Ostfalia
Hochschule für angewandte Wissenschaften

Courses

offered in

English Language

within the

Course of Studies

Bio- and Environmental Engineering

(Bio- und Umwelttechnik)

Bachelor of Engineering (B. Eng.)

at the

Faculty of Supply Engineering

Ostfalia – University of Applied Sciences

Fall 2018 - Summer 2021
due to changes to new Curriculum from 6/4 to 7/3
starting in Fall 2018
and the resulting overlap of old and new programs
for 3 more years.

1 Overview

Technical Courses Offered in English Language

Code	Course Description	Semester	Responsibility / Lecturer	SWS	CP	Language
BEE 20	Plant design	6.	Prof. Dr. Ahrens	5	7	
	Plant design		Prof. Dr. Ahrens	2	2	German
	Plant design – advanced laboratory		Prof. Dr. Ahrens	3	5	English/ German
BEE 21c	External Studies	5. (or 6.)	Dr. Sander	9	12	
	External studies I		Dr. Sander	3	4	English/ German
	External studies II		Dr. Sander	3	4	English/ German
	External studies III		Dr. Sander	3	4	English/ German
BEE 22	Bio- and Environmental Laboratory Course	6.	Prof. Dr. Wilharm	6	10	
	Environmental engineering		Prof. Dr. Ahrens	3	5	English/ German
	Biotechnology		Prof. Dr. Wilharm	3	5	English/ German
BEE 23	Bachelor Thesis	6.			14	English/ German

Total amount of credit points offered in winter semester (September – January)

(1 credit point (CP) equals 1 ECTS credit)

5 CP in advanced language skills (German)

Total amount of credits points offered in summer semester (March – July)

(1 credit point (CP) equals 1 ECTS credit)

27 CP in technical courses in English language

14 CP bachelor thesis

5 CP in advanced language skills (German)

Total CP per Year 51 CP 2018-2021

2 Technical Courses Offered in Summer Semester (March – July)

<table>
<tr><th colspan="2">Plant Design</th><th>Code
BEE 20</th><th>Responsibility
Prof. Dr. Ahrens</th><th>7 CP</th></tr>
<tr><td>Educational Objectives:</td><td colspan="4">Referring to the gained knowledge in the fields of Bio- and Environmental Engineering the students will learn how to organise and manage themselves in detailed and intensive project work. Major topics are management tools like organisation of project structures, milestone and task lists, time schedules, flow sheets, etc. This knowledge will be used in project works, which have topics from the whole variation of Bio- and Environmental Engineering (e.g. process evaluation of full scale bio reactor applications, development of know lab and pilot scale technologies and applications, layout of new technologies in process design, etc.) The projects have a strong focus to actual research activities and will vary with each semester.</td></tr>
<tr><td>Course:</td><td colspan="4">
<table>
<tr><th>Description</th><th>Semester</th><th>Style</th><th>Lecturer</th></tr>
<tr><td>Plant design</td><td>6.</td><td>Lecture</td><td>Prof. Dr. Ahrens</td></tr>
<tr><td>Plant design – advanced laboratory</td><td>6.</td><td>Practical project work</td><td>Prof. Dr. Ahrens</td></tr>
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</td></tr>
<tr><td>Course Contents:</td><td colspan="4">Plant Design:
Project management and organisation tools, process evaluation tools, layout of process engineering devices

Advanced Laboratory in Plant Design:
Detailed workout of a project in various topics of Bio- and Environmental Engineering</td></tr>
<tr><td>Course Scope, Credit Points and Type of Exam</td><td colspan="4">
<table>
<tr><th rowspan="2">Description</th><th rowspan="2">SWS</th><th rowspan="2">CP</th><th colspan="2">Workload</th><th rowspan="2">Examination Type</th></tr>
<tr><th>Contact Phase</th><th>Own/Home Phase</th></tr>
<tr><td>Plant design</td><td>2</td><td>2</td><td>32</td><td>28</td><td rowspan="2">Colloquium</td></tr>
<tr><td>Plant design – advanced laboratory</td><td>3</td><td>5</td><td>48</td><td>102</td></tr>
<tr><td>Sum</td><td>5</td><td>7</td><td>80</td><td>130</td><td></td></tr>
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<tr><td>Teaching and Learning Style:</td><td colspan="4">Lecture with integrated best practice units</td></tr>
<tr><td>Requirements for Awarding of CP:</td><td colspan="4">Successful completion of the examination</td></tr>
<tr><td>Entry Requirements</td><td colspan="4">None</td></tr>
<tr><td>Calculation of Module Grade:</td><td colspan="4">---</td></tr>
<tr><td>Usability in Education:</td><td colspan="4">Compulsory for the Bio- and Environmental Bachelor Studies</td></tr>
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<table>
<tr><th colspan="2">External Studies</th><th>Code
BEE 21c</th><th>Responsibility
Dr. Sander</th><th>12 CP</th></tr>
<tr><td>Educational Objectives:</td><td colspan="4">The students acquire practical and theoretical experiences by a practical application of methods of biotechnology and environmental technology (internally or externally) in running production and supervision processes. They are able to judge, to plan, to run, and to optimize environmental engineering methods as well as biotechnological processes of production, under inclusion of legal framework conditions and the ordinances established therein and technical sets of rules.</td></tr>
<tr><td>Course:</td><td colspan="4">
<table>
<tr><th>Description</th><th>Semester</th><th>Style</th><th>Lecturer</th></tr>
<tr><td>External studies I</td><td>5.</td><td>Lecture + laboratory</td><td>Dr. Sander
N.N.</td></tr>
<tr><td>External studies II</td><td>5.</td><td>Lecture + laboratory</td><td>Dr. Sander
N.N.</td></tr>
<tr><td>External studies III</td><td>5.</td><td>Lecture + laboratory</td><td>Dr. Sander
N.N.</td></tr>
</table>
</td></tr>
<tr><td>Course Contents:</td><td colspan="4">The teaching contents vary depending on institution and the situation appearing currently (Imbedding in regular research programs are possible).
Main emphases should be biochemical, molecular biological and genetic engineering methods to the optimization of biotechnical processes of production and environmental engineering processes.</td></tr>
<tr><td>Course Scope, Credit Points and Type of Exam</td><td colspan="4">
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<tr><td>External studies II</td><td>3</td><td>4</td><td>48</td><td>16</td></tr>
<tr><td>External studies III</td><td>3</td><td>4</td><td>48</td><td>16</td></tr>
<tr><td>Sum</td><td>9</td><td>12</td><td>144</td><td>48</td><td></td></tr>
</table>
</td></tr>
<tr><td>Teaching and Learning Style:</td><td colspan="4">Lecture with integrated best practice units</td></tr>
<tr><td>Requirements for Awarding of CP:</td><td colspan="4">Successful completion of the examination</td></tr>
<tr><td>Entry Requirements</td><td colspan="4">None</td></tr>
<tr><td>Calculation of Module Grade:</td><td colspan="4">80% joint written exam, 20% colloquium (oral exam)</td></tr>
<tr><td>Usability in Education:</td><td colspan="4">Optional subject, Compulsory for the Bio- and Environmental Bachelor Studies</td></tr>
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<table>
<tr><td colspan="2">Bio- and Environmental Laboratory Course | Code BEE 22 | Responsibility Prof. Dr. Wilharm | 10 CP</td></tr>
<tr><td>Educational Objectives:</td><td>With the knowledge of bio- and environmental technologies the students are able to operate appropriate plants. They understands the methods of scale-up and the product utilization and are able to assess costs and to make considerations for the economy and for the environmental compatibility as well as for plant safety reasons.</td></tr>
<tr><td>Course:</td><td>
<table>
<tr><th>Description</th><th>Semester</th><th>Style</th><th>Lecturer</th></tr>
<tr><td>Environmental engineering</td><td>6.</td><td>Laboratory / project</td><td>Prof. Dr. Ahrens</td></tr>
<tr><td>Biotechnology</td><td>6.</td><td>Laboratory / project</td><td>Prof. Dr. Wilharm</td></tr>
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</td></tr>
<tr><td>Course Contents:</td><td>Environmental Engineering Laboratory:
The students work under scientific supervision on a practice oriented task in small groups (2 to 3) on the area of environmental engineering.
The problem solution is prepared theoretically and converted then practically e.g. to plants of sewage, waste, and waste air treatment or lake and soil remediation.

Biotechnology Laboratory:
The students work under scientific supervision on a practice oriented task in small groups (2 to 4) in the area of biotechnology.
The task is theoretically prepared and then converted practically e.g. to bioreactors and other biotechnical plants.</td></tr>
<tr><td>Course Scope, Credit Points and Type of Exam</td><td>
<table>
<tr><th rowspan="2">Description</th><th rowspan="2">SWS</th><th rowspan="2">CP</th><th colspan="2">Workload</th><th rowspan="2">Examination Type</th></tr>
<tr><th>Contact Phase</th><th>Own/Home Phase</th></tr>
<tr><td>Environmental engineering</td><td>3</td><td>5</td><td>48</td><td>102</td><td>H</td></tr>
<tr><td>Biotechnology</td><td>3</td><td>5</td><td>48</td><td>102</td><td>H</td></tr>
<tr><td>Sum</td><td>6</td><td>10</td><td>96</td><td>204</td><td></td></tr>
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</td></tr>
<tr><td>Teaching and Learning Style:</td><td>Lab course with regular discussions</td></tr>
<tr><td>Requirements for Awarding of CP:</td><td>Successful completion of lab phase, protocol and presentation</td></tr>
<tr><td>Entry Requirements</td><td>None</td></tr>
<tr><td>Calculation of Module Grade:</td><td>40% lab protocol, 40% oral presentation, 20% lab performance (Biotechnology)</td></tr>
<tr><td>Usability in Education:</td><td>Optional subject, Compulsory for the Bio- and Environmental Bachelor Studies</td></tr>
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