



## Course and examination regulations, Bachelor's degree programmes

Ulm University of Applied Sciences

English version. For information purposes only.

Please note that only the German version of the course and examination regulations is legally valid. This document is a translation made in good faith to the translator's best knowledge.

<b>Document-ID</b>	HSULM-9-52
<b>Document type</b>	Regulations
<b>Title</b>	Course and examination regulations, Bachelor's degree programmes
<b>Resolution from:</b>	01.04.2016, 13.05.2016, 21.10.2016
<b>Valid from:</b>	01.09.2016
<b>Version</b>	1.3
<b>Status</b>	Publication
<b>Higher education establishment</b>	Rector's Office
<b>Responsible</b>	Vice President for academic affairs
<b>Confidentiality level</b>	Open
<b>Language</b>	EN

## Revision history

First version	Vice President for academic and international affairs	0.1	30.07.2015
Publication	President	1.0	01.09.2015
1st amendment: Sections 45, 46	Vice President for academic affairs	1.1	01.02.2016
2nd amendment: Sections 41, 2(1)	Vice President for academic affairs	1.2	10.08.2016
3rd amendment: Sections 36, 43	Vice President for academic affairs	1.3	15.11.2016

## Table of contents

1 Scope of application .....	1
Section A: General Section .....	2
I. General .....	2
2 Pre-study internship .....	2
3 Standard study period, curriculum, course credits, examination structure.....	3
4 Practical study semester .....	4
5 Deadlines, loss of admission to the degree programme and the right to take examinations.....	5
6 General admission requirements .....	7
7 Examinations.....	7
8 Oral examinations .....	8
9 Written examinations and other written assignments.....	8
10 Grading of examinations.....	9
11 Unexcused absence, withdrawal, cheating, breach of regulations.....	9
12 Pass and fail.....	10
13 Retaking examinations .....	11
14 Recognition of periods of study, monitored assignments and examination credits	11
15 Examination committee .....	12
16 Examiners and observers.....	13
17 Responsibilities.....	14
18 Acquisition and evidence of English language skills .....	14
II. Bachelor intermediate examination .....	14
19 Purpose of the Bachelor intermediate examination, overall grade, transcript ( <i>Zeugnis</i> ).....	14
III. Bachelor examination .....	15
20 Purpose and implementation of the Bachelor examination.....	15
21 Subject-specific prerequisites.....	15
22 Setting of the Bachelor thesis and time allowed for the Bachelor thesis .....	15
23 Setting and evaluation of the Bachelor thesis.....	16
24 Additional modules.....	17
25 Calculation of the overall grade and transcript ( <i>Zeugnis</i> ).....	17
26 Degree and Bachelor degree certificate ( <i>Bachelorurkunde</i> ) .....	17
27 Diploma Supplement (degree programme explanation).....	19
28 Invalidity of the Bachelor intermediate examination and the Bachelor examination .....	19
29 Inspection of examination files.....	20

Section B: Special section .....	21
30 Classes, monitored assignments, examinations, regulations for elective modules ..	21
31 Bachelor's degree programme Documentation and Computer Science in Medicine <i>(Medizinische Dokumentation und Informatik)</i> .....	22
32 Bachelor's degree programme Computer Engineering <i>(Technische Informatik)</i> .....	25
33 Bachelor's degree programme Communications Engineering <i>(Nachrichtentechnik)</i> , .....	27
34 Bachelor's degree programme Industrial Electronics <i>(Industrieelektronik)</i> .....	28
35 Bachelor's degree programme Automotive Electronics <i>(Fahrzeugelektronik)</i> .....	30
36 Bachelor's degree programme Production Engineering and Organisation <i>(Produktionstechnik und Organisation)</i> .....	32
37 Bachelor's degree programme Mechanical Engineering <i>(Maschinenbau)</i> .....	34
38 Bachelor's degree programme Automotive Engineering <i>(Fahrzeugtechnik)</i> .....	37
39 Bachelor's degree programme Mechatronics <i>(Mechatronik)</i> .....	41
40 Bachelor's degree programme Medical Engineering <i>(Medizintechnik)</i> .....	43
41 Bachelor's degree programme Digital Media.....	47
42 Bachelor's degree programme International Energy Management <i>(Internationale     Energiewirtschaft)</i> .....	48
43 Bachelor's degree programme Energy Systems Technology <i>(Energiesystemtechnik)</i> .....	51
44 Bachelor's degree programme Electrical Engineering and Information Technology <i>(Elektrotechnik und Informationstechnik)</i> .....	53
45 Bachelor's degree programme Computer Science .....	56
46 Bachelor's degree programme Computer Science <i>(Informatik)</i> .....	59
47 Bachelor's degree programme Data Science in Medicine <i>(Data Science in der     Medizin)</i> .....	62
Section C: Final and transitional provisions .....	64
48 Final and transitional provisions .....	64

## 1 Scope of application

- (1) These course and examination regulations apply to the Bachelor's degree programmes
- Digital Media,
  - Industrial Electronics (*Industrieelektronik*),
  - Automotive Electronics (*Fahrzeugelektronik*),
  - Communications Engineering (*Nachrichtentechnik*),
  - Documentation and Computer Science in Medicine (*Medizinische Dokumentation und Informatik*),
  - Computer Engineering (*Technische Informatik*),
  - Automotive Engineering (*Fahrzeugtechnik*),
  - Mechanical Engineering (*Maschinenbau*),
  - Production Engineering and Organisation (*Produktionstechnik und Organisation*),
  - Mechatronics (*Mechatronik*),
  - Medical Engineering (*Medizintechnik*),
  - Energy Systems Technology (*Energiesystemtechnik*),
  - International Energy Management (*Internationale Energiewirtschaft*),
  - Electrical Engineering and Information Technology (*Elektrotechnik und Informationstechnik*),
  - Computer Science,
  - Computer Science (*Informatik*),
  - Data Science in Medicine (*Data Science in der Medizin*).
- (2) The official and job titles in these course and examination regulations apply equally to women and men; in addition section 11(7) and section 35(5) of the State Higher Education Act (*Landeshochschulgesetz, LHG*) apply as appropriate.

## Section A: General Section

### I. General

#### 2 Pre-study internship

(1) In the following Bachelor's degree programmes of the Ulm University of Applied Sciences, evidence of work experience (pre-study internship) is a prerequisite for enrolment:

- Automotive Engineering (*Fahrzeugtechnik*),
- Mechanical Engineering (*Maschinenbau*),
- Production Engineering and Organisation (*Produktionstechnik und Organisation*),
- Mechatronics (*Mechatronik*),
- Medical Engineering (*Medizintechnik*).

This evidence must be supplied in the form of a certificate from the organisation providing the internship, detailing the duration and content of the pre-study internship. Any person not in a position to provide this evidence or evidence of a completed pre-study internship by the enrolment deadline will be admitted on the condition that the pre-study internship is completed in accordance with subsections (4) and (5).

(2) During the pre-study internship, the student will acquire practical experience and knowledge in appropriate companies or government agencies (training organisations). The Special Section (Section B) of these regulations specifies the duration and training content for the pre-study internship.

(3) An equivalent practical activity and a completed apprenticeship in a skilled trade appropriate to the degree course will be recognised. The Internship Office responsible for the degree course in question shall decide on the type of skilled trades and the type and content of activities which will be recognised in principle. A list will be created for this purpose, which will be updated by a decision before April 1 of each year. In case of doubt, the Internship Office will make the decision regarding recognition.

(4) The completion of the pre-study internship is the responsibility of the applicant. It can also be performed in sections. Evidence of completion of the internship must be submitted to the Internship Office, and recognised by the same, by the start of lectures for the main study period at the latest. Admission and enrolment will then take place on the condition that evidence of the completed pre-study internship is provided by the time lectures start for the main study period. If this evidence is not successfully submitted by this time, the right to take examinations will be revoked.

(5) If a pre-study internship of more than eight weeks is specified for the relevant degree course, one third of the total duration of the pre-study internship must be completed by the start of lectures and evidence of this provided to the degree course. Admission shall be granted on the condition that the pre-study internship is completed in accordance with this provision by the time lectures start.

### 3 Standard study period, curriculum, course credits, examination structure

- (1) The study period is divided into study semesters.
- (2) The standard study period for the Bachelor's degree programme Computer Science (section 45) is eight study semesters, for all other degree programmes listed in section 1(1) it is seven study semesters.  
This comprises the theoretical study semesters, the integrated practical study semester and the examinations including the Bachelor thesis.
- (3) The standard study period is divided into taught semesters. A student's individual study period on a degree programme is counted in subject semesters.
- (4) The courses in the degree programmes listed in section 1(1) are divided into the basic study period, which finishes after two semesters with the Bachelor intermediate examination, and the main study period which finishes with the Bachelor examination.
- (5) The course content in the degree programmes listed in section 1(1) are split into modules i.e. into thematically and chronologically complete, self-contained study units. For increased clarity of the course structure, multiple modules for the same subject can be assigned to module groups.
- (6) The Special Section specifies the compulsory and elective modules which must be completed successfully in order to successfully complete the basic or the main study period. A module shall be deemed to have been successfully completed once evidence has been provided that the learning outcomes have been achieved through the fulfilment of all the monitored assignments and examinations associated with the module as set out in the Special Section.
- (7) The Special Section contains the following details for each module:
  - the required workload for the student in credits, according to the European Credit Transfer System (ECTS), where one credit point corresponds to a workload of 30 hours,
  - the required monitored assignments and examinations for successful completion of the module,
  - the necessary classes and their scope in semester hours per week,
  - where specified, the assignment of the modules and the associated classes to the taught semesters,
  - where specified, the taught semester in which the student is registered with binding effect to deliver the monitored assignments and undergo the examinations for the first time – or in which the first registration is recommended (cf. section 5(1)),
  - the assignment of the monitored assignments and examination credits to the Bachelor intermediate examination or the Bachelor examination,
  - the weighting of the grades for examination performance, to form the overall grade for the Bachelor intermediate examination or the Bachelor examination.

The achievement of certain monitored assignments and examination grades can be made a prerequisite for participation in other academic assessments (pre-exam achievements "*Prüfungsvorleistungen*").

(8) In individual cases and for good reasons, the sequence and type of classes and the type of examination specified in the Special Section can be changed for one study semester by way of a decision by the examination committee.

(9) Specialisations or advanced courses can be offered in the main study period. Further details can be found in the Special Section.

## 4 Practical study semester

(1) A practical study semester is integrated into the course plan for the degree programmes listed in section 1(1) in accordance with the Special Section.

(2) The faculties of the Ulm University of Applied Sciences set up Internship Offices. The Internship Offices are responsible for organising the practical study semester, coordinating the training content and maintaining relationships with the training organisations.

(3) The practical study semester is divided into the practical project and the accompanying classes. Unless otherwise specified in the Special Section, the duration of the practical project is 6 months. The practical project must be undertaken in a company or other industry-related organisation (training organisation) outside the Ulm University of Applied Sciences. In justified exceptional cases approved by the Internship Office in the individual case, it may be completed at Institutes of the Ulm University of Applied Sciences; there is no right to such approval. The accompanying classes take place at the University of Applied Sciences and are organised in blocks.

(4) The objectives of the practical study semester are

- the application of the knowledge and expertise gained on the course so far to the relevant specialist and operational practice,
- the acquisition of knowledge and experience from the relevant professional practice,
- the learning and experiencing of the principles of commercial, legal and social company practice, as well as training soft skills and key competencies.

Under the guidance of a supervisor with experience in the targeted career, in the practical project the student shall work on tasks which are typical for the type of career and qualification the student is aiming for.

(5) The responsibility for finding a training organisation for the practical project lies with the student. The training organisations must be suggested by the student and approved by the head of the Internship Office. For the approval, the subjects of the practical project and the responsible supervisor should be known wherever possible. In cases of doubt, the Internship Office will make the decision.

(6) The supervision and monitoring of the practical projects by the University of Applied Sciences is performed via the following measures:

- report by the student about the task and supervision of the practical project in the company to be submitted by a deadline specified by the responsible Internship Office – at the latest three weeks after the start of lectures,
- generally a visit to the training organisation by an Ulm University of Applied Sciences Professor,



- written report by the student about the practical project,
- oral presentation by the student of 20 minutes duration, as part of a practical seminar (follow-up class), open to members of the University of Applied Sciences.

If the first and second measures are not appropriate, due to the overseas location of the training organisation or distances which are too great, the student is obliged to submit two intermediate reports.

(7) The University of Applied Sciences will work together with the training organisation on all questions concerning the practical work experience of the student.

(8) The student must submit the written reports as per subsection (6) to the training organisation for confirmation and to have the content approved. At the end of the practical project, the student must submit a work experience record from the training organisation which the student is responsible for obtaining and which must include the type and content of the work experience, the start and end of the training period and any absences. Whether the student has completed the practical project successfully shall be decided on the basis of the student's oral and written practical project reports, the results of the visit, and the work experience record.

(9) The practical study semester shall be regarded as successfully completed if, in the practical project – after the subtraction of any holidays, sick days and other absences – it can be proved that the student was present for at least 100 days, and the activities as per subsection (6), points 3 and 4, and the monitored assignments and examinations for the accompanying classes were completed successfully. If the practical project is not recognised as being successfully completed, it can be repeated once.

(10) The first-time participation in classes and examinations or monitored assignments for the theoretical study semester is not permitted during the practical study semester.

## **5 Deadlines, loss of admission to the degree programme and the right to take examinations**

(1) The students must complete the monitored assignments and examinations relating to the modules within the taught semester for which the associated classes are specified in the Special Section (examinations during the course of study). In the basic study period (first and second taught semesters), enrolment in a certain taught semester counts as occupying a place in the related classes and, correspondingly, as registration for the monitored assignments and examinations relating to this semester – unless the assignment of the class to the taught semester is not binding. All other classes must be reserved by the student, via the student Internet portal, 2 weeks after the start of lectures at the latest. The reservation of a place results in registration for the associated monitored assignments and examinations. Students can deregister themselves for examinations via the student Internet portal up to 4 weeks before the start of the relevant examination period, without having to give a reason.

(2) The academic assessments for the Bachelor intermediate examination must be taken by the end of the second taught semester. The academic assessments for the Bachelor examination must be taken by the end of the last taught semester. Academic assessments can also be

taken before the specified deadlines, as long as evidence of the required pre-examination achievements "*Prüfungsvorleistungen*" is provided.

(3) The students will be informed sufficiently in advance about both the type and number of pre-examination achievements required, and the academic assessments to be completed – and about the dates by which they must be completed. This information is published on the designated section of the website of the faculty responsible for conducting the examination. The deadlines associated with the setting of the Bachelor thesis are set out in section 22.

(4) The right to take examinations is lost and the admission to the degree programme lapses if the Bachelor intermediate examination has not been passed by the end of the fourth subject semester at the latest, or if the individual study period exceeds the standard study period as per section 3(2) by more than three semesters, unless the failure to meet the deadline is not the fault of the student (section 32(5) fourth sentence of the State Higher Education Act).

(5) The right to take examinations is lost and the admission to the degree programme lapses if, after two subject semesters, the student has not acquired at least 20 ECTS credits from the compulsory modules of the basic study period, unless the failure to do so is not the fault of the student.

(6) In the case of removal from the register of students (exmatriculation) due to exceeding the deadlines as per subsection 4, the right to be admitted to examinations for the Bachelor examination, as far as they are not to be taken during the course of study, remains for up to one year – providing that the other pre-examination achievements and examinations during the course of study required by the course and examination regulations have been fulfilled at the time admission to the degree programme lapses.

(7) Where the prerequisites are met, the protective provisions of the Maternity Protection Act (*Mutterschutzgesetz*) and the legal requirements for parental leave (*Elternzeit*), in the version applicable to employees, shall apply by analogy as is required by section 2(3) and section 61(3) of the State Higher Education Act. In cases of doubt, the examination committee will make the decision on the extension of examination deadlines and the duration of a leave of absence as per section 61 of the State Higher Education Act.

(8) Students with children or relatives requiring care, students with disabilities or chronic illnesses, and students who, due to special personal circumstances, are considerably impeded in the delivery of monitored assignments and the taking of examinations by the deadlines, can apply to the examination committee for an extension of the relevant deadlines and also for an exception with regard to financial support as per subsection (5). You can get advice about this from the Chair of the examination committee. Decisions on the applications are made on a case-by-case basis at the discretion of the examination committee. The student must provide appropriate evidence, particularly by submitting medical certificates; in cases of doubt the Ulm University of Applied Sciences can request submission of a certificate from a doctor named by the Ulm University of Applied Sciences, or a public medical officer. The student is obliged to inform the Ulm University of Applied Sciences immediately if the pre-conditions change.

## 6 General admission requirements

(1) The examinations for the Bachelor intermediate examination and the Bachelor examination, including the Bachelor thesis, can only be taken by students

- who have been admitted to the University of Applied Sciences on the basis of a general higher-education entrance qualification certificate (*Zeugnis der allgemeinen Hochschulreife*), a subject-specific higher-education entrance qualification certificate (*Zeugnis der fachgebundenen Hochschulreife*), an entrance qualification certificate for a university of applied sciences (*Zeugnis der Fachhochschulreife*), a higher-education entrance qualification certificate as per section 58 of the State Higher Education Act (*Zeugnis der Qualifikation für den Hochschulzugang nach §58 LHG*), or on the basis of a higher-education entrance qualification recognised to be equivalent either by legal provision or by the responsible government agency and, as far as is required for the chosen degree course, on the basis of a passed suitability assessment for the Bachelor's degree programme,
- who have successfully completed the pre-examination achievements (*Prüfungsvorleistungen*) for the relevant examination specified in the Special Section (section 3(7)),
- about whom a declaration has been presented stating that a Bachelor intermediate examination or a Bachelor examination has not yet been definitively failed in the same degree course – or in a degree course defined by the regulations of the University of Applied Sciences as per section 60(2) no.2 of the State Higher Education Act at a university of applied sciences within the area of application of German Basic Law (*Grundgesetz*), and
- who are registered for the degree programme for which the academic assessment is intended.

(2) Admission to an examination may only be declined if

- the prerequisites specified in subsection 1 are either not fulfilled or are only partially fulfilled, or
- the documents are incomplete or
- in the same degree course – or, in a degree course defined by the regulations of the University of Applied Sciences as per section 60(2) no.2 of the State Higher Education Act, an examination during the course of study required by the course and examination regulations, the Bachelor intermediate examination or the Bachelor examination has been definitively failed or if the person is currently undergoing an examination procedure, or
- the right to take examinations has been lost.

(3) Participation in classes and participation in examinations or monitored assignments at the Ulm University of Applied Sciences is not permitted for students who are on a leave of absence as per section 61 of the State Higher Education Act. The exception as per section 61(3) of the State Higher Education Act applies. Recognition of monitored assignments and examination credits acquired at a foreign university during a leave of absence may be possible as part of a Learning Agreement.

## 7 Examinations

(1) The examinations are generally taken during the examination weeks at the end of the lecture period of the study semester. Other examination periods can be specified by the responsible examination committee or by inclusion in the Special Section.

(2) In the Special Section it can be specified that examinations for individually mentioned classes must be taken in the English language, as long as the classes were also conducted in the English language.

(3) If someone puts forward a convincing argument that, due to long-lasting or permanent disability or chronic illness, he or she is not able to take the examinations completely or partially in the intended form, the Chair of the examination committee will give permission for the examinations to be taken within an extended period of time, or, at the discretion of the Chair, to take equivalent examinations in a different form. The submission of a medical certificate may be required for this. The same applies to monitored assignments.

## 8 Oral examinations

(1) The purpose of the oral examinations is for students to prove that they recognise the interrelationships within the examination subject and are able to classify particular questions within these contexts. They are also conducted to determine whether students have a broad knowledge of the fundamentals.

(2) Oral examinations are generally carried out in front of at least two examiners (examination before a panel of examiners), or by one examiner in the presence of an observer (section 16), as a group examination or as an individual examination.

(3) The duration of the oral examination for each person being examined and each area of examination is generally 20 minutes with the minimum being 15 minutes and the maximum 25 minutes.

(4) The main topics and the results of the oral examinations must be documented in the form of a record. Each candidate must be informed of the result at the end of the oral examination, or on the same day at the latest.

(5) Students who wish to undergo the same examination during a later examination period shall be admitted as an audience, available space permitting, unless the candidate objects. However, this permission does not extend to consultation and knowledge of the examination results.

## 9 Written examinations and other written assignments

(1) In the written examinations and other written assignments, the students must prove that, in a limited time period and with limited equipment, they are able to use the conventional methods from their degree subject to solve tasks and work on topics. Furthermore, the purpose of the written examination is to determine whether they have the necessary fundamental knowledge. A choice of topics may be provided.

(2) The duration of written examinations for monitored assignments and examination credits is 90 minutes, unless otherwise specified in the Special Section. The duration of other written assignments is specified in the Special Section.

## 10 Grading of examinations

(1) The grades for the individual examinations are determined by the relevant examiners. The following grades must be used:

- 1 = very good = an outstanding performance;
- 2 = good = a performance which is considerably above the average;
- 3 = satisfactory = a performance which corresponds to the average requirements;
- 4 = pass = a performance, which, despite its shortcomings, still satisfies the requirements;
- 5 = fail = a performance, which, due to its considerable shortcomings, does not satisfy the requirements.

To differentiate the evaluation of examination performances, individual grades can be increased or lowered by 0.3 to give intermediate values. The grades 0.7 or 4.3 or 5.3 are excluded.

(2) If an examination performance is evaluated by several examiners, the grade is calculated from the average of the grades awarded.

If a module examination consists of several examinations, the module grade is calculated from the grades of the individual examinations. Here the grades for individual examinations in the Special Section can be given a special weighting. The evaluation of the Bachelor thesis is regulated by section 23(4).

(3) The module grades are:

For an average of up to and including 1.5	= very good;
for an average from 1.6 up to and including 2.5	= good;
for an average from 2.6 up to and including 3.5	= satisfactory;
for an average from 3.6 up to and including 4.0	= pass
for an average above 4.1	= fail.

(4) For the formation of the overall grade (section 9 (2) and section 25 (1)) subsection 2 applies accordingly.

(5) After the average has been calculated, only the first decimal place behind the decimal point is taken into account; all other decimal places are discarded without rounding.

## 11 Unexcused absence, withdrawal, cheating, breach of regulations

(1) An examination for which the student has a valid registration will be graded as a 'fail' (5.0) if the student is absent on the date of examination without a good reason. The same applies if a written examination is not delivered within the specified time.

(2) The reason given for the withdrawal or absence must be reported in writing immediately and its credibility established. In case of illness, a medical certificate must be submitted and, in cases of doubt, a medical certificate from a doctor named by the University of Applied Sciences which contains the relevant medical diagnostic findings and states the circumstances

which are relevant to evaluate the student's inability to take the examination. The examination committee will decide whether the reason given is acceptable.

(3) In the same way as for personal illness, in compliance with subsection 2, sick children or relatives requiring care for which the student is responsible can be given as acceptable reasons why the student is prevented from taking the examinations within the specified time.

(4) If someone attempts to influence the result of his or her examination by cheating, or by using unauthorised equipment, the relevant examination will be graded with a 'fail' (5.0) by the examiner. Anyone who disrupts the proper course of the examination may be excluded by the relevant examiner or invigilator and prevented from continuing with the examination; in this case the examination will be graded with a 'fail' (5.0). In serious cases, the examination committee may exclude the candidate from taking further examinations.

(5) The person affected by a decision made as per subsection (1) or (4) can, within a period of one month, request that this decision be reviewed by the examination committee. The candidate must be informed in writing immediately about negative decisions. The letter must state the reasons and provide instructions on the right to appeal.

(6) The detection and punishment of breaches of integrity in homework, term papers and theses is regulated by the "Ulm University of Applied Sciences regulations regarding integrity in homework, term papers and theses" (*Satzung der Hochschule Ulm zur Redlichkeit bei Haus-, Seminar- und Abschlussarbeiten*), in its current version.

## 12 Pass and fail

(1) An examination shall be deemed to have been passed when the grade is at least a 'pass' (4.0). A module examination consisting of several 'partial examinations' shall be deemed to have been passed when the grade for each 'partial examination' taken as part of the module has been graded with at least a 'pass'.

(2) A module shall be considered to have been successfully completed when the module grade is at least 'pass' (4.0) and all the monitored assignments relating to the module have been completed.

(3) The Bachelor intermediate examination shall be deemed to have been passed when proof of the pre-study internship as per section 2 has been supplied, and all the modules for the basic study period have been completed. The Bachelor examination shall be deemed to have been passed when the practical study semester and all modules for the main study period have been successfully completed and the Bachelor thesis has been graded with at least a 'pass' (4.0).

(4) If a module examination is not passed, or the Bachelor thesis is evaluated with a grade poorer than a 'pass' (4.0), the candidate will be informed. The candidate must also receive information about whether and, if applicable, to what extent and by which date the module examination and the Bachelor thesis can be repeated.

(5) If the Bachelor intermediate examination or the Bachelor examination has been definitively failed, on request and on submission of the appropriate evidence, as well as the certificate of

removal from the register of students, a certificate will be issued listing the module examinations taken and their grades as well as the missing module examinations and which states that the Bachelor intermediate examination or the Bachelor examination has been failed.

### 13 Retaking examinations

(1) Failed examinations can be retaken a maximum of two times. Retaking a passed examination is not permitted. Failed attempts at examinations of the same type in other degree courses – at the Ulm University of Applied Sciences or other universities in the Federal Republic of Germany – will be taken into account. If all the chances to retake an examination counting towards a module have been used up without success, the module towards which the examination counts will be deemed to have been definitively failed. If the examination concerned is – according to the examination regulations – a required examination, then the right to take examinations is lost and the admission to the degree programme lapses.

(2) In the Special Section, it may be specified for a degree programme that the second retake for students of this course is subject to certain conditions, which must be fulfilled before registering for the retake. If these conditions are not fulfilled, the retake of the examination will be evaluated with a 'fail'.

(3) The date for retaking failed examinations as well as examinations for which there was an authorised withdrawal or an unexcused absence as per section 5, subsections (1), (6) and (7), or section 11 is the next regular examination date in the relevant subject, as far as those affected have not been informed otherwise. On request, a maximum of two failed examinations can be retaken in the practical semester.

(4) A third retake of an examination is not permitted.

### 14 Recognition of periods of study, monitored assignments and examination credits

(1) A preliminary or interim examination taken at another German university of the same university type, in the same or a related degree programme, will be recognised. If the learning outcomes of the Bachelor, preliminary or interim examination differ considerably from the corresponding learning outcomes at Ulm University of Applied Sciences, the recognition may come with the recommendation or condition that appropriate modules be repeated.

(2) Monitored assignments and examination credits, and degree qualifications awarded in degree programmes from other official or officially-recognised universities and universities of cooperative education of the Federal Republic of Germany, or in degree programmes from foreign official or officially-recognised universities will be recognised – as long as there is no significant difference in the achievements or qualifications being replaced, with regard to the acquired expertise. The recognition is helpful for the continuation of studies, taking examinations and acceptance for further studies or acceptance as a doctoral candidate (as per section 36a(1) of the State Higher Education Act).

(3) It is the duty of the applicant to provide the required information about the achievement to be recognised. In particular, information must be provided about the institution certifying

the achievement to be recognised, the teachers and the learning outcomes associated with the achievement to be recognised. The burden of proof that an application does not fulfil the prerequisites for recognition lies with the authority conducting the recognition procedure (as per section 36a(2) of the State Higher Education Act).

(4) As far as the Federal Republic of Germany has agreements and conventions with other states regarding equivalence in higher education (equivalency agreements), which benefit students from foreign states in derogation from subsections (1) and (2), the stipulations of the equivalency agreement take precedence (as per section 35(5) of the State Higher Education Act).

(5) Knowledge and skills acquired outside the higher education system may only replace a maximum of 50 per cent of the university of applied sciences studies. Here, at the time of recognition, the prerequisites for access to the University of Applied Sciences must be met, and the content and level of the knowledge and skills counting towards the University of Applied Sciences course must be equivalent to the monitored assignments and examinations which they are to replace (section 35(3) of the State Higher Education Act). In general, only knowledge and skills can be recognised which have been proved by an examination at an educational establishment as defined by the State Higher Education Act, or at a vocational training authority as defined by the Vocational Training Act (*Berufsbildungsgesetz*). If the recognition is not regulated by a cooperation agreement between the University of Applied Sciences and an external higher education institution, the applicant will generally undergo a placement test.

(6) If monitored assignments and examination credits are recognised, the grades – as far as the grading systems are compatible – shall be transferred and incorporated into the calculation of the overall grade. The ECTS Users' Guide Annex 3 shall be used for the grade transfer procedure. For incompatible grading systems, the endorsement 'passed' will be recorded. Credits awarded by recognition may be identified as such on the transcript (*Zeugnis*).

(7) The application for recognition of credits is made to the responsible examination committee. The examination committee will decide whether to recognise the credits. At the time the decision is taken, the applicant must be registered on a degree programme at the Ulm University of Applied Sciences.

## 15 Examination committee

(1) An examination committee is formed for each degree programme for the organisation of Bachelor intermediate examinations and Bachelor examinations, as well as for the tasks assigned by the course and examination regulations. A common examination committee can be formed for related degree programmes. It has seven members. The period of office of the members is four years.

(2) The Chair, the Deputy Chair, the other members of the examination committee and their deputies are appointed from the faculty to which the degree programme is assigned; from the professors of this faculty and from the professors of other faculties who regularly teach on the degree programme. The head of the Internship Office is a member of the examination committee ex officio. Other professors, lecturers and teaching staff for special tasks can be involved



in an advisory capacity. The Chair will normally conduct the business of the examination committee.

(3) The examination committee ensures that the provisions of the course and examination regulations are adhered to. It reports regularly to the faculty about the development of the examination times and periods of study, including the actual times needed to complete the Bachelor thesis, and the distribution of the module grades and overall grades. The report must be published by the University of Applied Sciences in a suitable form. The examination committee makes suggestions regarding the reform of the course plan and the course and examination regulations. The examination committee may delegate certain tasks, for which it is responsible, to the Chair.

(4) The members of the examination committee have the right to be present at examinations.

(5) The members of the examination committee and their deputies are subject to a duty of confidentiality. If they are not civil servants, they must give a commitment of confidentiality to the Chair.

(6) A central examination committee shall be set up at the Ulm University of Applied Sciences. The central examination committee comprises the Vice President for academic affairs as the Chair and the Chairs of the examination committees.

The central examination committee has the following tasks:

- to deal with fundamental issues regarding the structure of the degree programmes and course organisation
- to coordinate the uniform application of the course and examination regulations at the University of Applied Sciences.

## 16 Examiners and observers

(1) In general, only professors are authorised to hold examinations which are not conducted during the course of study as part of classes. Lecturers and teaching staff for special tasks can be appointed as examiners. Those who have experience in professional practice and training can also be appointed examiners – if they themselves possess at least the qualification to be determined by the examination, or an equivalent qualification.

(2) For the Bachelor thesis, including the associated seminars (section 23), the candidate can suggest the examiner or a group of examiners. The suggestion does not give rise to an entitlement.

(3) The names of the examiners must be made available sufficiently in advance.

(4) Only those possessing at least the qualification to be determined by the examination, or an equivalent qualification, can be appointed as observers.

(5) Section 15(5) applies accordingly to the examiners and the observers.

## 17 Responsibilities

The examination committee is responsible for decisions

1. about the consequences of breaches of the examination regulations (section 11),
2. about the passing and failing of examinations (section 12) and the evaluation of examination performance (section 10),
3. about the appointment of examiners and observers (section 16)

The announcement of failure of examinations will be made at latest one week after the decision of the examination committee, via a notice in the department office in an anonymised form. The announcement on the noticeboard can be replaced by an announcement on the University of Applied Sciences' Intranet. Written, unanonymisable information about the decisions of the examination committee will be delivered by post. Opposition periods start once the announcement has been made.

## 18 Acquisition and evidence of English language skills

(1) All students are expected to acquire and provide evidence of English language proficiency corresponding to level "B2" of the "Common European Framework of Reference of Languages", which enables them to follow English language classes on the relevant degree programme.

(2) Each student must undergo a placement test at the start of their studies. Based on the test result, appropriate classes will be suggested and offered to the student, which shall enable the student to achieve the level aspired to.

(3) In the Special Section, it can be determined that evidence of achievement of language proficiency as per subsection (1) is a prerequisite for passing the Bachelor examination.

## II. Bachelor intermediate examination

### 19 Purpose of the Bachelor intermediate examination, overall grade, transcript (*Zeugnis*)

(1) The purpose of the Bachelor intermediate examination is to prove that the studies can be continued with a prospect of success, and that the fundamental content of the subject studied, the methodological tools and a systematic orientation have been acquired.

(2) An overall grade will be awarded for the Bachelor intermediate examination.

(3) A transcript (*Zeugnis*) for the passed Bachelor intermediate examination will be issued without delay – wherever possible within four weeks – containing the modules studied in the basic study period, the results and the overall grade. The grades will show the decimal value in brackets, calculated in accordance with section 10(5).

(4) The transcript (*Zeugnis*) for the Bachelor intermediate examination shall be issued and signed by the Dean of the faculty to which the degree programme is assigned.

### III. Bachelor examination

#### 20 Purpose and implementation of the Bachelor examination

The Bachelor examination forms the professional qualification of the Bachelor's degree programme. The Bachelor examination determines whether the student has an overview of the interrelationships in the subject of study, whether the student has the ability to apply scientific methods and knowledge, and whether the student has acquired the necessary fundamental specialist knowledge and expertise for the transition to professional practice.

#### 21 Subject-specific prerequisites

(1) The academic assessments for the Bachelor examination can only be taken by someone who has, as per section 14(1), passed the Bachelor intermediate examination at a university of the same type in the Federal Republic of Germany, or who has had an equivalent academic assessment recognised as per section 14 subsections (2) and (3), in the degree programme in which the Bachelor examination is to be taken. With the agreement of the examination committee, examinations for the Bachelor examination may also be taken if a maximum of two examinations are missing for a complete Bachelor intermediate examination.

(2) The pre-examination achievements which are a prerequisite for admission to the examinations for the Bachelor examination are specified by type and number in the Special Section.

(3) Evidence of successful participation in the practical study semester must be provided by the time the Bachelor thesis is set, at the latest.

#### 22 Setting of the Bachelor thesis and time allowed for the Bachelor thesis

(1) The Bachelor thesis is an academic assessment. Its purpose is to demonstrate the ability to work independently on a problem from the degree subject using scientific methods and within a specified period of time. The subject of the Bachelor thesis shall be set in the penultimate taught semester at the earliest, and, at the latest, three months after all modules have been completed.

(2) The topics (tasks) of the Bachelor thesis are generally set by professors from the University of Applied Sciences. In this case, these professors are also the first reviewers and supervisors of the Bachelor thesis. Furthermore, the students may request topics, in particular with regard to topics which have been set by companies (external thesis). In this case, the student shall suggest a professor from the University of Applied Sciences as the first reviewer as well as a supervisor from the University of Applied Sciences. The suggested topic must be approved by both the supervisor for the external thesis and the Chair of the examination committee.

(3) The Bachelor thesis is set by the Chair of the examination committee. The topic, the start date and intended submission date must be recorded. On request, the examination committee will ensure that the Bachelor thesis is set in good time.

(4) The Bachelor thesis can also be conducted in a team, if the contribution of the individuals to be appraised can be clearly differentiated and evaluated as an academic assessment – by specifying sections, page numbers or other objective criteria which enable a clear demarcation – and the requirements as per subsection (1) are met.

(5) The student workload for successful completion of the Bachelor thesis corresponds to 12 ECTS credits. The Bachelor thesis must be submitted four months after it was set, at the latest. As far as it is necessary in order to ensure equivalent examination conditions, or for reasons for which the candidate is not responsible, the deadline for submission can be extended by a maximum of one month. The decision on this will be made by the examination committee based on the opinion of the supervisor. The topic, task and scope of the Bachelor thesis must be limited by the supervisor in such a way that the workload corresponds to the ECTS guide values, and, taking into account the workload from other modules in the same taught semester, the deadline for finishing the Bachelor thesis can be met.

### 23 Setting and evaluation of the Bachelor thesis

(1) The Bachelor thesis must be submitted on time to the supervisor, the responsible department office, or to the Students' Service Centre (SSC). The date and time of submission must be recorded. On submission, written assurance must be given that the student has completed the thesis independently – or the appropriately-labelled part of the work for a thesis completed in a team – and has used no sources and aids other than those stated.

(2) The Bachelor thesis must be evaluated by at least two examiners (reviewers) who are professors or lecturers at the Ulm University of Applied Sciences or a partner university. They must be appointed by the examination committee. One of the examiners must be a professor from the degree programme on which the student is enrolled. Equally, the first reviewer must be a professor from the Ulm University of Applied Sciences, and one of the examiners must be the supervisor of the Bachelor thesis. The evaluation process must not exceed four weeks.

(3) The content of the Bachelor thesis must be presented and defended as part of a seminar (colloquium). The evaluation of the presentation and its defence will be incorporated into the assessment of the Bachelor thesis.

(4) The grades for the assessment of the Bachelor thesis and the associated seminar are comprised of the following weighting factors

Evaluation of the first reviewer	50%,
Evaluation of the second reviewer	30%,
Evaluation of the colloquium	20%.

(5) If the evaluation is worse than a 'pass' (4.0), the Bachelor thesis can be repeated once. A second repetition is not permitted. An application for the setting of a new topic must be made in writing to the Chair of the examination committee within a period of two months after being informed about the failure of the Bachelor thesis. If the application period is not adhered to, the right to take examinations shall lapse, unless the deadline was missed due to reasons for which the candidate is not responsible.

## 24 Additional modules

Students may take examinations in modules in addition to those specified (additional modules); however there is no automatic right to do so. The results of the academic assessments from these modules will not be incorporated into the calculation of the overall grade.

## 25 Calculation of the overall grade and transcript (*Zeugnis*)

(1) The overall grade of the Bachelor examination is calculated as per section 10 subsections 2-5 from the module grades of the main study period and the Bachelor thesis grade. In the Special Section, a particular weighting can be given to individual module grades and the Bachelor thesis grade.

(2) For outstanding performances (overall grade of at least 1.2 or higher) the overall assessment 'passed with distinction' will be awarded.

(3) A transcript (*Zeugnis*) for the passed Bachelor examination (section 12(3)) will be issued without delay – wherever possible within four weeks. The following must be recorded on the transcript (*Zeugnis*):

- the modules taken during the main study period and their results,
- the subject of the Bachelor thesis and its grade,
- the overall grade of the Bachelor examination,
- the degree subject and, if applicable, the area(s) of specialisation,
- the number of semesters needed until completion of the Bachelor examination (duration of studies),
- if appropriate - on request - the result of the academic assessments for the additional modules (section 24).

The grades must show the decimal value in brackets, as calculated in accordance with section 10 (5).

(4) The Bachelor transcript (*Bachelorzeugnis*) will be issued and signed by the President and the Dean of the faculty to which the degree programme is assigned. It shall bear the date of the day on which the last examination was set by the examination committee.

## 26 Degree and Bachelor degree certificate (*Bachelorurkunde*)

(1) After a passed Bachelor examination, the Ulm University of Applied Sciences shall award

in the degree programme Digital Media the degree  
"Bachelor of Arts" (abbreviated: "B.A.).

in the degree programme Documentation and Computer Science in Medicine the degree  
"Bachelor of Science" (abbreviated: "B.Sc.).

in the degree programme Computer Engineering the degree  
"Bachelor of Science" (abbreviated: "B.Sc.).

in the degree programme Communications Engineering the degree  
"Bachelor of Engineering" (abbreviated "B.Eng.").

in the degree programme Industrial Electronics the degree  
"Bachelor of Engineering" (abbreviated "B.Eng.").

in the degree programme Automotive Electronics the degree  
"Bachelor of Engineering" (abbreviated "B.Eng.").

in the degree programme Mechatronics the degree  
"Bachelor of Engineering" (abbreviated "B.Eng.").

in the degree programme Medical Engineering the degree  
"Bachelor of Engineering" (abbreviated "B.Eng.").

in the degree programme Mechanical Engineering the degree  
"Bachelor of Engineering" (abbreviated "B.Eng.").

in the degree programme Automotive Engineering the degree  
"Bachelor of Engineering" (abbreviated "B.Eng.").

in the degree programme Production Engineering and Organisation the degree  
"Bachelor of Engineering" (abbreviated "B.Eng.").

in the degree programme Energy Systems Technology the degree  
"Bachelor of Engineering" (abbreviated "B.Eng.").

in the degree programme International Energy Management the degree  
"Bachelor of Science" (abbreviated "B.Sc.").

in the degree programme Electrical Engineering and Information Technology the de-  
gree  
"Bachelor of Engineering" (abbreviated "B.Eng.").

in the degree programme Computer Science the degree  
"Bachelor of Science" (abbreviated: "B.Sc.").

in the degree programme Computer Science (*Informatik*) the degree  
"Bachelor of Science" (abbreviated: "B.Sc.").

in the degree programme Data Science in Medicine the degree  
"Bachelor of Science" (abbreviated: "B.Sc.").

(2) At the same time as the transcript (*Zeugnis*), the Bachelor degree certificate (*Bachelorurkunde*) will be issued with the same date as the transcript. This documents the awarding of the degree qualification. The Bachelor degree certificate will be signed by the President and marked with the seal of the Ulm University of Applied Sciences.

## 27 Diploma Supplement (degree programme explanation)

- (1) Along with the Bachelor transcript (*Bachelorzeugnis*), the University of Applied Sciences issues a Diploma Supplement in line with the "Diploma Supplement Model" from the European Union, the Council of Europe and UNESCO. As a representation of the national education system, the text agreed between the Standing Conference of the Ministers of Education and Cultural Affairs (*KMK*) and the German Rectors' Conference (voluntary association of state / state-recognised universities in Germany – *HRK*) must be used in its currently applicable version.
- (2) The Diploma Supplement is signed by the responsible Dean.
- (3) The Diploma Supplement includes – listed individually – the grades from both the basic study period and the main study period. The overall grade shown in the Diploma Supplement is calculated in accordance with section 10(2-5), using the grades from the academic assessments assigned to the modules for the basic study period and the main study period, and the Bachelor thesis grade.
- (4) For improved transparency of the final grade, the Diploma Supplement shows information on the ECTS Grading Table according to the ECTS Users' Guide in its currently applicable version.

## 28 Invalidity of the Bachelor intermediate examination and the Bachelor examination

- (1) If the candidate cheated during an examination and this fact becomes known only after the transcript (*Zeugnis*) has been issued, the grade of the examination can be corrected as per section 10. In certain circumstances, the module examination can be declared a 'fail' (5.0), and the Bachelor intermediate examination or the Bachelor examination as failed. The same applies to the Bachelor thesis. Here, where appropriate, the regulations as per section 11(6) apply.
- (2) If, with no intent to deceive, the candidate failed to comply with all of the preconditions for sitting an examination, and this fact only comes to light after the transcript (*Zeugnis*) has been issued, this non-compliance becomes irrelevant if the candidate received a pass grade at the examination in question. If the candidate deliberately gained fraudulent admission to the academic assessment, the assessment may be graded with a 'fail' (5.0) and the Bachelor intermediate examination or the Bachelor examination declared failed.
- (3) The candidate shall be given a chance to account for his or her actions before a decision is made.
- (4) The incorrect transcript shall be revoked and, where appropriate, a new one issued. The Bachelor degree certificate shall also be revoked along with the incorrect transcript if the Bachelor examination is declared failed due to cheating. A decision in accordance with subsection (1) and subsection (2) second sentence is not possible after a period of five years from the date on the transcript.

## 29 Inspection of examination files

Within one year after the completion of the assessment process, the candidate may request, in a suitable form, to inspect their written test paper, the assessments relating to it and the records of the examination. Section 29 of the State Administrative Procedures Act (*Landesverwaltungsverfahrensgesetz*) is not affected.



## Section B: Special section

### 30 Classes, monitored assignments, examinations, regulations for elective modules

(1) The following abbreviations are used for the classes:

- V = Lecture (*Vorlesung*),
- Ü = Tutorial (*Übung*),
- L = Lab,
- S = Seminar,
- P = Project work.

(2) The abbreviation for the number of semester hours is SWS (*Semesterwochenstunden*). A semester hour is one academic contact hour (45 min) within each week of the lecture period (15 weeks/semester). The abbreviation for the ECTS credits is cp.

(3) The monitored assignments comprise:

- LN = General record of performance (*Allgemeiner Leistungsnachweis*), (information on the type of examination will be announced at the start of the semester)
- BE = Report (*Bericht*),
- E = Mechanical design (*Konstruktiver Entwurf*),
- HA = Homework (*Hausarbeit*),
- K = Written examination (*Klausur*);  
90 min. unless otherwise specified,
- LA = Laboratory work (*Laborarbeit*),
- PA = Practical work (*Praktische Arbeit*),
- PK = Record (*Protokoll*),
- PP = Practical work/design and presentation,
- RE = Presentation (*Referat*), 15 min. unless otherwise specified,
- ST = Monitored assignments (other written assignment).

(4) The academic assessments comprise:

- LN = General record of performance (*Allgemeiner Leistungsnachweis*), (information on the type of examination will be announced at the start of the semester)
- E = Mechanical design (*Konstruktiver Entwurf*),
- K = Written examination (*Klausur*);  
90 min. unless otherwise specified,
- K,K = 2 written examinations = 2 academic assessments,
- LA = Laboratory work (*Laborarbeit*),
- M = Oral examination (*Mündliche Prüfungsleistung*),
- ST = Monitored assignments (other written assignment),
- PA = Practical work (*Praktische Arbeit*),
- PP = Practical work/design and presentation,
- RE = Presentation (*Referat*), 15 min. unless otherwise specified,
- BE = Report (*Bericht*).

(5) Elective modules are modules for which the student must undergo academic assessment for appropriate classes (elective module subjects), which the student can select from the responsible faculty's defined catalogue of current classes. The number of elective module subjects is determined by the relevant specified student workload for the elective module in ECTS credits.

(6) The following types of elective modules exist:

Interdisciplinary elective module:	Interdisciplinary, economic and social science modules, including foreign language modules.
Subject specific elective module:	Subjects oriented towards the relevant field of study; specified by the faculty responsible for the relevant degree programme.
Elective module:	The student has the option of choosing both interdisciplinary and subject specific elective modules.
Alternative module:	The selection is limited in a defined way.

(7) The current elective modules will be announced sufficiently in advance of the start of lectures, stating the type of class, the student workload in ECTS credits, the teaching time in semester hours and the required monitored assignments and examinations.

(8) The assignment of the ECTS credits for elective modules to the taught semesters, shown in the Special Section course schedule tables, is a recommendation and is not binding. The student must register for the elective modules by, where applicable, enrolment in advance, and by taking part in the classes and examinations. Before the transcript for the Bachelor intermediate examination or the Bachelor examination is issued, the student must prove sufficiently in advance that he or she has adequately met the standard required by the specified elective modules.

(9) As far as elective modules are required to pass the Bachelor intermediate examination or the Bachelor examination, all the selected elective modules and the grades achieved in them will be listed on the appropriate transcripts. In the calculation of the overall grade, these grades will be weighted according to the number of ECTS credits stated in the degree programme description.

### 31 Bachelor's degree programme Documentation and Computer Science in Medicine (*Medizinische Dokumentation und Informatik*)

(1) For the successful completion of the course, the total scope of the required classes – as far as compulsory and elective modules are concerned – is 141 semester hours. This results in the acquisition of 210 ECTS credits in seven semesters. The student is intended to acquire 60 ECTS credits per academic year. An academic year consists of two semesters.

(2) From the 4th taught semester, classes for the degree programme may be offered in the English language, which then replace the corresponding classes in the German language.

(3) In the practical project, where the student must be present for at least 100 days (section 4 (2)), the student shall experience processes in a business or institutional environment. Due to the breadth of the subjects in the degree programme, these could be in the field of medicine, biometrics, clinical studies or also in computer science. The practical project serves as an introduction to independent project-related work in the student's future career, under specialist guidance.

(4) The required modules for successful completion and the associated monitored assignments and examinations can be found in the following table:

Bachelorstudiengang Medizinische Dokumentation und Informatik											
Modul / Lehrveranstaltung	Art	SWS	ECTS-Kreditpunkte im Lehrplansemester							Studienleistung	Prüfungsleistung
			1	2	3	4	5	6	7		
Vorklinische Medizin 1	V+L	4	5								K
Wissenschaftliches Arbeiten	V+L	4	5							LN	
Einführung in die Informatik	V+L	4	5								K
Einführung in die Programmierung	V+L	4	5								K
Beschreibende Statistik	V+Ü	4	5								K
Mathematik	V+Ü	4	5							LN	K
Vorklinische Medizin 2	V+L	4		5							K
Grundlagen der Dokumentation	V+L	4		5							K
Datenbanken	V+L	4		5						LA	K
Fortgeschrittene Methoden der Programmierung	V+L	4		5							K
Wahrscheinlichkeitsrechnung	V+Ü	4		5							K
Gesundheitswesen u. Recht	V	4		5							K
Klinische Medizin 1	V+L	4			5						K
Medizinische Dokumentation	V+L	4			5						K
Betriebssysteme/Rechnernetze	V+L	4			5						K
Webbasierte Programmierung	V+L	4			5						K
Inferenzstatistik	V+Ü	4			5						K
Statistische Auswertesysteme	V+L	4			5						K
Klinische Medizin 2	V+L	4				5					M
Klinische Forschung und Studien	V+L	4				5					M
Projektmanagement	V+L	4				5					M
Projektarbeit 1	V+L	4				5					M
Biostatistische Verfahren	V+L	4				5				LA	K
Fachenglisch	V+Ü	4				5					K
Medizinische Informationssysteme	V+L	4					5				M
Datenschutz IT-Sicherheit	V+L	4					5				M
Projektarbeit 2	V+L	4					5				M
Wahlpflichtmodul 1		4					5				§30
Wahlpflichtmodul 2		4					5				§30
Seminar	S	4					5				ST, RE
Kommunikation und Moderation	V+Ü	2						2			RE
Praxisprojekt	P							20			
Praxissemesterarbeit	S	1						8		BE	
Wahlpflichtmodul 3		4						S	5		§ 30
Wahlpflichtmodul 4		4						E	5		§ 30
Wahlpflichtmodul 5		4						M.	5		§ 30

Bachelorarbeit	P	4							12		BE, §23(3)
Seminar zur Bachelorarbeit	S	2							3		
<b>Summen</b>		<b>141</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>		

(5) Only students who have successfully completed the associated monitored assignments will be admitted to the required examinations. The monitored assignments for the practical study semester must be submitted at latest two weeks after the start of lectures in the subsequent study semester.

(6) Of the five required academic assessments for modules, at least one module must be taken in the subject group Medicine (Catalogue M), one module in the subject group Biometrics (Catalogue B) and one module in the subject group Computer Science (Catalogue I) respectively. The other two elective models can be freely chosen from the available catalogues. The catalogues M, B, I, and the other elective module catalogues available for the degree programme, are defined by the responsible examination committee. If module examinations were taken at another university (e.g. as a part of studying abroad), the student must apply to the responsible examination committee to have them recognised.

(7) The examinations for the Bachelor intermediate examination as per section 19 are the examinations for the first two taught semesters. In the calculation of the overall grade for the Bachelor intermediate examination (section 19(2)), these will be weighted according to the number of ECTS credits.

(8) The subject groups (section 3(5)) for the Bachelor examination, the associated modules, and the weighting of the module grades for the overall grade (section 25(1)) can be found in the following table:

Fachgruppe	Module	Gewicht der Modulnote für die Gesamtnote
Biometrie	Inferenzstatistik	5
	Statistische Auswertesysteme	5
	Biostatistische Verfahren	5
	Wahlpflichtmodul aus Katalog B	5
Informatik	Webbasierte Programmierung	5
	Betriebssysteme und Rechnernetze	5
	Projektmanagement	5
	Wahlpflichtmodul aus Katalog I	5
Medizinische Dokumentation und Informationssysteme	Medizinische Dokumentation	5
	Klinische Forschung/Studien	5
	Medizinische Informationssysteme	5
	Datenschutz und IT-Sicherheit	5
Medizin	Klinische Medizin 1	5
	Klinische Medizin 2	5
	Wahlpflichtmodul aus Katalog M	5
Kommunikation	Fachenglisch	5
	Kommunikation und Moderation	2
Praxis	Projektarbeit 1	5
	Projektarbeit 2	5
Vertiefung	Wahlpflichtmodul 4	5
	Wahlpflichtmodul 5	5
	Seminar	5
Bachelorarbeit	Bachelorarbeit, Seminar zur Bachelorarbeit	15
<b>Summe: 8</b>	<b>23</b>	<b>122</b>

## 32 Bachelor's degree programme Computer Engineering (*Technische Informatik*)

(1) For the successful completion of the course, the total scope of the required classes – as far as compulsory and elective modules are concerned – is 141 semester hours. This results in the acquisition of 210 ECTS credits in seven semesters. The student is intended to acquire 60 ECTS credits per academic year. An academic year consists of two semesters.

(2) From the 4th taught semester, classes for the degree programme may be offered in the English language, which then replace the corresponding classes in the German language.

(3) In the practical project, where the student shall be present for at least 100 days (section 4(2)), the student will experience hardware and software development processes in a business environment. It serves as an introduction to independent project-related work in the student's future career, under specialist guidance.

(4) The required modules for successful completion and the associated monitored assignments and examinations can be found in the following table:

Bachelorstudiengang Technische Informatik												
Modul / Lehrveranstaltung	Art	SWS	ECTS-Kreditpunkte im Lehrplansemester							Studienleistung	Prüfungsleistung	
			1	2	3	4	5	6	7			
Einsteiger-Projekt	P+S	4	5								LN	
Mathematik 1	V+Ü	4	5								LN	K
Programmieren 1	V+L	4	5								LA	K
Grundlagen der Technischen Informatik	V+L	4	5								LA	K
Elektrotechnik	V+L	4	5								LA	K
Einführung BWL	V	4	5									K
Projekt 1	P+V	4		5							LA	K 45 min, PP
Mathematik 2	V+Ü	4		5							HA	K
Programmieren 2	V+L	4		5							LA	K
Mikrocomputer	V+L	4		5							LA	K
Digitaltechnik	V+L	4		5							LA	K
Theoretische Informatik	V+Ü	4		5							HA	K
Projekt 2	P	4			5						PK	ST, RE
Mathematik 3	V+Ü	4			5						HA	K
Programmieren 3	V+L	4			5						LA	K
Embedded Systems	V+L	4			5						LA	K
Algorithmen und Datenstrukturen	V+L	4			5						LA	K
Softwaretechnologie	V+L	4			5						LA	K
Stochastik	V+Ü	4				5					HA	K
Betriebssysteme	V+L	4				5					LA	M
Computerarchitektur	V+L	4				5					LA	M
Rechnernetze	V+L	4				5					LA	M
Fachenglisch	V+Ü	4				5						K
Projektmanagement + Integr. Projekt I	S+P	4				5					RE	PP
Integr. Projekt II	S+P	4					5				RE	
Seminar <sup>1)</sup>	S	4					5					ST, RE

Verteilte Systeme + IT-Sicherheit	V+L	4					5				K
Echtzeitsysteme	V+L	4					5				M
Wahlpflichtmodul 1		4					5				§30
Wahlpflichtmodul 2		4					5				§30
Kommunikation und Moderation	V+Ü	2						2			RE
Praxisprojekt	P							20			
Praxissemester-Arbeit	S	1						8		ST, RE	
Wahlpflichtmodul 3		4							5		§30
Wahlpflichtmodul 4		4							S	5	§30
Wahlpflichtmodul 5		4							E	5	§30
Bachelorarbeit	P	4							M.	12	BE,
Seminar zur Bachelorarbeit	S	2								3	§23 (3)
<b>Summen</b>		<b>141</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	

<sup>1)</sup> Event held in English.

(5) Only students who have successfully completed the associated monitored assignments will be admitted to the required examinations. The monitored assignments for the practical study semester must be submitted at latest two weeks after the start of lectures in the subsequent study semester.

(6) Of the five required academic assessments for modules, at least three must be taken from Catalogue A of the degree programme-related elective modules. A maximum of two academic assessments can be taken from Catalogue B of the subject-related elective modules. A maximum of one academic assessment can be taken from Catalogue C of economic and social science modules. Catalogues A, B and C of the elective modules are defined by the responsible examination committee. If module examinations were taken at another university (e.g. as a part of studying abroad), the student must apply to the responsible examination committee to have them recognised.

(7) The examinations for the Bachelor intermediate examination as per section 19 are the examinations for the first two taught semesters. In the calculation of the overall grade for the Bachelor intermediate examination (section 19(2)), these will be weighted according to the number of ECTS credits.

(8) The subject groups (section 3(5)) for the Bachelor examination, the associated modules, and the weighting of the module grades for the overall grade (section 25(1)) can be found in the following table:

Fachgruppe	Module	Gewicht der Modulnote für die Gesamtnote
Mathematik	Mathematik 3	5
	Stochastik	5
Praktische Informatik	Programmieren 3	5
	Softwaretechnologie	5
	Algorithmen und Datenstrukturen	5
Computertechnik	Embedded Systems	5
	Computerarchitektur	5
	Echtzeitsysteme	5
Rechnernetze, Betriebssysteme und Verteilte Systeme	Rechnernetze	5
	Betriebssysteme	5
	Verteilte Systeme + IT-Sicherheit	5
Kommunikation	Fachenglisch	5
	Kommunikation und Moderation	2

Projektarbeit	Projekt 2	5
	Integriertes Projekt	10
Vertiefung	Wahlpflichtmodul 1	5
	Wahlpflichtmodul 2	5
	Wahlpflichtmodul 3	5
	Wahlpflichtmodul 4	5
	Wahlpflichtmodul 5	5
	Seminar	5
Bachelorarbeit	Bachelorarbeit, Seminar zur Bachelorarbeit	15
<b>Summe: 8</b>	<b>22</b>	<b>122</b>

### 33 Bachelor's degree programme Communications Engineering (*Na- chrichtentechnik*),

(1) For the successful completion of the course, the total scope of the required classes – as far as compulsory and elective modules are concerned – is 149 semester hours. The successful completion of all required modules results in the acquisition of 210 ECTS credits. The standard study period is seven semesters.

(2) From the fourth taught semester, classes for the degree programme may be offered in the English language instead of in the German language. See section 18 with regard to the acquisition and proof of English language skills.

(3) The required modules for successful completion and the associated monitored assignments and examinations can be found in the table in subsection (8):

(4) Only students who have successfully completed the associated monitored assignments will be admitted to the examinations. Monitored assignments taken as a written examination (K) count as pre-examination achievements (*Prüfungsvorleistungen*) as per section 3(7). The monitored assignments for the practical study semester must be submitted at latest 2 weeks after the start of lectures in the subsequent study semester.

(5) The grade weighting for the calculation of the overall grades for the Bachelor intermediate examination as per section 19(2) and the Bachelor examination as per section 25(1) depends on the number of ECTS credits. The calculation of the overall grade for the module "Communications Engineering Project" is made with the weighting BE (60%), M (20%) and RE (20%).

(6) If students were recommended by the examination committee for a consecutive Master's degree programme at Ulm University, they can have examinations which they took in the first taught semester of the Master's degree programme there recognised. The examination results achieved for the "Subject specific elective module" module examination will be recognised. The classes which go with these examinations can be offered by both Ulm University of Applied Sciences and Ulm University. They will be announced by the Faculty of Electrical Engineering and Information Technology at the start of the lecture period.

(7) The examinations can, in part, also be held in the week before the start of lectures for the subsequent semester. Examinations and examination dates will be announced sufficiently in advance.

(8) Table of the modules and classes:

Bachelorstudiengang Nachrichtentechnik												
Modul / Lehrveranstaltung	Art	SWS	ECTS-Kreditpunkte im Lehrplansemester							Studienleistung	Prüfungsleistung	
			1	2	3	4	5	6	7			
Mathematik 1	V+Ü	6	6								K	K 120 min
Physik 1	V	6	6								K	K
Elektrotechnik 1 mit Schlüsselqualifikationen	V+L	8	8								LA, RE	K
Digitaltechnik 1	V+L	4	4									K
Programmieren 1	V+L	6	6									K 120 min
Mathematik 2	V	6		6								K 120 min
Physik 2	V+L	4+1		5							LA	K
Elektrotechnik 2	V+L	4+1		5							LA	K
Digitaltechnik 2	V+L	4		4							LA	K
Programmieren 2 mit Projekt	V+L	6		6							LA, BE	K
Kommunikationstechnik	V+L	4		4							LA	K
Mathematik 3	V	4			4							K
Systemtheorie	V+L	4			5						LA	K
Halbleiterelektronik	V+L	6			6						LA	K
Mikrocomputertechnik 1	V+L	4			5						LA	K
Nachrichtentechnik 1	V+L	4			5						LA	K
Mikrowellentechnik	V+L	4			5						LA	K
Mikroelektronische Schaltungen	V+L	4				5					LA	K
Mikrocomputertechnik 2	V+L	4				5					LA	K
Signalverarbeitung	V+L	4				5					HA	K
Software Engineering	V+L	4				5						PP
Nachrichtentechnik 2	V+L	4				5						K
Systemdynamik	V+L	4				5					LA	K
Praktikum	Labor NT	L	2					2			LA	
	Praxisprojekt	P+S	1					28			BE, RE	
Projekt Nachrichtentechnik	P	6							10		ST	BE, M, RE
Leitungsgebundene Kommunikation	V+L	4							5			K
Funkkommunikation	V+L	4							5			K
Fachspezifisches Wahlpflichtmodul	§ 30	4							5			§30
Fachübergreifendes Wahlpflichtmodul	§ 30	8							5	5		§30
Management von Komm-Netzen	V+L	4								5		K
Simulation von Komm-Systemen	V+L	4								5		K
Seminar zur Bachelorarbeit	S	2										§23 (3)
Bachelorarbeit *)	P									15		und (4)
<b>Summen ECTS SWS</b>		<b>149</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>3</b>	<b>30</b>	<b>30</b>		

\*) The Bachelor thesis corresponds to a workload of 12 ECTS credits.

### 34 Bachelor's degree programme Industrial Electronics (*Industrieelektronik*)

(1) For the successful completion of the course, the total scope of the required classes – as far as compulsory and elective modules are concerned – is 149 semester hours. The successful completion of all required modules results in the acquisition of 210 ECTS credits. The standard study period is seven semesters.



(2) From the fourth taught semester, classes for the degree programme may be offered in the English language instead of in the German language. See section 18 with regard to the acquisition and proof of English language skills.

(3) The required modules for successful completion and the associated monitored assignments and examinations can be found in the table in subsection (8):

(4) Only students who have successfully completed the associated monitored assignments will be admitted to the examinations. Monitored assignments taken as a written examination (K) count as pre-examination achievements (*Prüfungsvorleistungen*) as per section 3(7). The monitored assignments for the practical study semester must be submitted at latest 2 weeks after the start of lectures in the subsequent study semester.

(5) The grade weighting for the calculation of the overall grades for the Bachelor intermediate examination as per section 19(2) and the Bachelor examination as per section 25(1) depends on the number of ECTS credits. The calculation of the overall grade for the module "Industrial Electronics Project" is made with the weighting BE (60%), M (20%) and RE (20%).

(6) If students were recommended by the examination committee for a consecutive Master's degree programme at Ulm University, they can have examinations which they took in the first taught semester of the Master's degree programme there recognised. The examination results achieved for the "Subject specific elective module" module examination will be recognised. The classes which go with these examinations can be offered by both Ulm University of Applied Sciences and Ulm University. They will be announced by the Faculty of Electrical Engineering and Information Technology at the start of the lecture period.

(7) The examinations can, in part, also be held in the week before the start of lectures for the subsequent semester. Examinations and examination dates will be announced sufficiently in advance.

(8) Table of the modules and classes:

Bachelorstudiengang Industrieelektronik												
Modul / Lehrveranstaltung	Art	SWS	ECTS-Kreditpunkte im Lehrplansemester							Studienleistung	Prüfungsleistung	
			1	2	3	4	5	6	7			
Mathematik 1	V+Ü	6	6								K	K 120 min
Physik 1	V	6	6								K	K
Elektrotechnik 1 mit Schlüsselqualifikationen	V+L	8	8								LA, RE	K
Digitaltechnik 1	V+L	4	4									K
Programmieren 1	V+L	6	6									K 120 min
Mathematik 2	V	6		6								K 120 min
Physik 2	V+L	4+1		5							LA	K
Elektrotechnik 2	V+L	4+1		5							LA	K
Digitaltechnik 2	V+L	4		4							LA	K
Programmieren 2 mit Projekt	V+L	6		6							LA, BE	K
Kommunikationstechnik	V+L	4		4							LA	K
Mathematik 3	V	4			4							K
Systemtheorie	V+L	4			5						LA	K
Halbleiterelektronik	V+L	6			6						LA	K
Mikrocomputertechnik 1	V+L	4			5						LA	K

Mess- und Sensortechnik	V+L	4			5		I E N -			LA	K
Steuerungstechnik	V+L	4			5					LA	K
Mikroelektronische Schaltungen	V+L	4			5					LA	K
Mikrocomputertechnik 2	V+L	4			5					LA	K
Signalverarbeitung	V+L	4			5					HA	K
Software Engineering	V+L	4			5						PP
Regelungstechnik 1	V+L	4			5						K
Elektrische Maschinen	V	4			5						K
Praktikum	Labor IE	L	2				2			LA	
	Praxisprojekt	P+S	1				28			BE, RE	
Projekt Industrieelektronik	P	6						10		ST	BE, M, RE
Leistungselektronik 1	V+L	4						5		LA	K
Regelungstechnik 2	V+L	4						5			K
Fachspezifisches Wahlpflichtmodul	§ 30	4						5			§30
Fachübergreifendes Wahlpflichtmodul	§ 30	8						5	5		§30
Leistungselektronik 2	V+L	4							5	LA	K
Geregelte Antriebe	V+L	4							5		K
Seminar zur Bachelorarbeit	S	2									§23 (3) und (4)
Bachelorarbeit *)	P								15		§23 (3) und (4)
<b>Summen ECTS</b>			30	30	30	30	30	30	30		
<b>SWS</b>		149	30	30	26	24	3	24	12		

\*) The Bachelor thesis corresponds to a workload of 12 ECTS credits.

### 35 Bachelor's degree programme Automotive Electronics (*Fahrzeugelektronik*)

(1) For the successful completion of the course, the total scope of the required classes – as far as compulsory and elective modules are concerned – is 149 semester hours. The successful completion of all required modules results in the acquisition of 210 ECTS credits. The standard study period is seven semesters.

(2) From the fourth taught semester, classes for the degree programme may be offered in the English language instead of in the German language. See section 18 with regard to the acquisition and proof of English language skills.

(3) The required modules for successful completion and the associated monitored assignments and examinations can be found in the table in subsection (8):

(4) Only students who have successfully completed the associated monitored assignments will be admitted to the examinations. Monitored assignments taken as a written examination (K) count as pre-examination achievements (*Prüfungsvorleistungen*) as per section 3(7). The monitored assignments for the practical study semester must be submitted at latest 2 weeks after the start of lectures in the subsequent study semester.

(5) The grade weighting for the calculation of the overall grades for the Bachelor intermediate examination as per section 19(2) and the Bachelor examination as per section 25(1) depends on the number of ECTS credits. The calculation of the overall grade for the module "Automotive Electronics Project" is made with the weighting BE (60%), M (20%) and RE (20%).

(6) If students were recommended by the examination committee for a consecutive Master's degree programme at Ulm University, they can have examinations which they took in the first taught semester of the Master's degree programme there recognised. The examination results achieved for the "Subject specific elective module" module examination will be recognised. The classes which go with these examinations can be offered by both Ulm University of Applied Sciences and Ulm University. They will be announced by the Faculty of Electrical Engineering and Information Technology at the start of the lecture period.

(7) The examinations can, in part, also be held in the week before the start of lectures for the subsequent semester. Examinations and examination dates will be announced sufficiently in advance.

(8) Table of the modules and classes:

Bachelorstudiengang Fahrzeugelektronik												
Modul / Lehrveranstaltung	Art	SWS	ECTS-Kreditpunkte im Lehrplansemester							Studienleistung	Prüfungsleistung	
			1	2	3	4	5	6	7			
Mathematik 1	V+Ü	6	6								K	K 120 min
Physik 1	V	6	6								K	K
Elektrotechnik 1 mit Schlüsselqualifikationen	V+L	8	8								LA, RE	K
Digitaltechnik 1	V+L	4	4									K
Programmieren 1	V+L	6	6									K 120 min
Mathematik 2	V	6		6								K 120 min
Physik 2	V+L	4+1		5							LA	K
Elektrotechnik 2	V+L	4+1		5							LA	K
Digitaltechnik 2	V+L	4		4							LA	K
Programmieren 2 mit Projekt	V+L	6		6							LA, BE	K
Kommunikationstechnik	V+L	4		4							LA	K
Mathematik 3	V	4			4							K
Systemtheorie	V+L	4			5						LA	K
Halbleiterelektronik	V+L	6			6						LA	K
Mikrocomputertechnik 1	V+L	4			5						LA	K
Mess- und Sensortechnik	V+L	4			5						LA	K
Fahrzeugtechnik - Antrieb	V+L	4			5						LA	K
Software Engineering	V+L	4				5						PP
Mikroelektronische Schaltungen	V+L	4				5					LA	K
Mikrocomputertechnik 2	V+L	4				5					LA	K
Signalverarbeitung	V+L	4				5					HA	K
Regelungstechnik 1	V+L	4				5						K
Fahrzeugtechnik - Fahrwerk	V+L	4				5						K
Praktikum	Labor FE	L	2					2			LA	
	Praxisprojekt	P+S	1					28			BE, RE	
Projekt Fahrzeugelektronik	P	6							10		ST	BE, M, RE
Leistungselektronik 1	V+L	4							5		LA	K
Regelungstechnik 2	V+L	4							5			K
Fachspezifisches Wahlpflichtmodul	§ 30	4							5			§30
Fachübergreifendes Wahlpflichtmodul	§ 30	8							5	5		§30
Fahrzeugsysteme	V	4								5		K
Elektromagnetische	V+L	4								5		K

Verträglichkeit												
Seminar zur Bachelorarbeit	S	2										§23 (3)
Bachelorarbeit *)	P									15		und (4)
<b>Summen ECTS</b>			30	30	30	30	30	30	30	30		
<b>SWS</b>		149	30	30	26	24	3	24	12			

\*) The Bachelor thesis corresponds to a workload of 12 ECTS credits.

### 36 Bachelor's degree programme Production Engineering and Organisation (*Produktionstechnik und Organisation*)

(1) For the successful completion of the course, the total scope of the required classes – as far as compulsory and elective modules are concerned – is 148 semester hours. The successful completion of all required modules results in the acquisition of 210 ECTS credits. The standard study period is seven semesters.

(2) The duration of the pre-study internship (section 2) is 12 weeks. The pre-study internship will give the student basic knowledge of manual and mechanical processing techniques.

(3) From the third taught semester, classes for the degree programme may be offered in the English language instead of in the German language.

(4) The required modules for successful completion and the associated monitored assignments and examinations can be found in the table in subsection (7). The basic study period includes the modules up to the end of the second taught semester, the main study period all modules from the third taught semester.

(5) Only students who have successfully completed the associated monitored assignments will be admitted to the required examinations. The monitored assignments for the practical study semester must be submitted at latest 2 weeks after the start of lectures in the subsequent study semester.

(6) The grade weighting for the calculation of the overall grades for the Bachelor intermediate examination as per section 19(2) and the Bachelor examination as per section 25(1) depends on the number of ECTS credits.

(7) Table of the modules and classes:

Bachelorstudiengang Produktionstechnik und Organisation												
Modul / Lehrveranstaltung	Art	SWS	ECTS-Kreditpunkte im Lehrplansemester							Studienleistung	Prüfungsleistung	
			1	2	3	4	5	6	7			
Mathematik I	V	6	6					P R A K. K.				K
Physik I	V	6	6									K
Technische Mechanik I	V	6	6									K
Konstruktion	V	6	6									K
Wirtschaftslehre												
Betriebswirtschaftslehre	V	4	4									K
Einf. in die Energiewirtschaft	V	2	2									

Werkstoffkunde											
Werkstoffkunde	V	4		4							
Werkstoffkunde - Labor	L	2		2				LA			K
Mathematik II	V	6		6							K
Physik II											
Angewandte Physik	V+L	3		3				LA			K
Elektrotechnik	V	3		3							K
Technische Mechanik II	V	6		6							K
Thermodynamik und Strömungslehre											
Strömungslehre	V	2		2							K
Thermodynamik mit Labor	V+L	4		4							120 min
Statistik in der Produktion	V	4				5					K
Produktionsanlagenbau											
Betriebsmittelkonstruktion	V	2				3		E, 60 h			K
Werkzeugmaschinen	V	2				2					
Arbeitswissenschaftliche Grundlagen											
Arbeitswissenschaft	V	2				3		RE			BE, K
Recht in der Produktion	V	2				2					HA, K
Fertigungsverfahren I	V	4				5					HA, K
Produktionsdatenverarbeitung	V+L	4				5		HA			K
Montage- und Fügetechnik											
Montagetechnik	V	2				2					K
Fügetechnik <sup>5)</sup>	V	2				3					
Automatisierungstechnik											
Steuer- und Regelungstechnik	V+L	3				4		LA			K
Automatisierung i.d. Produktion	V+L	3				4					HA, K
Fertigungsverfahren II	V	4				5					M
Produktionsplanung und -steuerung	V+L	6				6					
Qualitätstechnik											
Qualitätsmanagement	V	2				3					
Fertigungsmesstechnik	V+L	2				2		LA			K
Projektmanagement											
Angewandte Projektmethodik	V	2				3		LN			BE, ST
Projektarbeit <sup>2)</sup>	P+S	1				3		BE			
Praktikum <sup>4)</sup>											
Praktikum Fertigungslabor	L	2					4	LA			
Praxisprojekt	P+S						26	BE, RE			
Rationalisierung und Kostenrechnung	V	6						7			K
Fabrikplanung u. Organisation											
Fabrikplanung	V+L	4						4			BE, K
Betriebsorganisation	V+L	4						4	RE		
Angewandte Produktionstechnik <sup>2), 3)</sup>	P	1						5			ST
Wahlpflichtmodule <sup>1), 3)</sup>	§ 30	16						10	10		§30
Logistik											
Grundlagen der Logistik	V+L	3						4			K
Logistische Informationssysteme	V	3						4			
Bachelorarbeit	P+S	2						12			BE, RE §23 (3)

S  
T  
U  
D  
I  
E  
N  
S  
E  
M  
E  
S  
T  
E  
R

											und (4)
ECTS		210	30	30	30	30	30	30	30		
SWS		148	30	30	24	23	2	23	16		

<sup>1)</sup> Within the scope of the required ECTS credits, elective modules and economic and social sciences ("WISO") classes must be selected from a catalogue defined by the Faculty of Production Engineering and Production Economics. The catalogue of current modules will be published before the start of lectures. One elective module must be in a language subject.

<sup>2)</sup> One of the projects in the project work classes, Applied Production Engineering II or the Bachelor thesis must primarily be a design project.

<sup>3)</sup> The assignment to the semesters is not binding.

<sup>4)</sup> The practical study semester includes the internship, the Manufacturing Laboratory (preparatory class) and the presentation (follow-up seminar for the practical project). The Manufacturing Laboratory takes place in the 4th semester.

<sup>5)</sup> The elective "Welding Laboratory" (*Schweißtechnisches Labor*) is recommended as a supplement to Joining Technology (*Fügetechnik*).

### 37 Bachelor's degree programme Mechanical Engineering (*Maschinenbau*)

(1) For the successful completion of the course, the total scope of the required classes – as far as compulsory and elective modules are concerned – is 148.5 semester hours. The successful completion of all required modules results in the acquisition of 210 ECTS credits. The standard study period is seven semesters.

(2) The duration of the pre-study internship (section 2) is 12 weeks. The pre-study internship shall give the student basic knowledge of manual and mechanical processing techniques.

(3) From the fourth taught semester, classes for the degree programme may be offered in the English language instead of in the German language. Students must provide evidence of English language proficiency corresponding to level "B2" of the "Common European Framework of Reference of Languages". Proof of English language proficiency can be supplied by a placement test at the start of the student's studies, successfully passing the "*Englisch Mittelstufe 2*" test at the Ulm University of Applied Sciences, or by an equivalent language certificate. It is a prerequisite for passing the Bachelor examination (see also section 18).

(4) The required classes for successful completion and the associated monitored assignments and examinations as per section 3(6) can be found in the following tables. The basic study period includes the modules up to the end of the second taught semester, the main study period all modules from the third taught semester.

(5) Only students who have successfully completed the associated monitored assignments will be admitted to the required examinations, in as far as the monitored assignments can be completed in parallel to lectures. The monitored assignments for the module "Presentation Techniques" must be completed before the Bachelor intermediate examination transcript is issued. The monitored assignments for the practical study semester must be submitted at latest 4 weeks after the start of lectures in the subsequent study semester.

(6) The grade weighting for the calculation of the overall grades for the Bachelor intermediate examination as per section 19(2) and the Bachelor examination as per section 25(1) depends on the number of credits.

(7) The main study period is structured into the course specialisations "Design and Development" and "Automation and Energy Technology".

(8) Table of the modules and classes in the basic study period:

<b>Bachelorstudiengang Maschinenbau und Fahrzeugtechnik</b>							<b>Stand: FZ, MB</b>		
<b>Grundstudium</b>							<b>Sep. 15</b>		
Modul / Lehrveranstaltung	Art	SWS	ECTS-Kreditp. im Lehrplansemester		Studienleistung	Prüfungsleistung			
			1	2					
Mathematik 1	V	6	6		K	K			
Physik 1 / Chemie	Physik 1	V	4	4		K			
	Chemie	V	2	2		K, 60 min			
Werkstoffkunde / Fertigungsverfahren	Werkstoffkunde	V	4	4		K			
	Fertigungsverfahren	V	2	2		K, 60 min			
	Werkstoffprüfung	L	2		2	LA			
Präsentationstechnik	S	1,5	1	1		BE, RE			
Techn. Mechanik 1	Statik	V	6	6		K			
Techn. Mechanik 2	Festigkeitslehre	V	6		6	K			
Grundlagen CAD	CAD 1	V+P	2	2		E, 30h			
	CAD 2	V+P	2		3	E, 60h			
Grundlagen Konstruktion	Konstruktionslehre 1	V+Ü	2	3		E, 30h	K, 180 min		
	Konstruktionslehre 2	V+Ü	4		4	E, 60h			
	Maschinenelemente 1	V	2		2				
Mathematik 2	V	6		6		K			
Physik 2	Physik 2	V	4		4	K			
	Physiklabor	L	2		2	LA			
Summe		57,5	30	30					
Aufwand im Grundstudium		57,5	60						

(9) Table of the modules and classes in the main study period for the course specialisation "Design and Development":

<b>Bachelorstudiengang Maschinenbau</b>							<b>Stand: MBK</b>			
<b>Hauptstudium im Schwerpunkt Konstruktion und Entwicklung</b>							<b>Sep. 15</b>			
Modulgruppe	Modul	Art	SWS	ECTS-Kreditpunkte im Lehrplansemester				Studienleistung	Prüfungsleistung	
				3	4	5	6			7
Mathematik 3 / Programmieren	Mathematik 3	V	4	4					K; LA <sup>1)</sup>	
	Programmieren	V+Ü	4	4		P				
Technische Grundlagen	Elektrotechnik / Messtechnik	V+L	6	6		R		LA	K	
	Thermodynamik	V+L	5	4	1	A		LA, K	K	
	Strömungslehre	V+L	5	4	1	K		LA, K	K	
	Dynamik	V	5	4	1	T.		K	K	
Konstruktionsprojekt 1	Maschinenelemente 2	V	3	3						
	Konstruktionslehre 3	V+L	2	3		S		E, 60 h	K, 120 min	
Konstruktionsprojekt 2	Maschinenelemente 3	V	2	2		T.				
	Konstruktionslehre 4	V+L	2	3		U		E, 60 h	K, 120 min	
Technische Grundlagen	Regelungstechnik	V+L	4	5		D		LA	K	
Schwerpunktmodule	Alternativmodul 4a		4	5		I			K	
	Alternativmodul 4b		4	5		E			K	
	Alternativmodul 4c		4	5		N			K	
Praktikum	Ergänzung Praxisprojekt	L	2			2		LA		
	Praxisprojekt	P+S	0,5			28		BE, RE		
Schwerpunktmodule	Konstruktionsseminar	V+S	4			S	5	E, 90 h	K	
	Mehrkörpersimulation	V	4			E	5		K	
	Alternativmodul 6a		4			M	5		K	
	Alternativmodul 6b		4			E	5		K	
Betriebswirtschaft	V	4			S	5		K		
Angewandter Maschinenbau	P	1			T	5	ST 150h	BE, M		
Wahlfachmodule		§30	12			E	15		§30	
Abschlussarbeit	Seminar zur Bachelorarbeit	S	0,5			R	3	RE	§23 (3)	
	Bachelorarbeit	P	1				12		BE	
Aufwand im Hauptstudium			91	32	28	30	30	30		
Aufwand im gesamten Studium			148,5	210						

<sup>1)</sup> Grade-weighted according to ECTS credits / each examination component must be passed individually.

(10) Focus topic modules for the course specialisation "Design and Development":

		Art	SWS	ECTS	Studienleistung	Prüfungsleistung
4. Semester	Höhere Festigkeitslehre	V	4	5		K
	Finite Elemente	V	4	5		K
	Elektrische Antriebe	V+L	4	5	LA	K
	Ölhydraulik	V+L	4	5	LA	K
	Steuerungstechnik	V+L	4	5	LA	K
	Werkzeugmaschinen	V	4	5		K
6. Semester	Kraft- u. Arbeitsmasch.	V+L	4	5	LA	K
	Getriebetechnik Grundlagen	V+L	4	5		K, K
	Getriebetechnik (Industrie u. Energie)					
	Fügetechnik	V	4	5		K
	Klebtechnik	V+L	4	5	LA	K
	Laser- und Fertigungstechnik	V+L	4	5	LA	K
	Umformtechnik	V+L	4	5	LA	K

In the 4th semester, three out of six modules are to be selected and in the 6th semester, two out of six modules are to be selected. Not all modules can be offered in every semester.

(11) Table of the modules and classes in the main study period for the course specialisation "Automation and Energy Technology":

Bachelorstudiengang Maschinenbau										MBA	
Hauptstudium im Schwerpunkt Automatisierungs- und Energietechnik										Stand: Sep. 15	
Modulgruppe	Modul	Art	SWS	ECTS-Kreditpunkte im Lehrplansemester					Studienleistung	Prüfungsleistung	
				3	4	5	6	7			
Mathematik 3 / Programmieren	Mathematik 3	V	4	4		P				K; LA <sup>1)</sup>	
	Programmieren	V+Ü	4	4		R					
Technische Grundlagen	Elektrotechnik / Messtech	V+L	6	6		A			LA	K	
	Thermodynamik	V+L	5	4	1	K			LA, K	K	
	Strömungslehre	V+L	5	4	1	T.			LA, K	K	
	Dynamik	V+L	5	4	1				K	K	
Konstruktionsprojekt 1	Maschinenelemente 2	V	3	3		S				K, 120 min	
	Konstruktionslehre 3	V+L	2	3		T			E, 60h		
Schwerpunktmodule	Regelungstechnik	V+L	4		5	U			LA	K	
	Elektr. Antriebe	V+L	4		5	D			LA	K	
	Steuerungstechnik	V+L	4		5	I			LA	K	
	Alternativmodul 4a		4		5	E				K	
	Alternativmodul 4b		4		5	N				K	
Praktikum	Ergänzung Praxisprojekt	L	2			2			LA		
	Praxisprojekt	P+S	0,5			28			BE, RE §		
Schwerpunktmodule	Leistungselektronik	V+L	4			S	5		LA	K	
	Automatisierungssysteme	V+L	4			E	5		LA	K	
	Alternativmodul 6a		4			M	5			K	
	Alternativmodul 6b		4			E	5			K	
Betriebswirtschaft		V	4			S	5			K	
Angewandter Maschinenbau		P	1			T	5		ST, 150h	BE, M	
Wahlfachmodule		§30	12			E		15		§30	
Abschlussarbeit	Seminar zur Bachelorarbeit	S	0,5			R		3	RE	§23 (3)	
	Bachelorarbeit	P	1					12		BE	
Aufwand im Hauptstudium			91	32	28	30	30	30			
Aufwand im gesamten Studium			148,5	210							

<sup>1)</sup> Grade-weighted according to ECTS credits / each examination component must be passed individually.



(12) Focus topic modules for the course specialisation "Automation and Energy Technology":

		Art	SWS	ECTS	Studienleistung	Prüfungsleistung
Gruppe Anwendung Fertigung	Mehrkörpersimulation	V	4	5		K
	Werkzeugmaschinen	V	4	5		K
	Robotik	V+L	4	5		K
	Klebtechnik	V+L	4	5	LA	K
	Laser und Fertigungstechnik	V+L	4	5	LA	K
	Fügetechnik	V	4	5		K
	Umformtechnik	V+L	4	5	LA	K
Gruppe Anlagen Maschinen	Ölhydraulik	V+L	4	5	LA	K
	Getriebetechnik Grundlagen	V+L	4	5		K, K
	Getriebetechnik (Industrie u. Energie)					
	Verbrennungsmotoren	V+L	4	5	LA	K
	Regelungstechnik 2	V	4	5	LA	K
	Maschinenelemente 3, Konstruktionslehre 4	V+L	4	5	E, 60h	K 120 min
	Mehrkörpersimulation	V	4	5		K
Gruppe Energietechnik	Thermodynamik 2	V	4	5		K
	Kraft- u. Arbeitsmasch.	V+L	4	5	LA	K
	Verbrennungsmotoren	V+L	4	5	LA	K
	Energiesysteme in Industrie und Gewerbe	V	4	5		K
	Erneuerbare Energien	V	4	5		K
	Kraftwerkstechnik	V	4	5		K
	Photovoltaik	V	4	5		K
	Strömungssimulation	V	4	5		K
	Energiespeicher	V	4	5		K

Not all modules can be offered in every semester.

Subject groups have been formed; for timetabling reasons not every combination is possible.

Subjects with 20 ECTS credits shall preferably be selected from one group.

### 38 Bachelor's degree programme Automotive Engineering (*Fahrzeugtechnik*)

(1) For the successful completion of the course, the total scope of the required classes – as far as compulsory and elective modules are concerned – is 148.5 semester hours. The successful completion of all required modules results in the acquisition of 210 ECTS credits. The standard study period is seven semesters.

(2) The duration of the pre-study internship (section 2) is 12 weeks. The pre-study internship shall give the student basic knowledge of manual and mechanical processing techniques.

(3) From the fourth taught semester, classes for the degree programme may be offered in the English language instead of in the German language. Students must provide evidence of English language proficiency corresponding to level "B2" of the "Common European Framework of Reference of Languages". Proof of English language proficiency can be supplied by a

placement test at the start of the student's studies, successfully passing the "*Englisch Mittelstufe 2*" test at the Ulm University of Applied Sciences, or by an equivalent language certificate. It is a prerequisite for passing the Bachelor examination (see also section 18).

(4) The required classes for successful completion and the associated monitored assignments and examinations as per section 3(6) can be found in the following tables. The basic study period includes the modules up to the end of the second taught semester, the main study period all modules from the third taught semester.

(5) Only students who have successfully completed the associated monitored assignments will be admitted to the required examinations, in as far as the monitored assignments can be completed in parallel to lectures. The monitored assignments for the module "Presentation Techniques" must be completed before the Bachelor intermediate examination transcript is issued. The monitored assignments for the practical study semester must be submitted at latest 4 weeks after the start of lectures in the subsequent study semester.

(6) The grade weighting for the calculation of the overall grades for the Bachelor intermediate examination as per section 19(2) and the Bachelor examination as per section 25(1) depends on the number of credits.

(7) The main study period is structured into the course specialisations "Design and Development" and "System and Drive Technologies".

(8) Table of the modules and classes in the basic study period:

<b>Bachelorstudiengang Maschinenbau und Fahrzeugtechnik</b>							<b>FZ, MB</b>	
<b>Grundstudium</b>							<b>Stand: Sep. 15</b>	
				<b>ECTS-Kreditp. im Lehrplansemester</b>		<b>Studienleistung</b>	<b>Prüfungsleistung</b>	
<b>Modul / Lehrveranstaltung</b>		<b>Art</b>	<b>SWS</b>	<b>1</b>	<b>2</b>			
Mathematik 1		V	6	6		K	K	
Physik 1 / Chemie	Physik 1	V	4	4			K	
	Chemie	V	2	2		K, 60 min		
Werkstoffkunde / Fertigungsverfahren	Werkstoffkunde	V	4	4			K	
	Fertigungsverfahren	V	2	2		K, 60 min		
	Werkstoffprüfung	L	2		2	LA		
Präsentationstechnik		S	1,5	1	1	BE, RE		
Techn. Mechanik 1	Statik	V	6	6			K	
Techn. Mechanik 2	Festigkeitslehre	V	6		6		K	
Grundlagen CAD	CAD 1	V+P	2	2		E, 30h	K	
	CAD 2	V+P	2		3	E, 60h		
Grundlagen Konstruktion	Konstruktionslehre 1	V+Ü	2	3		E, 30h	K,180 min	
	Konstruktionslehre 2	V+Ü	4		4	E, 60h		
	Maschinenelemente 1	V	2		2			
Mathematik 2		V	6		6		K	
Physik 2	Physik 2	V	4		4		K	
	Physiklabor	L	2		2	LA		
Summe			57,5	30	30			
Aufwand im Grundstudium			57,5	60				

(9) Table of the modules and classes in the main study period for the course specialisation "Design and Development":

<b>Bachelorstudiengang Fahrzeugtechnik</b>											<b>FZK</b>	
<b>Hauptstudium im Schwerpunkt Konstruktion und Entwicklung</b>											<b>Stand: Sep. 15</b>	
<b>Modulgruppe</b>	<b>Modul</b>	<b>Art</b>	<b>SWS</b>	<b>ECTS-Kreditpunkte im Lehrplensemester</b>					<b>Studienleistung</b>	<b>Prüfungsleistung</b>		
				<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>				
Mathematik 3 / Programmieren	Mathematik 3	V	4	4								
	Programmieren	V+Ü	4	4							K; LA <sup>1)</sup>	
Technische Grundlagen	Elektrotechnik / Messtechnik	V+L	6	6						LA	K	
	Thermodynamik	V+L	5	4	1					LA, K	K	
	Strömungslehre	V+L	5	4	1					LA, K	K	
	Dynamik	V+L	5	4	1					K	K	
Konstruktionsprojekt 1	Maschinenelemente 2	V	3	3								
	Konstruktionslehre 3	V+L	2	3						E, 60h	K, 120 min	
Konstruktionsprojekt 2	Maschinenelemente 3	V	2		2							
	Konstruktionslehre 4	V+L	2		3					E, 60h	K, 120 min	
Technische Grundlagen	Regelungstechnik	V+L	4		5					LA	K	
Schwerpunktmodule	Fahrzeugkonstruktion 1	V+L	4		5						K; E, 60h <sup>1)</sup>	
	CAD im Fahrzeugbau	V+L			5						K	
	Alternativmodul 4a		4		5						K	
	Alternativmodul 4b		4		5						K	
Praktikum	Ergänzung Praxisprojekt	L	2			2				LA		
	Praxisprojekt	P+S	0,5			28				BE, RE		
Schwerpunktmodule	Fahrzeugkonstruktion 2	V+L	4			S	5				K; E, 60h <sup>2)</sup>	
	Alternativmodul 6a		4			E	5			LA	K	
	Alternativmodul 6b		4			M	5				K	
	Alternativmodul 6c		4			E	5				K	
Betriebswirtschaft			4			S	5				K	
Angewandte Fahrzeugtechnik		P	1			T.	5			ST, 150h	BE, M	
Wahlfachmodule		§30	12			E		15			§30	
Abschlussarbeit	Seminar zur Bachelorarbeit	S	0,5			R		3		RE	§23 (3)	
	Bachelorarbeit	P	1					12			BE	
Aufwand im Hauptstudium			91	32	28	30	30	30				
Aufwand im gesamten Studium			148,5			210						

<sup>1)</sup> Grade-weighted according to ECTS credits / each examination component must be passed individually.

<sup>2)</sup> Grade-weighted K : E = 1:1 / each examination component must be passed individually.

(10) Focus topic modules for the course specialisation "Design and Development":

			<b>SWS</b>	<b>ECTS</b>	<b>Studienleistung</b>	<b>Prüfungsleistung</b>
4. Semester	Finite Elemente	V	4	5		K
	Höhere Festigkeitslehre	V	4	5		K
	Fahrzeugmechanik	V	4	5		K
6. Semester	Getriebetechnik Grundlagen	V+L	4	5		K, K
	Getriebetechnik (Fahrzeug)					
	Verbrennungsmotoren	V+L	4	5	LA	K
	Karosseriebau	V	4	5		K
	Fahrwerktechnik	V+L	4	5	LA	K
	Fügetechnik	V	4	5		K
	Klebtechnik	V+L	4	5	LA	K
	Laser- und Fertigungstechnik	V+L	4	5	LA	K
Umformtechnik	V+L	4	5	LA	K	

In the 4th semester, two out of three modules are to be selected and

in the 6th semester, three out of eight modules are to be selected.

Not all modules can be offered in every semester.

(11) Table of the modules and classes in the main study period for the course specialisation "System and Drive Technologies":

Bachelorstudiengang Fahrzeugtechnik										FZS			
Hauptstudium im Schwerpunkt System- und Antriebstechnik										Stand: Sep. 15			
Modulgruppe	Modul	Art	SWS	ECTS-Kreditpunkte im Lehrplansemester							Studienleistung	Prüfungsleistung	
				3	4	5	6	7					
Mathematik 3 / Programmieren	Mathematik 3	V	4	4						P			
	Programmieren	V+Ü	4	4						R		K; LA <sup>1)</sup>	
Technische Grundlagen	Elektrotechnik / Messtech	V+L	6	6						A	LA	K	
	Thermodynamik	V+L	5	4	1					K	LA, K	K	
	Strömungslehre	V+L	5	4	1					T.	LA, K	K	
	Dynamik	V+L	5	4	1						K	K	
Konstruktionsprojekt 1	Maschinenelemente 2	V	3	3						S			
	Konstruktionslehre 3	V+Ü	2	3						T	E, 60h	K, 120 min	
Schwerpunktmodule	Regelungstechnik	V+L	4		5					U	LA	K	
	Elektr. Antriebe	V+L	4		5					D	LA	K	
	Fahrzeugsystemtechnik 1	V	4		5					I		K	
	Alternativmodul 4a		4		5					E		K	
	Alternativmodul 4b		4		5					N		K	
Praktikum	Ergänzung Praxisprojekt	L	2							2	LA		
	Praxisprojekt	P+S	0,5							28	BE, RE §		
Schwerpunktmodule	Verbrennungsmotoren	V+L	4							S	5	LA	K
	Fahrzeugsystemtechnik 2	V	4							E	5		K
	Alternativmodul 6a		4							M	5		K
	Alternativmodul 6b		4							E	5		K
Betriebswirtschaft		4								S	5		K
Angewandte Fahrzeugtechnik		P	1							T	5	ST, 150h	BE, M
Wahlfachmodule		§30	12							E	15		§30
Abschlussarbeit	Seminar zur Bachelorarbeit	S	0,5							R	3	RE	§23 (3)
	Bachelorarbeit	P	1								12		BE
Aufwand im Hauptstudium			91	32	28	30	30	30					
Aufwand im gesamten Studium			148,5			210							

<sup>1)</sup> Grade-weighted according to ECTS credits / each examination component must be passed individually.

(12) Table of the focus topic modules for the course specialisation "System and Drive Technologies":

		Art	SWS	ECTS	Studienleistung	Prüfungsleistung
4.Semester	Fahrzeugelektronik	V	4	5		K
	PDV mit µComputern					
	Fahrzeugmechanik	V	4	5		K
	Thermodynamik 2	V	4	5		K
6.Semester	Maschinenelemente 3, Konstruktionslehre 4	V+L	4	5	E, 60h	K, 120 min.
	Leistungselektronik	V+L	4	5		K
	Getriebetechnik Grundlagen	V+L	4	5		K, K
	Getriebetechnik (Fahrzeug)					
Regelungstechnik 2	V	4	5		K	

In the 4th semester, two out of four modules are to be selected and in the 6th semester, two out of three modules are to be selected. Not all modules can be offered in every semester.

### 39 Bachelor's degree programme Mechatronics (*Mechatronik*)

(1) For the successful completion of the course, the total scope of the required classes – as far as compulsory and elective modules are concerned – is 145 semester hours. This results in the acquisition of 210 ECTS credits in seven semesters.

(2) A pre-study internship with a duration of 8 weeks is required for this degree programme (section 2). It helps the student get to know the structure of a company and will provide basic knowledge of manual and machine processing techniques in mechatronics or medical engineering. It must be demonstrated that approx. 50% of this pre-study internship has been completed before the start of the course. The practical work carried out as part of the pre-study internship must be documented electronically in a coherent report. As a guide, one page of report is expected for each week of the internship. The report must be approved by the relevant training organisation.

(3) In the practical study semester, practical experience is to be gathered in engineering projects in fields such as design and manufacturing, electrical engineering, measurement technology and/or IT. In addition, an insight is to be gained into the technical and organisational interrelationships of the production process and the social relationships in a company.

(4) From the 4th taught semester, classes for the degree programme may be offered in the English language instead of in the German language.

(5) The required classes for successful completion and the associated monitored assignments and examinations can be found in the following tables. The basic study period includes the modules up to the end of the second taught semester and finishes with the Bachelor intermediate examination. Depending on the student's choice of module groups, the main study period is divided into course specialisations. It starts with the third taught semester and finishes with the Bachelor examination.

(6) Only students who have successfully completed the associated monitored assignments will be admitted to the required examinations. The monitored assignments for the practical study semester must be submitted at latest 2 weeks after the start of lectures in the subsequent study semester.

(7) The grade weighting for the calculation of the overall grades for the Bachelor intermediate examination and the Bachelor examination depends on the number of credits.

(8) Table of the modules and classes in the basic study period:

Bachelorstudiengang Mechatronik, Grundstudium						
Modul	Art	SWS	ECTS-Kreditpunkte im Lehrplansemester		Studienleistung	Prüfungsleistung
			1	2		
Lineare Algebra	V+Ü	4	5			K
Analysis	V+Ü	4	5		LN	K
Mehrdimensionale Analysis	V+Ü	5		5		K
Physik	V+L	8	4		K	
				4	LA	K
Werkstoffkunde <sup>1)</sup>	V+L	4	2			K
				3	LA, BE	

Grundlagen der Elektrotechnik und Elektronik	V+L	8	4		K	
				4	LA	K
Grundlagen der Konstruktionslehre	V+L	6	6		LN	K
Konstruktives Gestalten und Konstruktionselemente	V+L	6		6	LN	K
Technische Mechanik 1-2	V+Ü	8	4		LN	
				4	LN	K
Grundlagen der Softwareentwicklung	V+Ü	4		5		K
<b>Summen</b>		<b>57</b>	<b>30</b>	<b>31</b>		

1) In this module, the monitored assignment is to be done after the examination.

(9) The main study period of the degree programme Mechatronics is divided into the course specialisations **Mechatronic systems and devices**, **Mechatronic systems in the vehicle** and **Mechatronic systems in photonics**. For successful completion of the Bachelor degree programme, all the specialisation modules assigned to one of the three specialisations are to be completed.

(10) In addition, subject-specific elective modules counting for 10 ECTS credits are to be completed. These are to be selected from a catalogue published by the Faculty of Mechatronics and Medical Engineering. Furthermore, all subject-specific elective modules from the Mechatronics course specialisation module catalogue are permitted.

(11) In the main study period for the Mechatronics degree programme, the 6th taught semester is identified as a "flexible window" (*Mobilitätsfenster*).

(12) The taught semesters 6 and 7 are recommended for placements abroad (flexible window).

(13) The required classes for successful completion of the Bachelor main study period can be found in the following table:

Bachelorstudiengang Mechatronik, Hauptstudium										
Modulgruppe	Modul	Art	SWS	ECTS-Kreditpunkte im Lehrplensemester					Studienleistung	Prüfungsleistung
				3	4	5	6	7		
Technische Grundlagen	Mathematische Modellierung	V+L	5	5					LA	K
	Analoge und digitale Schaltungstechnik	V+L	4	5					LA	K
	Objektorientierte Softwareentwicklung	V+L	4	5					LA	K
	Technische Optik	V+Ü	4		5					K
	Systemanalyse und Simulation	V+Ü	3	5						K
Projektarbeit	Projektarbeit / Schlüsselqualifikationen	S+L	8		10				LA, PK	BE, RE
Allgemeine Mechatronik	Sensorik und Messtechnik	V+L	4		5				LA	K
	Regelungstechnik	V+L	4				5		LA	K
	Fertigungstechnik	V	4	5						K
	Qualitätstechnik	V+L	4		5				LA	K
Vertiefungs-module	Richtungsspezifische Vertiefungsmodule	§ 30	24	5	5		10	10		§ 30
Wahlpflicht-module	Fachspezifische Wahlpflichtmodule/Projektarbeit	§ 30	8				5	5		§ 30

	Fachübergreifende Wahlpflichtmodule (WISO)	§ 30	8				10			§ 30
Praktikum	Praxisseminar	S	2			2			LN	
	Praxisprojekt	P+S	1			28			BE, RE	
Bachelorarbeit	Arbeit	P						12		§23 (3) und (4)
	Seminar	S	1					2		
<b>Summen</b>			<b>88</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>29</b>		

(14) The specialisation modules for the individual specialisations are shown in the following table. All modules have 4 SWS and 5 ECTS credits:

Bachelorstudiengang Mechatronik, Katalog der Vertiefungsmodul				
Vertiefungsrichtung	Modul	Art	Studienleistung	Prüfungsleistung
Mechatronische Systeme und Geräte	Mikrocontroller-Anwendungen	V+L	LA	K
	Finite Elemente und Mehrkörpersysteme	V+Ü	LA	LN
	Reverse Engineering und Rapid Prototyping	V+L	LA	K
	Technische Mechanik 3	V+L	LA	K
	Mechatronische Antriebe und Leistungselektronik	V+L	LA	K
	Produktentwicklung in der Mechatronik	V+L	PP	M
Mechatronische Systeme im Fahrzeug	Fahrzeugsysteme	V		K
	Mikrosensoren und Mikroelektronik	V+L	LA	K
	Mikrocontroller-Anwendungen	V+L	LA	K
	Technische Mechanik 3	V+L	LA	K
	Optoelektronik	V+L	LA	K
	Mechatronische Antriebe und Leistungselektronik	V+L	LA	K
Mechatronische Systeme der Photonik	Ausgewählte Kapitel der Technischen Optik	V+L	LA	BE
	Optoelektronik	V+L	LA	K
	Optische Messtechnik	V+L	LA	K
	Mikrocontroller-Anwendungen	V+L	LA	K
	Photovoltaik	V+L	LA	M
	Solarelektronik	V+L	LA	K

#### 40 Bachelor's degree programme Medical Engineering (*Medizintechnik*)

(1) For the successful completion of the course, the total scope of the required classes – as far as compulsory and elective modules are concerned – is 145 semester hours. This results in the acquisition of 210 ECTS credits in seven semesters.

(2) A pre-study internship with a duration of 8 weeks is required for this degree programme (section 2). It helps the student get to know the structure of a company and will provide basic knowledge of manual and machine processing techniques in mechatronics or medical engineering. It must be demonstrated that approx. 50% of this pre-study internship has been completed before the start of the course. The practical work carried out as part of the pre-study internship must be documented electronically in a coherent report. As a guide, one page of report is expected for each week of the internship. The report must be approved by the relevant training organisation.

(3) In the practical study semester, practical experience is to be gathered in engineering projects in fields such as design and manufacturing, electrical engineering, measurement technology and/or IT. In addition, an insight is to be gained into the technical and organisational interrelationships of the production process and the social relationships in a company.



(4) From the 4th taught semester, classes for the degree programme may be offered in the English language instead of in the German language.

(5) The required classes for successful completion and the associated monitored assignments and examinations can be found in the following tables. The basic study period includes the modules up to the end of the second taught semester and finishes with the Bachelor intermediate examination. Depending on the student's choice of module groups, the main study period is divided into course specialisations. It starts with the third taught semester and finishes with the Bachelor examination.

(6) Only students who have successfully completed the associated monitored assignments will be admitted to the required examinations. The monitored assignments for the practical study semester must be submitted at latest 2 weeks after the start of lectures in the subsequent study semester.

(7) The grade weighting for the calculation of the overall grades for the Bachelor intermediate examination and the Bachelor examination depends on the number of credits.

(8) Table of the modules and classes in the basic study period:

Bachelorstudiengang Medizintechnik, Grundstudium						
Modul	Art	SWS	ECTS-Kreditpunkte im Lehrplansemester		Studienleistung	Prüfungsleistung
			1	2		
Lineare Algebra	V+Ü	4	5			K
Analysis	V+Ü	4	5		LN	K
Mehrdimensionale Analysis	V+Ü	5		5		K
Physik	V+L	8	4		K	
				4	LA	K
Werkstoffkunde <sup>1)</sup>	V+L	4	2			K
				3	LA, BE	
Grundlagen der Elektrotechnik und Elektronik	V+L	8	4		K	
				4	LA	K
Grundlagen der Konstruktionslehre	V+L	6	6		LN	K
Konstruktives Gestalten und Konstruktionselemente	V+L	6		6	LN	K
Technische Mechanik 1-2	V+Ü	8	4		LN	
				4	LN	K
Grundlagen der Softwareentwicklung	V+Ü	4		5		K
<b>Summen</b>		<b>57</b>	<b>30</b>	<b>31</b>		

<sup>1)</sup> In this module, the monitored assignment is to be done after the examination.

(9) The main study period of the degree programme Medical Engineering is divided into the course specialisations **Medical electronics**, **Biomechanics** and **Biotechnology instrumentation**. For successful completion of the Bachelor degree programme, all the specialisation modules assigned to one of the three specialisations are to be completed.

(10) In addition, subject-specific elective modules counting for 10 ECTS credits are to be completed. These are to be selected from a catalogue published by the Faculty of Mechatronics and Medical Engineering. Furthermore, all subject-specific elective modules from the Medical Engineering course specialisation module catalogue are permitted.

(11) In the main study period for the Medical Engineering degree programme, the 6th taught semester is identified as a "flexible window" (*Mobilitätsfenster*).

(12) The taught semesters 6 and 7 are recommended for placements abroad (flexible window).

(13) The required classes for successful completion of the Bachelor main study period can be found in the following table:

Bachelorstudiengang Medizintechnik, Hauptstudium										
Modulgruppe	Modul	Art	SWS	ECTS-Kreditpunkte im Lehrplansemester					Studienleistung	Prüfungsleistung
				3	4	5	6	7		
Technische Grundlagen	Mathematische Modellierung	V+L	5	5					LA	K
	Chemie und Biochemie	V+L	4	5					LA	K
	Objektorientierte Softwareentwicklung	V+L	4	5					LA	K
	Technische Optik	V+Ü	4		5					K
	Systemanalyse und Simulation	V+Ü	3	5						K
Projektarbeit	Projektarbeit / Schlüsselqualifikationen	S+L	8		10				LA, PK	BE, RE
Allgemeine Medizintechnik	Sensorik und Biosignalverarbeitung	V+L	4		5				LA	K
	Medizinische Regelungstechnik	V+L	4				5		LA	K
Medizin	Anatomie und Physiologie	V+Ü	4	5						K
	Krankheitslehre	V+Ü	4		5					K
Vertiefungs-module	Richtungsspezifische Vertiefungsmodule	§ 30	24	5	5		10	10		§30
Wahlpflicht-module	Fachspezifische Wahlpflicht-module / Projektarbeit	§ 30	8				5	5		§30
	Fachübergreifende Wahlpflichtmodule (WISO)	§ 30	8				10			§30
Praktikum	Praxisseminar	S	2			2			LN	
	Praxisprojekt	P+S	1			28			BE, RE	
Bachelorarbeit	Arbeit	P						12		§23 (3) und (4)
	Seminar	S	1					2		
<b>Summen</b>			<b>88</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>29</b>		

(14) The specialisation modules for the individual specialisations are shown in the following table. All modules have 4 SWS and 5 ECTS credits:

Bachelorstudiengang Medizintechnik, Katalog der Vertiefungsmodule				
Vertiefungsrichtung	Modul	Art	Studienleistung	Prüfungsleistung
Medizinelektronik	Medizinelektronik und Gerätetechnik	V+L	LA	K
	Mikrocontroller-Anwendungen	V+L	LA	K
	Strahlenmesstechnik	V+L	LA, RE	K
	Technische Sicherheit in der Medizin	V+L	LA	K
	Mikrosensoren und Mikroelektronik	V+L	LA	K
	Physiologische Messtechnik	V+L	LA	M
Biomechanik	Grundlagen der Biomechanik	V+L	LA	K

	Mikrocontroller-Anwendungen	V+L	LA	K
	Technische Mechanik 3	V+L	LA	K
	Finite Elemente und Mehrkörpersysteme	V+L	LA	LN
	Technische Sicherheit in der Medizin	V+L	LA	K
	Produktentwicklung in der Medizintechnik	V+L	PP	M
Apparative Biotechnologie	Grundlagen der Biotechnologie <sup>1)</sup>	V+L	LA	K
	Bioverfahrenstechnik (Bioprozesstechnik)	V+L	LA	K
	Grundlagen der Molekularbiologie	V+L	LA	M
	Medizinelektronik und Gerätetechnik	V+L	LA	K
	Optische Messtechnik	V+L	LA	K
	Optoelektronik	V+L	LA	K

<sup>1)</sup> If the specialisation Biotechnology instrumentation (*Apparative Biotechnologie*) is chosen, this specialisation module should be taken in the 3rd semester.

## 41 Bachelor's degree programme Digital Media

(1) For the successful completion of the course, the total scope of the required classes – as far as compulsory and elective modules are concerned – is 141 semester hours. The successful completion of all required modules results in the acquisition of 210 ECTS credits. The standard study period is seven semesters.

(2) From the fourth taught semester, classes for the degree programme may be offered in the English language instead of in the German language. See section 18 with regard to the acquisition and proof of English language skills.

(3) The required modules for successful completion and the associated monitored assignments and examinations can be found in the table in subsection (8).

(4) The practical study semester serves as an introduction to the role of multimedia designer, by working on the solution of design problems using digital media, under the guidance of experienced colleagues in a suitable department or a suitable company, e.g. graphics/design agencies, advertising/Internet agencies, IT departments.

(5) Only students who have successfully completed the associated monitored assignments will be admitted to the examinations. The monitored assignments for the module "Presentation Techniques" must be completed before the Bachelor intermediate examination transcript is issued.

(6) Only students who have successfully completed the practical study semester will be admitted to the examinations for the modules e-Learning, User Experience Design and Motion Design.

(7) The grade weighting for the calculation of the overall grades for the Bachelor intermediate examination as per section 19(2) and the Bachelor examination as per section 25(1) depends on the number of ECTS credits.

(8) Table of the modules and classes:

Bachelorstudiengang Digital Media					
Modul / Lehrveranstaltung	Art	SWS	ECTS-Kreditpunkte im	Studien-	Prüfungs-

			Lehrplansemester							leistung	leistung		
			1	2	3	4	5	6	7				
Web Grundlagen	V+Ü	4	4					P R A K T I C H E S			PA	K	
Programmieren	V+L	4	4										K
Grundlagen der 2D-Gestaltung	V+Ü	6	7									PA	K, 120 min
Grundlagen der 3D-Gestaltung	V+Ü	6	7										PP
Zeichnerische Darstellung	V+Ü	4	4									PA	PP
Bild- und Filmgestaltung	V	4	4										K
Webentwicklung Client	V+L	4		5									K
Typographie	V+Ü	4		5								PA	PP
Medientechnik	V+L	4		4									K
Interface Design	V+Ü	4		4								PA	PP
Farbdesign	V+Ü	4		5								PA	PP
Fotografie	V+Ü	6		7								PA	PP
									S U D I E N				
-Interaction Design 1	V+Ü	8			10						PA	PP	
Corporate Design	V+Ü	6			8						PA	PP	
Bildkonzeption	V+Ü	4			5						PA	PP	
2D-Animation	V+Ü	4			5						PA	PP	
Drehbuch und Storyboard	V+Ü	4				5					PA	PP	
Videoproduktion und -authoring	V+Ü	6				8					PA	F-übergr	
Computergrafik	V+L	6				7						PP	
Interaction Design 2	V+Ü	4				5					PA	PP	
Praktikum	Pilotprojekt	S	2					2			RE, 20min		
	Praxisprojekt	P+S	1					28			BE, RE 20		
e-Learning	V+Ü	6						S E M E S T E R	8			PP	
User Experience Design	V+Ü	6							7		PA	PP	
Motion Design	V+Ü	4							5		PA	PP	
Einführung in die BWL	V	4							5			K	
Fachübergreifendes Wahlpflichtmodul	§ 30	4							5			§30	
Fachspezifisches Wahlpflichtmodul	§ 30	12			2	5				8		§30	
Service Design	V+Ü	4								5	PA	PP	
Seminar zur Bachelorarbeit	S	2											§23 (3)
Bachelorarbeit *)	P									17			und (4)
<b>Summen ECTS</b>			<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>		<b>30</b>	<b>30</b>	<b>30</b>		
<i>SWS</i>		<b>141</b>	<b>28</b>	<b>26</b>	<b>22</b>	<b>24</b>	<b>3</b>	<b>24</b>	<b>14</b>				

\*) The thesis corresponds to a workload of 12 ECTS credits.

## 42 Bachelor's degree programme International Energy Management (*Internationale Energiewirtschaft*)

(1) For the successful completion of the course, the total scope of the required classes – as far as compulsory and elective modules are concerned – is 138 semester hours. The successful completion of all required modules results in the acquisition of 210 ECTS credits. The standard study period is seven semesters.

(2) From the third taught semester, classes for the degree programme may be offered in the English language instead of in the German language.

(3) Use of the ECTS tools (Course Catalogue, Preliminary Learning Agreement, Final Learning Agreement, Transcript of Records) for the preparation, implementation and follow-up work for the semester in a foreign country is mandatory.

The intended learning outcomes for the integrated semester in a foreign country must be significantly different from the compulsory modules of the degree programme.

In this semester, a maximum of 30 ECTS credits may be transferred from foreign universities, whereby 20 ECTS credits will be awarded for the module "Integrated semester in a foreign country"; grades will not be transferred for this.

Any excess ECTS credits will at least be documented as an additional subject. Where appropriate, they may be recognised as a compulsory or elective subject with grade transfer. Further details are regulated by the responsible examination committee.

(4) The integrated semester in a foreign country may also be recognised as completed – on request and with good reason – if fewer than 20 ECTS credits but at least 15 ECTS credits have been attained in the foreign country. In this case, the difference between the credits achieved and 20 ECTS credits must generally be compensated for by an appropriate achievement at Ulm University of Applied Sciences.

An exemption from the obligation to study in a foreign country is only possible if an application to the responsible examination committee is made providing evidence of urgent reasons. At same time, it must be proven that these reasons only occurred after enrolment on the course.

(5) The required modules for successful completion and the associated monitored assignments and examinations can be found in the table in subsection (8).

The basic study period includes the modules up to the end of the second taught semester, the main study period all modules from the third taught semester.

(6) Only students who have successfully completed the associated monitored assignments will be admitted to the required examinations. The monitored assignments for the practical study semester must be submitted at latest two weeks after the start of lectures in the subsequent study semester.

(7) The grade weighting for the calculation of the overall grades for the Bachelor intermediate examination as per section 19(2) and the Bachelor examination as per section 25(1) depends on the number of credits.

(8) Table of the modules and classes:

Bachelorstudiengang Internationale Energiewirtschaft													
Nr.	Modul / Lehrveranstaltung	Art	SWS	ECTS-Kreditpunkte im Lehrplensemester							Studienleistung	Prüfungsleistung	
				1	2	3	4	5	6	7			
1	Mathematik I	V	4	5					P	A		LN	K
2	Physik, Grundlagen der Elektrotechnik	V	4	5					R	U			K
3	Einführung in die Wirtschaftsinformatik	V	4	5					K	L		ST	K
4	Einführung in die Energiewirtschaft	V	4	4					I	N			K
5	Grundlagen der BWL und VWL	V	4	5					S	D			K
									C	S			
									H	S			

6	Projektmanagement	V	4	4				E S  S E M E S T E R	E M E S T E R		HA	BE + RE <sup>6)</sup>		
7	Studium als Projekt 1	V	2	2								LN		
8	Mathematik II	V	4		5								K	
9	Technische Thermodynamik	V	4		5								K	
10	Einführung in Datenbanken	V	4		5							LA	K	
11	Regenerative Energiesysteme	V+L	4		4							LA	K	
12	Entrepreneurship	V	4		4							HA	RE	
13	Investition und Finanzplanung	V	4		5								K	
14	Studium als Projekt 2	V	2		2							LN		
15	Operations Research <sup>5)</sup>	V	4			5						LA	K	
16	Analytics for Energy Data <sup>6)</sup>	V	4			5						LA	K + ST <sup>6)</sup>	
17	Kraftwerkstechnik	V	4			5							K	
18	Business and Technical English	V	4			5						RE	K	
19	Performance Management and Cost Accounting <sup>5)</sup>	V	4			5							K	
20	Industrielle Energiekonzepte	V	4			5						PP	K	
21	Simulation	V	4				5					LA	K + BE <sup>6) 7)</sup>	
22	Seminar zur Energiewirtschaft	S	4				5						RE + BE <sup>6) 7)</sup>	
23	Energy Data Management <sup>6)</sup>	S+L	4				5					LA	RE + BE <sup>6) 7)</sup>	
24	Energy Trading and Risk Management <sup>5)</sup>	V	4				5					RE	K + BE <sup>6) 7)</sup>	
25	Projekt zur Energiewirtschaft	P	4				10						ST	
26	Praktisches Studiensemester													
	Praxisprojekt	P					20					LA		
	Praxissemesterarbeit	S	4				10					BE, RE		
27	Intercultural Communication <sup>2) 5)</sup>	V	2							2			BE + RE <sup>6)</sup>	
28	Recht <sup>3)</sup>	V	2							3			K	
29	Wahlpflichtmodul 1	V	4					5			§30			
30	Integriertes Auslandsstudiensemester <sup>6)</sup>	V	16					20		LN				
31	Wahlpflichtmodul 2 <sup>1) 2)</sup>	V	4						5		§30			
32	Wahlpflichtmodul 3 <sup>1) 2)</sup>	V	4						5		§30			
33	Wahlpflichtmodul 4 <sup>1) 2)</sup>	V	4						5		§30			
34	Bachelorarbeit und Seminar	P+S	2						15		BE, §23 (3)			
<b>Summen</b>		<b>ECTS</b>	<b>210</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>				
		<b>SWS</b>	<b>138</b>	<b>26</b>	<b>26</b>	<b>24</b>	<b>20</b>	<b>4</b>	<b>24</b>	<b>14</b>				

<sup>1)</sup> Within the scope of the required semester hours, elective modules and economic and social sciences ("WISO") classes shall be selected from a catalogue defined by the Faculty of Production Engineering and Production Economics. The catalogue of current modules will be published before the start of lectures.

<sup>2)</sup> The assignment to the semesters is not binding.

<sup>3)</sup> Block seminar.

- 4) The SWS given here are theoretical values. The actual semester hours (SWS) may be different from these.
- 5) The lecture/seminar will be held in the English language.
- 6) The weighting of the individual examinations must be announced to the students at the start of the class.
- 7) The report content is coordinated.

### 43 Bachelor's degree programme Energy Systems Technology (*Energiesystemtechnik*)

(1) For the successful completion of the course, the total scope of the required classes – as far as compulsory and elective modules are concerned – is 145 semester hours. The successful completion of all required modules results in the acquisition of 210 ECTS credits. The standard study period is seven semesters.

(2) From the third taught semester, classes for the degree programme may be offered in the English language instead of in the German language.

(3) The required modules for successful completion and the associated monitored assignments and examinations can be found in the table in subsection (7). The basic study period includes the modules up to the end of the second taught semester, the main study period all modules from the third taught semester.

(4) Only students who have successfully completed the associated monitored assignments will be admitted to the required examinations. The monitored assignments for the practical study semester must be submitted at latest 2 weeks after the start of lectures in the subsequent study semester.

(5) The grade weighting for the calculation of the overall grades for the Bachelor intermediate examination as per section 19(2) and the Bachelor examination as per section 25(1) depends on the number of credits.

(7) Table of the modules and classes:

Bachelorstudiengang Energiesystemtechnik											
Modul/Lehrveranstaltung	Art	SWS	ECTS-Kreditpunkte im Lehrplansemester							Studienleistung	Prüfungsleistung
			1	2	3	4	5	6	7		
Mathematik I und Programmieren		8									K
Mathematik I	V	6	6								
Programmieren	V	2	2							HA	
Physik I	V	6	6								K
Technische Mechanik I	V	6	6								K
Konstruktion	V	6	6							HA	K
Energiewirtschaft			4								K
Einführung in die Energiewirtschaft	V	2									

Gruppenseminar	S	2					S			PA	
Mathematik II	V	6		6							K
Elektrotechnik I				6							K
Angewandte Physik	V+L	3								LA	
Elektrotechnik I	V+L	3								LA	
Technische Mechanik II				6							K
Festigkeitslehre	V	4									
Werkstoffkunde	V	2									
Thermodynamik und Chemie				6							K
Thermodynamik I	V	4									
Chemie	V	2									
Strömungsmechanik				6							K
Strömungslehre	V	4									
Labor Strömungslehre	L	2								LA, BE	
Automatisierung						8					K
Steuern und Regeln	V+L	4								LA	
Automatisierungstechnik	V+L	3								LA	
Konstruktion und Berechnung						6					K + E + BE ④
Konstruktion von Energieanlagen	V	3								HA	
Berechnung und Simulation energetischer Anlagen	V+L	2								LA	
Thermodynamik und Wärmeübertragung						10					K, 120 min
Thermodynamik II	V	4									
Wärmeübertragung	V	3									
Labor Thermodynamik und Wärmeübertragung	L	2								LA, BE	
Elektrotechnik II						6					K
Elektrotechnik II	V+L	3								LA	
Elektrische Antriebe	V+L	2								LA	
Maschinen und Apparate						9					K, 120 min
Strömungsmaschinen	V	6									
Wärmeerzeuger und Wärmeübertrager	V	2									
Erneuerbare Energiebereitstellung						7					K
Erneuerbare Energien	V	4									
Labor Erneuerbare Energien	L	2								LA, BE	
Energiewirtschaft und dezentrale Systeme						9					K + BE ④
Investition und Recht	V	3									
Kraft-Wärme-Kopplung und Netzanbindung	V+P	4								PA	
Projektarbeit Energiesysteme I	P	2				5				RE	ST
Praktisches Studiensemester											
Praxisprojekt	P						26			BE	
Praxisseminar	S	2					4			RE	
Gebäudeklimatik	V+L	4						5		PP	K



Energiesysteme in Industrie und Gewerbe	V	4						5			K + PP ④
Projektarbeit Energiesysteme II	P	4						10		RE	ST
Alternativmodul Energiesysteme ①	V	12						10	5	③	K③
Wahlpflichtmodul ②	V	8							10	③	K③
Seminar zur Bachelorarbeit	S	2							3		BE + RE, §23
Bachelorarbeit	P								12		
<b>Summen</b>	<b>ECTS</b>	<b>210</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>		
	<b>SWS</b>	<b>145</b>	<b>30</b>	<b>30</b>	<b>26</b>	<b>23</b>	<b>2</b>	<b>20</b>	<b>14</b>		

<sup>1)</sup> In the 6th and 7th semester, all alternative modules must be selected from a subject catalogue specified by the academic commission. The following table shows examples of some modules from the subject catalogues, as well as the calculation of SWS and ECTS credits:

	SWS	ECTS		SWS	ECTS
Solares Bauen, HLK mit EnEV	4	5	Leistungselektronik	4	5
Kraftwerkstechnik	4	5	Energiespeicher	4	5
Photovoltaik	4	5	Windparkprojektierung	4	5
Elektrische Netze	4	5	Anlagensimulation mit Labor	4	5

Individual alternative modules from the subject catalogue may also only be offered once a year. If there is insufficient demand when the modules are chosen, individual alternative modules may not be offered for a period. The academic commission defines and publishes the subject catalogue and the offers in the relevant 6th and 7th semesters.

Modules taken at foreign universities as part of a semester spent in a foreign country can be recognised as alternative modules as long as they count for at least 5 ECTS credits and cover topics concerning Energy Technology and/or Energy Management. The decision on recognition will be made by the examination committee.

<sup>2)</sup> Classes worth 10 ECTS credits must be selected from the alternative modules (see above) or from the elective catalogue. A list of the classes which can be chosen will be announced for each semester.

<sup>3)</sup> Monitored assignments required in individual cases, or varying examinations must be announced to the students at the start of the class.

<sup>4)</sup> The weighting of the individual examinations must be announced to the students at the start of the classes.

## 44 Bachelor's degree programme Electrical Engineering and Information Technology (*Elektrotechnik und Informationstechnik*)

(1) The degree programme is split into basic and advanced studies. The basic studies are enhanced by two selectable specialist topics. The successful completion of all modules in the basic studies (90 ECTS credits), the specialisations (2 x 25 ECTS credits), as well as the internship, elective modules, project work and Bachelor thesis/seminar (70 ECTS credits), results in the attainment of a total of 210 ECTS credits.

(2) The student personalises the focus of his or her course by selecting two specialisations from a catalogue of eight, see table in subsection (11). If the 2 x 25 ECTS are not achieved because a module is common to both the specialisations selected, an additional module from a different specialisation must be selected. If the class is overbooked or has too few participants, the examination committee will decide about changes to the course, without extending the study period, on a case-by-case basis.

(3) For the successful completion of the course, the total scope of the required classes – as far as compulsory and elective modules are concerned – is 147 semester hours. The standard study period is seven semesters.

(4) From the third taught semester, classes for the degree programme may be offered in the English language instead of in the German language. See section 18 with regard to the acquisition and proof of English language skills.

(5) The required modules for successful completion and the associated monitored assignments and examinations can be found in the table in subsection (10).

(6) Only students who have successfully completed the associated monitored assignments will be admitted to the examinations. The monitored assignments for the practical study semester must be submitted at latest 2 weeks after the start of lectures in the subsequent study semester.

(7) The grade weighting for the calculation of the overall grades for the Bachelor intermediate examination as per section 19(2) and the Bachelor examination as per section 25(1) depends on the number of ECTS credits. The calculation of the overall grade for the module "Electrical Engineering Project" is made with the weighting BE (60%), M (20%) and RE (20%).

(8) The examinations can, in part, also be held in the week before the start of lectures for the subsequent semester. Examinations and examination dates will be announced sufficiently in advance.

(9) The subject specific elective module must be selected from a list published by the faculty.

(10) Table of the modules and classes:

Bachelorstudiengang Elektrotechnik und Informationstechnik											
Modul / Lehrveranstaltung	Art	SWS	ECTS-Kreditpunkte im Lehrplensemester							Studienleistung	Prüfungsleistung
			1	2	3	4	5	6	7		
Mathematik 1	V+Ü	6	6							K	K 120 min
Physik 1	V	5	5				P			K	K
Elektrotechnik 1 mit Schlüsselqualifikationen	V+L	6	6				R			LA	K
Digitaltechnik 1	V+L	4	4				A				K
Programmieren 1	V+L	5	5				K				K
Kommunikationstechnik	V+L	4	4				T			LA	K
Mathematik 2	V	6		6			I				K 120 min
Physik 2	V+L	5		5			S			LA	K
Elektrotechnik 2	V+L	5		5			C			LA	K
Digitaltechnik 2	V+L	4		4			H			LA	K
Programmieren 2 mit Projekt	V+L	6		6			E			LA, BE	K
Mikrocomputertechnik 1	V+L	4		4			S			LA	K
Elektronik 1	V+L	4			5					LA	K
Systemtheorie	V+L	4			5		S			LA	K
Regelungstechnik mit Signalverarbeitung 1	V+L	4			5		T			HA	K

Mikrocomputertechnik 2	V+L	4			5		U			LA	K
Schwerpunkt 1	V+L	4			5		D			Abs. (11)	Abs. (11)
Schwerpunkt 2	V+L	4			5		I			Abs. (11)	Abs. (11)
Mathematik für die Elektrotechnik	V	4			5		E				K
Software Engineering	V+L	4			5		N				PP
Schwerpunkt 1	V+L	8			10		-			Abs. (11)	Abs. (11)
Schwerpunkt 2	V+L	8			10					Abs. (11)	Abs. (11)
Praktikum	Labor	L	2				2			LA	
	Praxisprojekt	P+S	1				28			BE, RE	
Projekt Elektrotechnik	P	6						10		ST	BE, M, RE
Schwerpunkt 1	V+L	4					S	5		Abs. (11)	Abs. (11)
Schwerpunkt 2	V+L	4					E	5		Abs. (11)	Abs. (11)
Fachspezifisches Wahlpflichtmodul	§ 30	4					M	5			§30
Fachübergreifendes Wahlpflichtmodul	§ 30	4					E	5			§30
Schwerpunkt 1	V+L	4					S		5	Abs. (11)	Abs. (11)
Schwerpunkt 2	V+L	4					T		5	Abs. (11)	Abs. (11)
Fachübergreifendes Wahlpflichtmodul	§ 30	4					E		5		§30
Seminar zur Bachelorarbeit	S	2					R				§23 (3) und (4)
Bachelorarbeit *)	P								15		
<b>Summen ECTS</b>			<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>		
<b>SWS</b>		<b>147</b>	<b>30</b>	<b>30</b>	<b>24</b>	<b>24</b>	<b>3</b>	<b>22</b>	<b>14</b>		

\*) The Bachelor thesis corresponds to a workload of 12 ECTS credits.

(11) Table of modules and classes in the focus topics:

	Art	SWS	ECTS	Studienleistung	Prüfungsleistung
<b>K Kommunikationssysteme</b>					
Nachrichtentechnik	V+L	4	5		K
Regelungstechnik mit Signalverarbeitung 2	V+L	4	5		K
Leitungsgebundene Kommunikation	V+L	4	5		K
Simulation v. Kommunikationssystemen	V+L	4	5		K
Funkkommunikation	V+L	4	5		K
<b>E Elektronik für die Informationstechnik</b>					
Elektronik 2	V+L	4	5	LA	K
Digitale Schaltungen und Systeme	V+L	4	5		K
Hochfrequenztechnik	V+L	4	5	LA	K
Schaltungen der Kommunikationstechnik	V+L	4	5		K
Elektromagnetische Verträglichkeit	V+L	4	5		K
<b>A Automatisierung</b>					
Regelungstechnik mit Signalverarb. 2	V+L	4	5		K
Methoden der Regelungstechnik	V+L	4	5		K
Geregelte Antriebe	V+L	4	5		K
Bussysteme	V+L	4	5		K
Steuerungstechnik	V+L	4	5	LA	K
<b>F Fahrzeugelektronik</b>					
Fahrzeugtechnik Antrieb	V+L	4	5	LA	K
Fahrzeugtechnik Fahrwerk	V+L	4	5		K
Bussysteme	V+L	4	5		K
Automotive Engineering	V+L	4	5		K
Fahrzeugsysteme	V	4	5		K
<b>L Energie- und Leistungselektronik</b>					

Elektronik 2	V+L	4	5	LA	K
Leistungselektronik	V+L	4	5	LA	K
Elektr. Anlagentechnik und Energieversorgung	V+L	4	5		K
Energiewandlung und -speicherung	V+L	4	5		K
Elektromagnetische Verträglichkeit	V+L	4	5		K
<b>M Medientechnik</b>					
Web Grundlagen	V+L	4	5		K
Web-Entwicklung Client	V+L	4	5	LA	K
Web-Entwicklung Server	V+L	4	5		K
Medienergonomie	V+Ü	4	5		PP
Animation 1	V+L	4	5		PP
<b>I Informatik</b>					
Softwarearchitekturen	V+L	4	5		K
Betriebssysteme	V+L	4	5	LA	M
Rechnernetze	V+L	4	5	LA	K
Web Grundlagen	V+L	4	5		K
Datenbanken	V+L	4	5	LA	K
<b>W Wirtschaft</b>					
Betriebswirtschaftslehre	V	4	5		K
Controlling	V	4	5		K
Englisch Oberstufe	S	4	5		K
Marketing	V	4	5		K
Projektmanagement	S	4	5		K

## 45 Bachelor's degree programme Computer Science

(1) For the successful completion of the course, the total scope of the required classes – as far as compulsory and elective modules are concerned – is 161 semester hours per week. This results in the acquisition of 240 ECTS credits in eight semesters. The student is intended to acquire 60 ECTS credits per academic year.

(2) In the third taught semester, the student chooses two focus topics from a catalogue of specialisations published by the faculty. The specialisations help shape the course according to the student's personal preferences. The examination committee decides upon the composition of the specialisation catalogue and the associated examinations. Not every focus topic is offered every year. One focus topic consists of three modules each with 5 ECTS credits. If one module occurs in both the selected specialisations, an additional module is to be selected. This can be a further elective module or an as yet untaken module from a different specialisation.

(3) The modules for the degree programme are generally held in the English language. From the 3rd taught semester, classes for the degree programme may be offered in the German language, which then replace the corresponding classes in the English language.

(4) The elective modules are to be selected from a catalogue of recognised elective modules published by the faculty.

(5) The practical project, where the student must be present for at least 100 days (section 4(2)), will help the student learn about independent project-related work in the student's future career, under specialist guidance.

(6) The required classes for successful completion and the associated monitored assignments and examinations can be found in the following table:

Basic study period:

Bachelorstudiengang Computer Science, Grundstudium													
Modul / Lehrveranstaltung	Art	SWS	ECTS-Kreditpunkte im Lehrplansemester								Studienleistung	Prüfungsleistung	
			1	2	3	4	5	6	7	8			
Deutsch 1 (German 1)	V	4	5									LN	
Analysis 1 (Calculus 1)	V+Ü	4	5									LN	K
Programmieren 1 (Programming 1)	V+L	4	5									LA	K
Einführung in die Informatik (Introduction to Computer Science)	V+L	4	5									LA	K
Techn. Grundlagen der Informatik (Techn. Foundations of Comp. Science)	V+L	4	5									LA	K
Einführendes Projekt (Introductory Project)	P+S	4	5									LN	-
Lineare Algebra (Linear Algebra)	V+Ü	4		5								HA	K
Programmieren 2 (Programming 2)	V+L	4		5								LA	K
Rechnernetze (Computer Networks)	V+L	4		5								LA	K
Deutsch 2 (German 2)	V	4		5								LN	
Theoretische Informatik (Theoretical Computer Science)	V+Ü	4		5								HA	K
Mikrocomputertechnik (Microcomputer Technology)	V+L	4		5								LA	K
<b>Summen</b>		<b>48</b>	<b>30</b>	<b>30</b>									

Main study period:

Bachelorstudiengang Computer Science, Hauptstudium													
Modul / Lehrveranstaltung	Art	SWS	ECTS-Kreditpunkte im Lehrplansemester								Studienleistung	Prüfungsleistung	
			1	2	3	4	5	6	7	8			
Analysis 2 (Calculus 2)	V+Ü	4			5							HA	K
Programmieren 3 (Programming 3)	V+L	4			5							LA	K
Algorithmen & Datenstrukturen (Algorithms & Data Structures)	V+L	4			5							LA	K
Schwerpunkt A, 1. Modul (Special Subject A, 1. Module)	V+L	4			5								Abs. (10)
Schwerpunkt B, 1. Modul (Special Subject B, 1. Module)	V+L	4			5								Abs. (10)
Fachdeutsch(Technical German)	V+Ü	4			5								K
Stochastik (Stochastics)	V+Ü	4				5						HA	K
Software Engineering (Software Engineering)	V+L	4				5						LA	K
Betriebssysteme (Operating Systems)	V+L	4				5						LA	M
Schwerpunkt A, 2. Modul (Special Subject A, 2. Module)	V+L	4				5							Abs. (10)
Schwerpunkt B, 2. Modul (Special Subject B, 2. Module)	V+L	4				5							Abs. (10)
Datenbanken (Databases)	V+L	4				5						LA	K
Seminar (Seminar)	S	4						5					ST+RE

Verteilte & Webbasierte Systeme (Distributed & Webbased Systems)	V+L	4					5						M
Software Projekt (Software Project)	P	4					5					PK	ST+RE
Schwerpunkt A, 3. Modul (Special Subject A, 3. Module)		4					5						Abs. (10)
Schwerpunkt B, 3. Modul (Special Subject B, 3. Module)	V+L	4					5						Abs. (10)
Wahlpflichtmodul 1 (Elective 1)		4					5						§30
Betriebswirtschaftslehre (Business Economics)	V	4						5					K
Wahlpflichtmodul 2 (Elective 2)		4						5					§30
Wahlpflichtmodul 3 (Elective 3)		4						5					§30
Wahlpflichtmodul 4 (Elective 4)		4						5					§30
Wahlpflichtmodul 5 (Elective 5)		4						5					§30
Wahlpflichtmodul 6 (Elective 6)		4						5					§30
Projektmanagement (Project Management)	V+Ü	4							5				RE
Teamorientiertes Projekt (Team-oriented Project)	S+P	8							10				PP
Kommunikation und Moderation (Communication & Moderation)	V+Ü	2								2			RE
Praxisprojekt (Internship)	P									20			ST+RE
Praxissemester-Arbeit (Report on Internship)	S	1								8			
Seminar zur Bachelorarbeit (Bachelor Thesis Seminar)	S	2									3		RE + BE, §23 (3)
Bachelorarbeit (Bachelor Thesis)											12		
<b>Summen</b>		<b>161</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>		

(7) Only students who have successfully completed the associated monitored assignments will be admitted to the required examinations. The monitored assignments for the practical study semester must be submitted at latest 2 weeks after the start of lectures in the subsequent study semester.

(8) The examinations can, in part, also be held in the week before the start of lectures for the subsequent semester. Examinations and examination dates will be announced sufficiently in advance.

(9) In the calculation of the overall grade for the Bachelor intermediate examination (section 19(2)), and the Bachelor examination, the individual modules will be weighted according to the number of ECTS credits. The examinations for the first two taught semesters count towards the Bachelor intermediate examination.

(10) Examples of focus topics are listed in the following catalogue:

Modul / Lehrveranstaltung	Art	SWS	ECTS-Kreditpunkte im Lehrplensemester								Studienleistung	Prüfungsleistung
			1	2	3	4	5	6	7	8		
<b>Computer Engineering</b>												
Digital Systems	V+L	4			5						LA	K
Hardware-Oriented Programming	P+V	4				5					LA	K
Computer Architecture	V+L	4					5				LA	M
<b>Service Robotics</b>												

Embedded Systems	V+L	4			5						LA	K
Realtime Systems	V+L	4				5					LA	M
Autonomous Systems	V+L	4					5					K
<b>IT Security</b>												
Information Security	V+Ü	4			5							K
Digital Forensics	V+Ü	4				5						K
Pentesting	V+Ü	4					5					K
<b>Mobile Computing</b>												
Mobile Application Development	V+L	4			5						LA	K
Ad hoc & Sensor Networks	V+L	4				5					LA	M
Web Engineering	V+L	4					5					K
<b>Computer Graphics &amp; Vision</b>												
Machine Vision	V+L	4			5							K
Computer Graphics	V+Ü	4				5					LA	K
Game Programming	V+P	4					5					PP
<b>Medical Information Systems</b>												
Medizinische Dokumentation*	V+L	4			5							K
Health Data Analytics*	V+L	4				5						K
Medizinische Informationssysteme*	V+Ü	4					5					K
<b>Information Systems</b>												
Database Programming	V+P	4			5							ST+PA
Data Warehousing	V+L	4				5					ST	M
Operations Research*	V+Ü	4					5					K
<b>Business Administration</b>												
Controlling, Kosten- und Leistungsrechnung*	V	4			5							K
Grundlagen des Marketings*	V	4				5						K
Entrepreneurship *	V	4					5				HA	RE

\*) Modules are taught in the German language.

## 46 Bachelor's degree programme Computer Science (*Informatik*)

(1) For the successful completion of the course, the total scope of the required classes – as far as compulsory and elective modules are concerned – is 137 semester hours per week. This results in the acquisition of 210 ECTS credits in seven semesters. The student is intended to acquire 60 ECTS credits per academic year.

(2) In the third taught semester, the student chooses two focus topics from a catalogue of specialisations published by the faculty. The specialisations help shape the course according to the student's personal preferences. The examination committee decides upon the composition of the specialisation catalogue and the associated examinations. Not every focus topic is offered every year. One focus topic consists of three modules each with 5 ECTS credits. If one module occurs in both the selected specialisations, an additional module is to be selected. This can be a further elective module or an as yet untaken module from a different specialisation.

(3) From the 3rd taught semester, classes for the degree programme may be offered in the English language, which then replace the corresponding classes in the German language.

(4) The elective modules are to be selected from a catalogue of recognised elective modules published by the faculty.

(5) The practical project, where the student must be present for at least 100 days (section 4 (2)), will help the student learn about independent project-related work in the student's future career, under specialist guidance.

(6) The required classes for successful completion and the associated monitored assignments and examinations can be found in the following table:

Bachelorstudiengang Informatik											
Modul / Lehrveranstaltung	Art	SWS	ECTS-Kreditpunkte im Lehrplansemester							Studienleistung	Prüfungsleistung
			1	2	3	4	5	6	7		
Betriebswirtschaftslehre	V	4	5								K
Analysis 1	V+Ü	4	5							LN	K
Programmieren 1	V+L	4	5							LA	K
Einführung in die Informatik	V+L	4	5							LA	K
Techn. Grundlagen der Informatik	V+L	4	5							LA	K
Einführendes Projekt	P+S	4	5							LN	-
Lineare Algebra	V+Ü	4		5						HA	K
Programmieren 2	V+L	4		5						LA	K
Rechnernetze	V+L	4		5						LA	K
Datenbanken	V+L	4		5						LA	K
Theoretische Informatik	V+Ü	4		5						HA	K
Microrcomputertechnik	V+L	4		5						LA	K
Analysis 2	V+Ü	4			5					HA	K
Programmieren 3	V+L	4			5					LA	K
Algorithmen & Datenstrukturen	V+L	4			5					LA	K
Schwerpunkt A, 1. Modul	V+L	4			5						Abs. (10)
Schwerpunkt B, 1. Modul	V+L	4			5						Abs. (10)
Fachenglisch*	V+Ü	4			5						K
Stochastik	V+Ü	4				5				HA	K
Software Engineering	V+L	4				5				LA	K
Betriebssysteme	V+L	4				5				LA	M
Schwerpunkt A, 2. Modul	V+L	4				5					Abs. (10)
Schwerpunkt B, 2. Modul	V+L	4				5					Abs. (10)
Wahlpflichtmodul 1		4				5					§30
Seminar*	S	4					5				ST+RE
Verteilte & Webbasierte Systeme	V+L	4					5				M
Software Projekt	P	4					5			PK	ST+RE
Schwerpunkt A, 3. Modul		4					5				Abs. (10)
Schwerpunkt B, 3. Modul	V+L	4					5				Abs. (10)
Wahlpflichtmodul 2		4					5				§30
Projektmanagement*	V+Ü	4						5			RE
Teamorientiertes Projekt*	S+P	8						10			PP
Kommunikation und Moderation	V+Ü	2							2		RE
Praxisprojekt	P								2		ST+RE
Praxissemester-Arbeit	S	1							0		
Seminar zur Bachelorarbeit	S	2								3	RE + BE, §23 (3)
Bachelorarbeit										12	
<b>Summen</b>		<b>137</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>		



\*) Modules are taught in the English language.

(7) Only students who have successfully completed the associated monitored assignments will be admitted to the required examinations. The monitored assignments for the practical study semester must be submitted at latest 2 weeks after the start of lectures in the subsequent study semester.

(8) The examinations can, in part, also be held in the week before the start of lectures for the subsequent semester. Examinations and examination dates will be announced sufficiently in advance.

(9) In the calculation of the overall grade for the Bachelor intermediate examination (section 19(2)), and the Bachelor examination, the individual modules will be weighted according to the number of ECTS credits. The examinations for the first two taught semesters count towards the Bachelor intermediate examination.

(10) Examples of focus topics are listed in the following catalogue:

Modul / Lehrveranstaltung	Art	SWS	ECTS-Kreditpunkte im Lehrplansemester								Studienleistung	Prüfungsleistung
			1	2	3	4	5	6	7	8		
<b>Computer Engineering</b>												
Digital Systems	V+L	4			5						LA	K
Hardware-Oriented Programming	P+V	4				5					LA	K
Computer Architecture	V+L	4					5				LA	M
<b>Service Robotics</b>												
Embedded Systems	V+L	4			5						LA	K
Realtime Systems	V+L	4				5					LA	M
Autonomous Systems	V+L	4					5					K
<b>IT Security</b>												
Information Security	V+Ü	4			5							K
Digital Forensics	V+Ü	4				5						K
Pentesting	V+Ü	4					5					K
<b>Mobile Computing</b>												
Mobile Application Development	V+L	4			5						LA	K
Ad hoc & Sensor Networks	V+L	4				5					LA	M
Web Engineering	V+L	4					5					K
<b>Computer Graphics &amp; Vision</b>												
Machine Vision	V+L	4			5							K
Computer Graphics	V+Ü	4				5					LA	K
Game Programming	V+P	4					5					PP
<b>Medical Information Systems</b>												
Medizinische Dokumentation*	V+L	4			5							K
Health Data Analytics*	V+L	4				5						K
Medizinische Informationssysteme*	V+Ü	4					5					K
<b>Information Systems</b>												
Database Programming	V+P	4			5							ST+PA
Data Warehousing	V+L	4				5					ST	M
Operations Research*	V+Ü	4					5					K

Business Administration											
Controlling, Kosten- und Leistungsrechnung*	V	4			5						K
Grundlagen des Marketings*	V	4			5						K
Entrepreneurship *	S	4				5			HA		RE

\*) Modules are taught in the German language.

### 47 Bachelor's degree programme Data Science in Medicine (*Data Science in der Medizin*)

(1) For the successful completion of the course, the total scope of the required classes – as far as compulsory and elective modules are concerned – is 141 semester hours. This results in the acquisition of 210 ECTS credits in seven semesters. The student is intended to acquire 60 ECTS credits per academic year. An academic year consists of two semesters.

(2) From the 4th taught semester, classes for the degree programme may be offered in the English language, which then replace the corresponding classes in the German language.

(3) In the practical project, where the student must be present for at least 100 days (section 4(2)), the student shall experience processes in a business or institutional environment. Due to the breadth of the subjects in the degree programme, these could be in the field of medicine, biometrics, clinical studies or also in computer science. The practical project serves as an introduction to independent project-related work in the student's future career, under specialist guidance.

(4) The required modules for successful completion and the associated monitored assignments and examinations can be found in the following table:

Bachelorstudiengang Data Science in der Medizin											
Modul / Lehrveranstaltung	Art	SWS	ECTS-Kreditpunkte im Lehrplansemester							Studienleistung	Prüfungsleistung
			1	2	3	4	5	6	7		
Vorklinische Medizin 1	V+L	4	5						P		K
Wissenschaftliches Arbeiten	V+L	4	5						R	LN	
Einführung in die Informatik	V+L	4	5						A		K
Einführung in die Programmierung	V+L	4	5						K	LA	K
Beschreibende Statistik	V+Ü	4	5						T		K
Mathematik	V+Ü	4	5						I	LN	K
Vorklinische Medizin 2	V+L	4		5					S		K
Grundlagen der Dokumentation	V+L	4		5					C		K
Datenbanken	V+L	4		5					H	LA	K
Fortgeschrittene Methoden der Programmierung	V+L	4		5					E	LA	K
Wahrscheinlichkeitsrechnung	V+Ü	4		5					S		K
Gesundheitswesen u. Recht	V	4		5					T		K
Klinische Medizin 1	V+L	4			5				U		K
Medizinische Dokumentation	V+L	4			5				D		K
Betriebssysteme/Rechnernetze	V+L	4			5				I		K
Webbasierte Programmierung	V+L	4			5				E		K
									N		K

Inferenzstatistik	V+Ü	4			5			-			K
Statistische Auswertesysteme	V+L	4			5						K
Klinische Medizin 2	V+L	4				5					M
Klinische Forschung und Studien	V+L	4				5					M
Projektmanagement	V+L	4				5					M
Projektarbeit 1	V+L	4				5					PP
Biostatistische Verfahren	V+L	4				5			LA		K
Fachenglisch	V+Ü	4				5					K
Medizinische Informationssysteme	V+L	4					5				M
Datenschutz IT-Sicherheit	V+L	4					5				M
Projektarbeit 2	V+L	4					5				PP
Wahlpflichtmodul 1		4					5				§30
Wahlpflichtmodul 2		4					5				§30
Seminar	S	4					5				ST+RE
Kommunikation und Moderation	V+Ü	2						2			RE
Praxisprojekt	P							20			
Praxissemesterarbeit	S	1						8		BE	
Wahlpflichtmodul 3		4							5		§ 30
Wahlpflichtmodul 4		4						S	5		§ 30
Wahlpflichtmodul 5		4						E	5		§ 30
Bachelorarbeit	P	4						M.	12		BE,
Seminar zur Bachelorarbeit	S	2							3		§23(3)
<b>Summen</b>		<b>141</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>		

(5) Only students who have successfully completed the associated monitored assignments will be admitted to the required examinations. The monitored assignments for the practical study semester must be submitted at latest 2 weeks after the start of lectures in the subsequent study semester.

(6) The elective subjects are to be selected from a catalogue of recognised elective subjects published by the faculty. If module examinations were taken at another university (e.g. as a part of studying abroad), the student must apply to the responsible examination committee to have them recognised.

(7) The examinations for the Bachelor intermediate examination as per section 19 are the examinations for the first two taught semesters. In the calculation of the overall grade for the Bachelor intermediate examination (section 19(2)), these will be weighted according to the number of ECTS credits.

(8) The subject groups (section 3(5)) for the Bachelor examination, the associated modules, and the weighting of the module grades for the overall grade (section 25(1)) can be found in the following table:

Fachgruppe	Module	Gewicht der Modulnote für die Gesamtnote
Biometrie	Inferenzstatistik	5
	Statistische Auswertesysteme	5
	Biostatistische Verfahren	5
	Wahlpflichtmodul aus Katalog B	5
Informatik	Webbasierte Programmierung	5
	Betriebssysteme und Rechnernetze	5
	Projektmanagement	5
	Wahlpflichtmodul aus Katalog I	5

Medizinische Dokumentation und Informationssysteme	Medizinische Dokumentation	5
	Klinische Forschung/Studien	5
	Medizinische Informationssysteme	5
	Datenschutz und IT-Sicherheit	5
Medizin	Klinische Medizin 1	5
	Klinische Medizin 2	5
	Wahlpflichtmodul aus Katalog M	5
Kommunikation	Fachenglisch	5
	Kommunikation und Moderation	2
Praxis	Projektarbeit 1	5
	Projektarbeit 2	5
Vertiefung	Wahlpflichtmodul 4	5
	Wahlpflichtmodul 5	5
	Seminar	5
Bachelorarbeit	Bachelorarbeit, Seminar zur Bachelorarbeit	15
<b>Summe: 8</b>	<b>23</b>	<b>122</b>

## Section C: Final and transitional provisions

### 48 Final and transitional provisions

(1) This 3rd amendment of the Ulm University of Applied Sciences course and examination regulations for Bachelor's degree programmes shall take retroactive effect from September 1, 2016.

(2) The provisions of sections 30-47 from this new version are generally applicable to all students on the affected degree programmes. The corresponding provisions of the course and examination regulations for Bachelor's degree programmes, valid from March 1, 2011, are thereby repealed. Possible exceptions to this are students who, at the time these course and examination regulations came into effect, were already enrolled on the basis of an earlier version of the course and examination regulations – which were no longer used for new students on the relevant degree programme.

Ulm, 30.11.2016

Prof. Dr Volker Reuter  
Rector

#### Announcement:

Public university announcement displayed from 01.12.2016 to 16.12.2016.  
Additionally available in electronic form from 01.12.2016

Ulm, 30.11.2016

Iris Teicher  
Chancellor