47 64 96 57 25
  e-post: espen.arestol@umb.no

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**Simen Sandve**
PhD Student Plant Genetics
UMB

I study the genes that influence the lignin synthesis in agricultural grass. Lignin is essential to the plants; it provides them with protection, rigidity and strength. But lignin can not be digested by herbivores and therefore you want a low content of this in the fodder. Therefore it is important to know as much as possible about the genes that influence the lignin synthesis and thereby cultivate fodder with optimal lignin content. This is not genetical modification, just refining of natural grass.

My education gave me a professional network which has been very useful to me with regard to work, both as a research assistant at CDC (Centers for Disease Control and Prevention) and now as a PhD student at UMB.
Why study Feed Manufacturing Technology?

• This study program is unique in Europe
• You will develop competence which is needed for providing animals with high quality fodder at affordable prices
• You will become an expert within production of animal feed combining animal nutrition, chemistry, physic and technology
• You will be in close contact with the feed industry

What can you use this qualification for? Students will get skills needed for higher level management in the feed milling industry and related industries. You can also build your carrier to further scientific research activity in feed technology.
**Contents of the programme**

Students will get hands-on experience with the various types of equipment and production lines by fully integrating the possibilities offered by the Centre for Feed Technology in the programme. Teaching and training will partly be based on lectures, but a considerable part will be offered as demonstrations and training in groups. The courses are mainly taught by staff from UMB but external experts from the Centre for Feed Technology, the feed industry and international companies and institutions will also be called in when appropriate.

The 2-year programme consists of 3 semesters of teaching and a final semester of thesis work. The students must have taken a minimum of 90 credits of courses in order to be permitted to defend their Master’s thesis, which accounts for an additional 30 credits. The programme is based on a series of core subjects, mandatory for all Master’s students in Feed Manufacturing Technology. The students are expected to take the remaining credits by choosing other subjects offered by UMB. The study plan contains different topics, such as Bulk solids handling, Biological material science, Advanced feed manufacturing technology, Heat engineering, Feed production planning and management and Process technology.

The programme needs at least 10 students to be held.

Programme structure for Feed Manufacturing Technology: www.umb.no/8773

**Requirements for application**

The deadline for application with a non-Nordic educational background is March 1st. The deadline for applicants with a Norwegian/Nordic education is April 15th. • The applicants must have obtained a Bachelor’s degree or its equivalent, with at least: 10 credits mathematics, 10 credits chemistry/physics, 10 credits statistics and 60 credits biological subjects.

**For more information**

- Information about application and general questions about the study:
  Students Information Office (SiT)
  P.O.Box 5003, 1432 Aas, Norway
  Phone.: +47 94 96 61 00
  E-mail: opptak@umb.no
  Internett: http://www.umb.no/sit

- More information about the courses:
  Study Coordinators
  Marit Ensby, Phone.: +47 64 94 51 26
  E-mail: marit.ensby@umb.no
  Megumi Ota Fog, Phone.: +47 64 96 51 54
  E-mail: megumi.fog@umb.no
**Study programme structure***

**Feed Manufacturing Technology - 120 ECTS**

<table>
<thead>
<tr>
<th>Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Core courses</strong></td>
<td>105</td>
</tr>
<tr>
<td>hfe306 Advanced Feed Manufacturing Technology</td>
<td>5</td>
</tr>
<tr>
<td>tmpp212 Biological Material Science</td>
<td>10</td>
</tr>
<tr>
<td>tps220 Bulk Solids Handling</td>
<td>5</td>
</tr>
<tr>
<td>hfe305 Feed Manufacturing Technology</td>
<td>10</td>
</tr>
<tr>
<td>hfe308 Feed Optimalisation for Different Species</td>
<td>10</td>
</tr>
<tr>
<td>hfe307 Feed Production Planning and Management</td>
<td>15</td>
</tr>
<tr>
<td>mvi261 Heat Engineering I</td>
<td>5</td>
</tr>
<tr>
<td>tmpp250 Process Technology I</td>
<td>5</td>
</tr>
<tr>
<td>mvi310 Proteins, Polysaccharides and Fat/Oils; Structure and Functionality</td>
<td>10</td>
</tr>
<tr>
<td>m30-iha Master thesis</td>
<td>30</td>
</tr>
</tbody>
</table>

**Optional courses**

**Comment:** Minimum 15 credits may be optional courses from 200-levels.

*We reserve the right to make changes*

The Master’s degree study programme is planned in conjunction with the relevant study coordinator. Further information on the structure of the programme can be found on this Master’s programme’s web page.
**International Environmental Studies (Formerly MNRSA)**

**Why study International Environmental Studies?**
- Because you want to contribute towards an environmental healthy and just world
- Because you want to learn more about the environmental challenges facing the world today, e.g. in relation to policy, power and governance, climate change, water distribution and sound management of natural resources
- Because you want to study at a university in a developing country as part of the study programme

**What can you use this qualification for?** You may be qualified to work in national and international agencies, such as ministries and environmental organisations. You may find jobs in development aid agencies, schools, research institutions, media and consulting companies
What will I learn? You will learn about causes and effects of environmental issues related to, for instance, climate change, biodiversity, desertification, water and land degradation. You will explore how problems and solutions are linked to governance, power relations and international cooperation. The role of international bodies and policy implications of environmental conventions are covered. Development and sustainability are important elements of the programme. You will have opportunities to study environmental issues in relation to economic growth, welfare, health, poverty, rights and conflicts.

During the programme, you will tackle a wide range of questions, such as:

- How do international environmental conventions influence people’s livelihoods?
- Can changes in land use reduce greenhouse gases?
- What are the effects of privatisation of land on poverty and the environment?
- How can poor communities reach their parts of the Millennium Goals regarding water and sanitation?
- Does grazing of drylands lead to desertification?
- Why is it so difficult for national park staff to work in harmony with local people?

The programme consists of courses, field research and thesis writing. There is an option for field studies at universities in the South (Uganda and Nepal). Students joining this programme have varied educational backgrounds and come from all parts of the world. The student diversity creates an inspiring learning environment.

Requirements A bachelor’s degree or equivalent education in a relevant field is required for admission. Depending on your planned specialisation, your background may be from environmental sciences, ecology, earth sciences, resource management, agriculture, forestry, fisheries, geography, economics, political science or social science.

For more information

- Information about application and general questions about the study:
  Students Information Office (SiT)
  P.O. Box 5003, 1432 Aas, Norway
  phone: +47 94 96 61 00
  e-mail: opptak@umb.no
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  P.O. Box 5003, 1432 Aas, Norway
  phone: +47 64 96 52 00
  e-mail: noragric@umb.no
  http://www.umb.no/noragric
  e-mail: noragric-masterinfo@umb.no
## Study program structure

### International Environmental Studies - 120 ects

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Core courses:</strong></td>
<td></td>
</tr>
<tr>
<td>EDS210</td>
<td>Global Ecology</td>
</tr>
<tr>
<td>EDS260</td>
<td>Global Environmental Change</td>
</tr>
<tr>
<td>EDS240</td>
<td>Economics for Environment, Development and Natural Resources</td>
</tr>
<tr>
<td>EDS310</td>
<td>Management of Natural Resources and the Environment</td>
</tr>
<tr>
<td><strong>Selected Elective Courses:</strong></td>
<td></td>
</tr>
<tr>
<td>EDS200</td>
<td>Environment and Development, Seminar</td>
</tr>
<tr>
<td>EDS215</td>
<td>Sustainable Agriculture and the Environment</td>
</tr>
<tr>
<td>EDS220</td>
<td>Statistical Analysis</td>
</tr>
<tr>
<td>EDS225</td>
<td>Linking Ecological and Social Resilience</td>
</tr>
<tr>
<td>EDS280</td>
<td>Land Rights: An Introduction to Theory, Applications, and Policy</td>
</tr>
<tr>
<td>EDS300</td>
<td>Research Methods</td>
</tr>
<tr>
<td>EDS315</td>
<td>Management of Genetic Resources: Law and Policy</td>
</tr>
<tr>
<td>EDS330</td>
<td>Political Ecology</td>
</tr>
<tr>
<td>EDS350</td>
<td>Management of Dryland Resource Systems</td>
</tr>
<tr>
<td>EDS360</td>
<td>Conflict and Development</td>
</tr>
<tr>
<td>EDS385</td>
<td>Rural Development and Project Management</td>
</tr>
<tr>
<td>ECOL250</td>
<td>Tropical Ecosystems and Biodiversity</td>
</tr>
<tr>
<td>ECOL310</td>
<td>Global Change Ecology</td>
</tr>
<tr>
<td>ECOL320</td>
<td>Tropical Field Ecology</td>
</tr>
<tr>
<td>JORD260</td>
<td>Tropical Soils, Their Properties and Management</td>
</tr>
<tr>
<td>JORD310</td>
<td>Global and Local Pollution</td>
</tr>
<tr>
<td>JORD315</td>
<td>Biogeochemistry, Global Change</td>
</tr>
<tr>
<td>THT281</td>
<td>Decentralised Wastewater Treatment? Appropriate Sanitation in Developing Countries</td>
</tr>
<tr>
<td>THT282</td>
<td>Ecotechnology</td>
</tr>
<tr>
<td>THT310</td>
<td>Ecological and Conventional Systems for Treatment of Water</td>
</tr>
<tr>
<td>GMGI290</td>
<td>Geographical Information: Data Capture and Analysis</td>
</tr>
</tbody>
</table>

The Master’s degree study programme is planned in conjunction with the relevant study coordinator. Further information on the structure of the programme can be found on this Master’s programme’s web page.

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### Former Students

**Marte Qvenild**  
**Employment:** Researcher (Forsker 3) at the Norwegian Institute for Nature Research

**What are you doing at the moment**  
I work at NINA’s department of Natural Resource Use at Lillehammer with projects related to biodiversity, conservation ecology, and nature-based tourism. Part of my job will be to carry out an interdisciplinary PhD study within the field of biodiversity.

**Why did you choose UMB for your studies**  
The programme was chosen as I could carry out the whole programme in English, in an international environment. Also, in a small university like UMB it is easy to have interaction with lecturers and scientific staff. UMB has good connections with universities in the south, which made it possible for me to have an exiting semester in Nepal.
Why study Radioecology? Radiological protection of man and the environment is included in the Radiation Protection Law of Norway (2000) and has become a matter of significant public concern.

The establishment of public confidence in nuclear technologies will depend upon the availability of well-educated personnel and independent experts/advisors within the fields of radiochemistry, radioecology and radiation protection.

What can you use this qualification for? The programme provides the competence to a wide range of positions related to European authorities responsible for the national legislation and the nuclear energy industry e.g., within ministries, directories, governments, services, development projects, technical support and consultancy, management, environmental protection, as well as within institutions responsible for research and education.
**Contents of the programme?**  In a diverse learning process, you will gain knowledge about radioecology; behaviour of radionuclides in the environment, as well as impact and risk assessment based on radiochemistry and radiation protection, the nuclear industry and waste management, project management and research methods.

Skills in these areas are required not only to deal with currently installed nuclear capacity and decommissioned facilities, but also to meet the needs presented by likely new-build nuclear installations. The pressures are facilitated by new improved and safer reactor systems that are being developed in Europe and the USA. Therefore, the need for nuclear competence is probably greater today than was earlier anticipated.

**The teaching**  Your learning will be based on intensive courses, laboratory work, group work, real-life case studies and thematic thesis with interdisciplinary approach, and through reflection on links between real-life situations and theory. To secure that the education is scientifically based, teachers from Europe will contribute with their special competence. The course modules will be held at UMB and at collaborating European universities.

**Requirements for application**  Bachelor’s degree (BSc), a Norwegian “cand. mag.” degree, or equivalent education in any field relevant to the environment (e.g. chemistry, ecology, biology, resource management, agriculture, environmental sciences, environmental engineering, geography etc.). Applicants must demonstrate English language ability in accordance with UMB regulations for programmes taught in English.

**Study programme structure:**  The Master’s degree study programme is planned in conjunction with a study coordinator. Further information on the structure of the programme can be found on this Master’s programme’s web page.

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**For more information?**

- **Information about application and general questions about the study:**  Students Information Office (SiT)  P.O.Box 5003, 1432 Aas, Norway  phone: +47 94 96 61 00  e-mail: opptak@umb.no  internett: http://www.umb.no/sit

- **More information about the courses:**  Study Coordinator Ingrid F. Bugge  phone: +47 64 96 55 25  e-mail: ingrid.bugge@umb.no
Master

Plant Science

Why study Plant Science?
• You are interested in agriculture and horticulture
• Ecological agriculture
• Plant biology, effect of climate and environment on growth and quality
• Health aspects of food
• You can use the basic knowledge gained during the bachelor’s study programme to solve the many challenges that face agriculture both nationally and internationally.

What can you use this qualification for?
Work opportunities include managerial positions in environment or agriculture. You can work in the state, communal or private sectors as a manager, adviser/consultant, marketing director, leader of a ring group, fellow, researcher, lecturer (with pedagogic). You can work internationally, e.g. in FAO and NORAD.
Programme objectives  The programme provides specialisation in agriculture, horticulture or plant biology.

Contents of the programme  You can choose between two study options:

1) Agriculture and horticulture, focusing on
- Flowers, fruit, berries and vegetables
- Corn, fibre and oil plants and diverse fodder plants
- Environmentally friendly growing methods
- You study how physiological processes in plants are affected by external conditions (nutrients, temperature, light and length of day)
- You can also study how plants can be changed through plant breeding to meet producer and user requirements

2) Plant biology, focusing on:
- Understanding of a plant’s functions and how this is affected by environment and climate
- You will obtain a deeper understanding of genetics and molecular methods

Choice of electives provides the possibility for individual adjustments in the study programme.

Requirements  Bachelor’s degree in plant science, biology, biotechnology or equivalent education that includes basic knowledge in mathematics, chemistry, plant physiology, and natural sciences.

You can also apply for plant science studies with other basic background combinations. This might require a short, adjusted course.
What do you do?
I work mainly with processing building applications, private regulation plans and housing developments in the planning, building and surveying sectors. In the agriculture sector, I handle cases concerning agricultural law, and applications for subsidies for replacements during sickness, etc. I also write official statements and work on various projects.

Do you use your education?
It has given me a total understanding of agriculture. I am used to acquiring new knowledge and to understanding different fields. At the end of your studies you must be ready to learn a lot of new areas.

Advice to future students?
Use your Master’s thesis to make contacts and learn to work independently. Even though you might not have direct use of your subject area in your new work, you will certainly have use for the methodology you have learned.

For more information?

• Information about application and general questions about the study:
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  Study Coordinator Ingrid F. Bugge
phone: +47 64 96 55 25
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