

**Examination Regulations (Rules)  
of the Faculty of Engineering  
at Christian-Albrechts-Universität zu Kiel (Kiel University)  
for students of 'Electric Vehicle Propulsion and Control'  
leading to a Master of Science degree (M.Sc.) – 2020  
(Degree-specific examination regulations (FPO) Master in Electric Vehicle  
Propulsion and Control (E-PiCo) (1-subject) – 2020)  
of 14 February 2020**

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Based on Section 52 (1) 1 of the Schleswig-Holstein Higher Education Act (HSG) in the version published on 5 February 2016 (GVOBl. Schl.-H. p.39), last amended by the law of 13 December 2019 (GVOBl. Schl.-H., p. 612), after a resolution was passed by the Convention of the Faculty of Engineering of 15 January 2020, the following Rules were issued:

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**Section 1  
Scope of application**

- (1) The Master's degree programme in Electric Vehicle Propulsion and Control is a joint degree programme by
1. Kiel University,
  2. École Centrale de Nantes (Centrale Nantes, consortium leader),
  3. Università degli Studi dell'Aquila (University of L'Aquila), and
  4. Universitatea POLITEHNICA din Bucureşti (University POLITEHNICA of Bucharest).
- These four institutions form the E-PiCo consortium.

- (2) These degree-specific examination regulations (FPO) in conjunction with the Examination Procedure Regulations (Rules) of Christian-Albrechts-Universität zu Kiel for students of Bachelor's and Master's Degree Programmes (PVO) apply to the teaching and assessment of the modules offered by Kiel University's Faculty of Engineering for the Master's degree

programme in Electric Vehicle Propulsion and Control.

- (3) Admission to modules offered by other faculties at Kiel University and the respective module examinations are subject to the examination regulations of the respective faculties or institutes. Admission to modules imported from the Key Skills Centre (ZfS) at Kiel University and the respective module examinations are subject to the relevant regulations of the ZfS.
- (4) Modules offered by the other participating universities are regulated by the Examination Provisions at the respective university. Modules successfully completed at the other participating universities are recognised as part of this degree programme and will be duly allocated the ECTS credits earned.

## **Section 2 Objective of the degree programme**

The “Master in Electric Vehicle Propulsion and Control” Master's degree programme leads to a degree qualifying for a professional career. Graduates are able to analyse a specific task within their subject area and independently and efficiently complete the task by applying scientific methods. Accordingly, graduates are particularly well-suited for challenging roles in professional practice or as early career researchers. The profile of the degree programme is characterised by the objective of enabling graduates to consistently meet the challenges of professional practice in a German and international environment.

## **Section 3 Admission to the Master's degree programme**

- (1) The academic year applies, starting in the winter semester.
- (2) Prerequisites for admission to the Master's degree programme are:
  1. Successful completion of a Bachelor's examination awarding at least 180 ECTS credits in a degree programme in the field of electrical engineering and information technology, or in a related degree programme such as mechatronics, automation technology or technical cybernetics with specialisation in a relevant topic, after a standard period of study of at least three years at a recognised German or foreign institution of higher education.
  2. A good knowledge of English. More details can be found in the study qualification rules (Studienqualifikationssatzung).
  3. Fulfilment of subject-specific acceptance criteria in accordance with European Union requirements.

The E-PiCo Selection Committee, a joint committee of the consortium partners, determines if the prerequisites are met and decides on admission. This is regulated in more detail by the consortium agreement, extracts of which are contained in Annex 2, and to this extent form an integral part of these degree-specific examination regulations.

## **Section 4 Teaching and examination language**

Lectures and examinations will be held in English.

## **Section 5 Structure and scope of curriculum, standard period of study**

- (1) The overall scope of the modules required for successful completion of the degree programme is 90 ECTS credits, with attendance time of up to 64 hours per week per semester (SWS). In addition, the completion of a Master's thesis worth 30 ECTS credits is required.
- (2) The standard period of study including the Master's thesis is four semesters.
- (3) The Master's examination is comprised of the individual module examinations and the Master's thesis.

- (4) Within the scope of their degree programme, students select modules totalling 30 ECTS credits each from the sections “core modules”, “in-depth modules” and “specialisation modules” in accordance with the module overview. In addition, the students complete a Master’s thesis worth 30 ECTS credits.
  1. The core modules worth 30 ECTS credits are offered in the first semester at the École Centrale de Nantes.
  2. In the second semester, Kiel University, the Università degli Studi dell'Aquila and the University Politehnica of Bucharest each offer a combination of in-depth modules worth at least 30 ECTS credits. The students choose one of the three study locations, and complete in-depth modules there from the modules offered.
  3. In the third semester, each of the four consortium partners offers at least one combination of specialisation modules worth at least 30 ECTS credits each. The students choose a specialisation, and complete modules from among the relevant offers.
  4. The Master’s thesis is completed during the fourth semester. Application for admission to a Master’s thesis can be made at any of the four consortium partners.
- (5) The modules offered by Kiel University for the degree programme are described in more detail in the module handbook. The Chairperson of the Examination Board oversees updating of the module handbook. The content is published on the Internet pages of the Electrical Engineering and Information Technology Examination Office.
- (6) In order to acquire the academic title in accordance with Section 12, a minimum of 30 ECTS credits must be obtained in modules at Kiel University.

### **Section 6**

#### **Recognition of study periods, coursework and examinations**

The mutual recognition of study periods, coursework and examinations throughout the consortium, which are considered part of this degree programme in terms of Section 1 (4), occurs in accordance with the contractual agreements between the consortium partners.

In all other cases, the recognition of study periods, coursework and examinations takes place in accordance with the Recognition Rules at Kiel University.

### **Section 7**

#### **Examinations**

- (1) The following types of examination are permitted in the modules offered by the Institute of Electrical Engineering and Information Technology for the degree programme and for the Master’s thesis:
  1. Written examination (duration: maximum 180 minutes)
  2. Oral examination (duration: 30 to 45 minutes)
  3. Colloquium
  4. Experiment
  5. Practical task
  6. Demonstration
  7. Paper
  8. Protocol
  9. Work report
  10. Written report
  11. Term paper
  12. Interview and interview report
  13. Online test
  14. Presentation

Individual details about the examinations to be completed for each module can be found in the module overview. If several of the types of examination listed above are given as an option, the valid type for one academic year will be announced on the notice board at the start of the module.

- (2) With the exception of written examinations, in accordance with (1), every examination can be taken as a group examination instead of an individual examination if the contributions from each candidate are clearly definable, can clearly be differentiated between and assessed, based on objective criteria. There will be an announcement at the start of the module if examinations are to be in the form of group examinations.
- (3) For the modules offered by the École Centrale de Nantes, the Università degli Studi dell'Aquila and the University Politehnica of Bucharest for the degree programme, the associated examinations will be one of the following types:
  1. Written examination
  2. Oral examination
  3. Colloquium
  4. Experiment
  5. Practical task
  6. Demonstration
  7. Paper
  8. Protocol
  9. Work report
  10. Written report
  11. Term paper
  12. Interview and interview report
  13. Online test
  14. Presentation

The consortium partners will announce the types of examination for their modules by the start of the corresponding course at the latest.

### **Section 8 Examination prerequisites**

- (1) If a module contains laboratory courses, practical exercises or language courses, admission to the examination requires regular attendance at these courses.
- (2) If a module includes courses that are not mentioned in (1), admission to the examination requires regular attendance at these courses, if the individual students cannot achieve the qualification objective without regular attendance, if attendance is necessary in order to grasp the essential subject-specific methods, or if acquiring competence is dependent on the presence of the other participants, or on being present at a certain place. This is the case for seminars within the scope of this degree programme. The obligation for regular attendance at a seminar within the scope of this degree programme is based on the premise that, in addition to oral presentations given by students, the course also provides the opportunity for all seminar attendees to learn scientific discussion. As such, in addition to the acquisition of specialist knowledge, the learning objectives of a seminar specifically encompass the development of analytical and rhetorical skills, the use of presentation techniques and the ability to successfully work in teams. This learning objective can only be achieved through regular attendance.
- (3) Course attendance is deemed regular if
  1. all experiments relating to a laboratory course and practical exercise have been carried out. If a student misses a session for reasons in Section 52 (4) HSG, the lecturer can give him or her a substitute date.
  2. in the case of a language course or a seminar, no more than 20% of the course dates have been missed without giving reasons for the non-attendance. Section 52 (4) HSG remains without prejudice; in justified exceptional cases, the module coordinator may specify an equivalent substitute for the course elements that have been missed.
- (4) The courses offered by the Faculty of Engineering for the Master's degree programme in "Electric Vehicle Propulsion and Control" which require regular attendance for admission to the

examinations are marked in Annex 1. These degree-specific examination regulations provide no information about any possible compulsory attendance for the courses offered by the consortium partners.

### **Section 9 Master's thesis**

- (1) During the second semester, the E-PiCo consortium publishes a list of possible topics for Master's theses. Every candidate can register for up to five topics, and specify an order of preference. The final allocation of the topics among the candidates is announced by the E-PiCo consortium at the beginning of the third semester. From this point onwards, students can begin working on the topic of their Master's thesis. The actual admission to a Master's thesis takes place later, in accordance with the following paragraphs.
- (2) Candidates who write their Master's thesis at the Faculty of Engineering must submit their application for admission to a Master's thesis in writing to the Electrical Engineering and Information Technology Examination Office at the Faculty of Engineering.
- (3) The Master's thesis is to be written in English.
- (4) Students who have demonstrably acquired a minimum of 75 ECTS credits in the Master's degree programme will be admitted to the Master's thesis.
- (5) In justified exceptional cases, the Chairperson of the Examination Board may also admit a candidate to the Master's thesis where the admission requirement in (4) above has not been met.
- (6) The Master's thesis may also be issued in the form of a group thesis, provided that all candidates in the group fulfil the requirement stated in (4) above and that the contributions from each individual candidate are clearly definable, can clearly be differentiated between and assessed, based on objective criteria.
- (7) When applying for admission to the Master's thesis, the candidate may propose first and second examiners and a topic for the thesis, without this giving rise to any claim for the proposal to be considered.
- (8) The thesis will be issued and supervised by a university or private lecturer working in the specialist field of Electrical Engineering and Information Technology at the Faculty of Engineering at Kiel University, who is involved in the degree programme.
- (9) If the thesis is to be prepared at a different institute at the Faculty of Engineering, at an institution outside of the Faculty of Engineering or outside the university, it requires approval by the Chairperson of the Examination Board.
- (10) The maximum period from admission to the Master's thesis until the Master's thesis is submitted is six months.
- (11) The topic of the Master's thesis may be handed back only once and only within the first month after admission to the Master's thesis.
- (12) The Master's thesis is to be submitted to the responsible Examination Office, on time, in the form of two hard copies and additionally one digital copy saved on a data carrier suitable for standard electronic data processing. The Examination Office will record the date of submission.
- (13) The candidate conveys the results of their Master's thesis in a presentation lasting 30 minutes. The presentation is followed by a brief discussion. The presentation should take place at the end of the thesis preparation period, no earlier than one month before and no later than one month after the deadline for submission of the written thesis. The first examiner attends the presentation in person. In accordance with (14), the second examiner either attends the presentation in person, or takes part via suitable communication software. Other members of the institute may also attend the presentation. Any members of the institute who are suitably qualified in terms of Section 51 (3) HSG are entitled to ask questions during the discussion that follows the presentation.
- (14) The Master's thesis will be assessed by two examiners within six weeks of submission. The thesis supervisor is the first examiner. Generally, a suitably qualified professor from one of the other

universities participating in the consortium is to be appointed as a second examiner of the Master's thesis with equal standing (jointly supervised Master's thesis). The Examination Board shall decide on exceptions to these rules.

- (15) The overall grade for the Master's thesis is calculated as follows: 90% comes from the grade for the written thesis and 10% comes from the grade for the presentation.

### **Section 10 Assessment of the examination**

The grades obtained for coursework and examinations at the other universities involved in the degree programme are converted to the German grading system as follows:

École Centrale de Nantes	Università degli Studi dell'Aquila	University Politehnica of Bucharest	Kiel University
17.0 → 20.0	29 → 30	10	1.0
16.0 → 16.9	28	9	1.3
15.0 → 15.9	27		1.7
14.0 → 14.9	25 → 26	8	2.0
12.0 → 12.9	24		2.3
11.8 → 11.9	23	7	2.7
11.5 → 11.7	21 → 22	6	3.0
11.0 → 11.4	20		3.3
10.5 → 10.9	19	5	3.7
10.0 → 10.4	18		4.0
0.0 → 9.9	0 → 17	0 → 4	5.0

### **Section 11 Overall grade for the Master's examination**

- (1) The overall grade is calculated as the arithmetic mean of the three grades for the three sections "core modules", "in-depth modules" and "specialisation modules" with a weighting of 30 each, and the grade for the Master's thesis with a weighting of 30.
- (2) The section grades for "core modules", "in-depth modules" and "specialisation modules" are calculated as the arithmetic means of the grades achieved in each, weighted according to their ECTS credits.
- (3) Depending on the university or universities which the student attends in the second and third semesters, they will have the opportunity to complete more examinations than required in the compulsory elective modules for the sections "in-depth modules" and "specialisation modules", and can then choose which grades for compulsory elective modules should be included in the section grade. Corresponding additional examinations must be taken by no later than the end of the examination period in which the Master's examination is passed. Students who wish to acquire more than the required ECTS credits must notify the Examination Office of this in good time. Notification will be considered to be in good time if done within five working days of the date the student knows or is in a position to know that they have acquired, by way of successful examination, the necessary number of ECTS credits for the Master's examination.

Where notification is not forthcoming or is not in good time, the examination results of the additional modules will not be considered for calculating the grade.

Students who have acquired more than the required number of ECTS credits in a particular section are to provide the Examination Office with written notification of the modules to be considered for calculating the section grade within five working days of receipt of the last examination result. This notification must be signed by the student. If a student does not notify the Examination Office of the modules to be considered, or fails to do so in good time, the modules with the best grades will be used for the calculation.

## **Section 12 Academic title**

Students who undertake their studies at two consortium partners (École Centrale de Nantes, Università degli Studi dell'Aquila, University Politehnica of Bucharest, Kiel University) and complete the Master's degree programme with an overall grade of at least "sufficient" (ausreichend), are awarded a Master of Science degree by both consortium partners (double degree). Where one semester of the degree programme has been successfully completed at three of the consortium partners, thereby achieving an overall grade of at least "sufficient" in the completed Master's degree programme, the Master of Science will be awarded as a multiple degree by the relevant three consortium partners.

The Faculty of Engineering at Kiel University awards the degree of Master of Science (M.Sc.) based on studies of at least half a year at Kiel University and achievement of an overall grade of at least "sufficient" in the completed Master's degree programme.

## **Section 13 Examination Board**

- (1) The Electric Vehicle Propulsion and Control Examination Board is responsible for the organisation of examinations in accordance with these Examination Regulations, as well as for the tasks allocated by these Examination Regulations. The business of the Examination Board is managed by the relevant Examination Office.
- (2) The Examination Board consists of four members from the university lecturers' group, one member from the scientific personnel and two members from the student body.
- (3) The Chairperson of the Examination Board is simultaneously the national coordinator of the degree programme, and in this capacity also a member of the "Joint Programme Board" of the E-PiCo consortium.

## **Section 14 Entry into force**

These rules enter into force on 1 October 2020.

The University Board at Kiel University granted its approval in accordance with Section 52 (1) 1 of the Schleswig-Holstein Higher Education Act (HSG) in its letter dated 13 February 2020.

Kiel, 14 February 2020

Prof. Dr Hermann Kohlstedt  
Dean of the Faculty of Engineering  
at Kiel University

## Annex 1: Programme schedule

The modules offered by the Faculty of Engineering for the Master's degree programme in "Electric Vehicle Propulsion and Control" which require regular attendance for admission to the examinations are marked in the following programme schedule. This programme schedule provide no information about any possible compulsory attendance for the courses offered by the consortium partners.

### 1st semester (Core Modules)

Module	Compulsory (P) / compulsory elective (WP)	Examination	SWS	ECTS Module	ECTS Section
Control Systems	P	In accordance with Section 7 (3)	Information on attendance is contained in the module handbook	4	30
Research Methodology	P			4	
Embedded Software Systems	P			4	
Statistical Signal Processing and Estimation Theory	P			4	
Fundamentals of Electric Vehicle System	P			4	
Electric Vehicle Modeling and Simulation	P			4	
Project	P			3	
French Language Course1)	P			3	

1) With the written permission from the Chairperson of the Examination Board, this course may be replaced by another module to learn a foreign language, provided French language skills are proven. Level B1 of the Common European Framework of Reference for Languages (CEFR) is regarded as sufficient for French language skills.

### 2nd semester (In-depth Modules)

#### a) University of L'Aquila

Module	Compulsory (P) / compulsory elective (WP)	Examination	SWS	ECTS Module	ECTS Section
Electrical Machines	P	In accordance with Section 7 (3)	Information on attendance is contained in the module handbook	5	30
Power Electronic Converters	P			5	
Renewable Power Energy and Storage Systems	P			5	
Nonlinear Control Systems	P			5	
Hybrid Systems Control and Simulation	P			5	
Italian Language Course2)	P			5	

2) With the written permission from the Chairperson of the Examination Board, this course may be replaced by another module to learn a foreign language, provided Italian language skills are proven. Level B1 of the Common European Framework of Reference for Languages (CEFR) is regarded as sufficient for Italian language skills.

#### b) University of Bucharest

Module	Compulsory (P) / compulsory elective (WP)	Examination	SWS	ECTS Module	ECTS Section
Electrical Machines	P	In accordance with Section 7 (3)	Information on attendance is contained in the module handbook	5	30
Power Electronic Converters	P			5	
Renewable Energy and Storage Systems	P			5	
Nonlinear Control Systems	P			5	

**For information purposes only, the German original is binding.**

Machine Learning for Autonomous Systems	P			5	
Romanian Culture, Civilization and Language <sup>3)</sup>	P			5	

3) With the written permission from the Chairperson of the Examination Board, this course may be replaced by another module to learn a foreign language, provided Romanian language skills are proven. Level B1 of the Common European Framework of Reference for Languages (CEFR) is regarded as sufficient for Romanian language skills.

c) Kiel University

Students who are at Kiel University in the second semester and will be at the University of L'Aquila in the third semester, and wish to obtain a degree from the university there, must complete either the module "etit6001-01a Applied Nonlinear Dynamics" or the module "etit6021-01a Advanced Methods in Nonlinear Control" as a compulsory elective module at Kiel University during the second semester.

Module	Compulsory (P) / compulsory elective (WP)	Examination	SWS	ECTS Module	ECTS Section
Design of Power Electronics Converters	P	K / M	2V + 1.5Ü	5	20
Nonlinear Control Systems	P	M	3V + 1Ü	5	
Electric Drives	P	M	2V + 1.5Ü	5	
Renewable Energy Systems	P	M	2V + 1.5Ü	5	
Compulsory elective module	WP	depending on the module		5	5
German course *, 4)	WP	Cumulative exercises		5	5

\* Compulsory attendance applies for the courses offered in these modules.

4) With the written permission from the Chairperson of the Examination Board, this course may be replaced by another module to learn a foreign language, provided German language skills are proven. Level B1 of the Common European Framework of Reference for Languages (CEFR) is regarded as sufficient for German language skills.

### 3rd semester (Specialisation Modules)

a) University of L'Aquila - specialisation 1 in L'Aquila (specialisation for students who attended the University of L'Aquila or Kiel University in the second semester).

Students who were at Kiel University in the second semester and are studying at the University of L'Aquila in the third semester, and wish to obtain a degree from the university there, must have completed either the module "etit6001-01a Applied Nonlinear Dynamics" or the module "etit6021-01a Advanced Methods in Nonlinear Control" as a compulsory elective module at Kiel University during the second semester.

Module	Compulsory (P) / compulsory elective (WP)	Examination	SWS	ECTS Module	ECTS Section
System Identification and Data Analysis	P	In accordance with Section 7 (3)	Information on attendance is contained in the module handbook	6	30
Embedded Systems	P			9	
Advanced Control Systems	P			9	
Optimization Models and Algorithms	P			6	

b) University of L'Aquila - specialisation 2 in L'Aquila (specialisation exclusively for students who attended the University of Bucharest in the second semester).

Module	Compulsory (P) / compulsory elective (WP)	Examination	SWS	ECTS Module	ECTS Section
System Identification and Data Analysis	P	In accordance with Section	Information on attendance is contained in the module	6	30
Embedded Systems	P			4	
Advanced Control Systems	P			9	

**For information purposes only, the German original is binding.**

Optimization Models and Algorithms	P	7 (3)	handbook	6	
Optimal Control	P			5	

c) University of Bucharest

Module	Compulsory (P) / compulsory elective (WP)	Examination	SWS	ECTS Module	ECTS Section
Sensorless Control of Electric Machines	P	In accordance with Section 7 (3)	Information on attendance is contained in the module handbook	6	30
Battery Chargers	P			6	
Energy Storage Requirements	P			6	
Battery Management Systems and Battery Life Cycle	P			6	
Microprocessor Applications for Real-time Systems	P			6	

d) Centrale Nantes

Module	Compulsory (P) / compulsory elective (WP)	Examination	SWS	ECTS Module	ECTS Section
Optimization, Application to Energy Management of Electric Vehicle Charging	P	In accordance with Section 7 (3)	Information on attendance is contained in the module handbook	5	30
Control of Power Converters for Electric Propulsion System	P			5	
Observation and Diagnosis, Application for Electrical Systems	P			5	
Advanced Control of Electric Propulsion Systems	P			5	
Case Study Application Dedicated Electric Vehicle Topology	P			5	
Project: Simulation and on Control of Propulsion System of Electric Vehicle	P			5	

e) Kiel University – Specialisation “Control of Complex Dynamical Systems”

Module	Compulsory (P) / compulsory elective (WP)	Examination	SWS	ECTS Module	ECTS Section
Optimization and Optimal Control	P	M	3V + 1Ü	5	20
Rigid Body Dynamics and Robotics	P	K	2V + 1Ü	5	
Seminar on Selected Topics in Systems and Control *	P	V+P	2S	5	
M.Sc. Laboratory Advanced Control *	P	Colloq., PA and P	4PÜ	5	
Compulsory elective module I	WP	depending on the module		5	10
Compulsory elective module II	WP	depending on the module		5	

\* Compulsory attendance applies for the courses offered in these modules.

f) Kiel University – Specialisation “Power Electronics Drives Technologies”

Module	Compulsory (P) / compulsory elective (WP)	Examination	SWS	ECTS Module	ECTS Section
Modeling and Control of Power Electronics Converters	P	K / M	2V + 1.5Ü	5	20
Grid Converters for Renewable Energy Systems	P	M	2V + 1.5Ü	5	
Seminar Power Electronics *	P	V+P	2S	5	
M.Sc. Laboratory Power Electronics - Renewable Energy - Drive Engineering *	P	Colloq., PA and P	5PÜ	5	
Compulsory elective module I	WP	depending on the module		5	10
Compulsory elective module II	WP	depending on the module		5	

\* Compulsory attendance applies for the courses offered in these modules.

Key:

- **Compulsory / compulsory elective:** P: compulsory; WP: compulsory elective
- **Examination:** K: Klausur / written examination; Colloq.: Colloquium; M: Mündliche Prüfung / oral examination; MP: P: written report in the form of a paper or protocol; PA: practical task; V: presentation
- **SWS:** S: seminar; SP: language practical/language course; P: internship; Pro.: project; PÜ: practical exercise; Ü: exercise; V: lecture

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## Annex 2: Admission requirements in accordance with the consortium agreement

The consortium agreement contains the following provisions regarding the application, selection and admission procedures:

### Application, selection and admission procedures

#### **Application**

- 6.1. Applicants will be required to complete the application procedure, providing documents and forms available through the E-PiCo website: "<https://master-epico.ec-nantes.fr>". The application procedure will have the following steps:
- STEP 1: Complete an online application form (available on the website), and submit it. In the application form the student will indicate his/her choice on the mobility scheme.
  - STEP 2:
    - Certificate as evidence for validation place of residence (as indicated in the PRADO website);
    - Copy of the ID/ passport (passport will be required for students outside Schengen);
    - Certified copy of the transcript of records of all courses taken to achieve the BSc degree (translation into English is required);
    - Certified copy of the highest degree obtained, stating credits, average grade and workload (translation into English is required);
    - Copy of Language Certificates in accordance with the requirements related to language proficiency (as set out in clause 8.3);
    - Full curriculum vitae;
    - Letter of motivation to participate in the E-PiCo Programme;
    - Disability Certificate and/or of special needs if applicable, any supplementary information / work that may be consider relevant by the applicant.
- 6.2. The deadline for submitting the application form and the required documentation will be announced on the E-PiCo website. In the cases of late submission of the online application, applications will only be accepted in the event of evidenced technical failure of the online registration platform.
- 6.3. The Programme shall offer a minimum of 60 places per intake.

#### **Selection**

- 6.4. The JPB will review all the applications according to the following scoring system:

<b>Evaluation criteria</b>	<b>Evidence requested</b>	<b>Score</b>
Academic performance at the Bachelor (class rang, GPA...)	Student transcripts	35
Relevance of B.Sc study to E-Pico	Student transcripts	20
Quality of institution that delivered the degree	BSc Degree	15
Other CV aspects (work experience, professional qualifications, languages)	CV	10
English level	Language certificate	10
Motivation	Motivation letter	10

#### ***Evaluation grid***

The Selection Committee will carry out the selection procedure on a competitive basis and decisions will be taken only on the basis of the provided documents.

The Selection Committee is composed by one representative from each partner and has the following tasks:

- Preparation of Timetable of application and criteria of selection;
- Advertising for the Programme to reach good European and third country students;
- Organizing the selection process including the checking and reception of postal documents of the candidates;
- Selection of students (with or without Erasmus+ scholarships);
- Distribution of the selected students on the partner institutions;

The Selection Committee members will have access to the database of the on-line application website.

The applicants will be assessed by giving a **mark out of one hundred** within a predefined grid. Each student will be assessed by 3 evaluators nominated by Selection Committee members. During the annual selection meeting, assessments of the different categories for a given applicant with a deviation greater than 2 between the different evaluators will be reviewed. After revision, the final mark in each category will be the average of all the reviewers' marks for this category.

The members involved in the assessment of applications must sign a "Non conflict of interest declaration".

- 6.5. The selection process will take place early enough to allow for notification of final decision to applicants in one month prior to the commencement of the first semester of each intake. Applicants will be admitted only when they have obtained the necessary visas, permits and insurance policies. The E-PiCo Management Office will assist with these procedures. Parties will provide assistance to students through their respective International Offices as stated in Clause 7.
- 6.6. Requirements for insurance cover (including for example, personal, accident, health, civil liability insurance) for students enrolled in the Programme will follow the rules in force at the Party at which the student is enrolled and will fulfill the minimum requirements laid out by any funding bodies (if any) from whom the Parties accept funding. The participation cost include a health and accident insurance conforms to the Minimum requirements for the health and accident insurance coverage of EMJMD students of the EACEA ([https://eacea.ec.europa.eu/sites/eacea-site/files/student\\_health\\_insurance\\_requirements\\_final.pdf](https://eacea.ec.europa.eu/sites/eacea-site/files/student_health_insurance_requirements_final.pdf)).
- 6.7. Scholarships and grants made to students will be awarded on the basis of demonstrated merit according to the scoring system foreseen.
- 6.8. Transparency of the application, admission and selection procedures are guaranteed by the publication of the relevant information procedures.
- 6.9. In accordance with each Party's Equal Opportunities Policy, the Programme is open to anyone regardless of age, class, creed, disability, ethnic origin, gender, marital status, nationality, sexual orientation or caring responsibilities. All individuals are selected and treated on their relative merits and abilities in line with this abovementioned Policy. Disabled applicants will be treated according to the same procedures as any other applicant. The Programme may require adaptation for students with special needs (e.g. hearing impairment, visual impairment, mobility difficulties, dyslexia, etc), particularly the practical laboratory sessions, and the Parties will make reasonable adjustments to accommodate students wherever possible. If a student has particular needs these will be discussed with him/her at the selection stage. All Parties have comprehensive support for and experience with students with a wide range of disabilities. Further details are specified in Clause 7.2 for all Parties.
- 6.10. Students participating in the Programme should have sufficient funds for the full period of study on the Programme as the Consortium is not responsible.

- 6.11. After being selected by the JPB, all applicants, supported by the E-PiCo Management Office will follow the registration procedure in each of the Partners Institutions involved in the student's mobility path, according to its own rules and regulations.

### **Admission**

- 6.12. The JPB is responsible for coordination of admissions between Parties and follow the policy and procedures provided by the UAC of each Party. Each UAC is sovereign and provide policy and procedures according to its own rules.
- 6.13. The Programme is open to holders of an official first cycle higher education degree from one or more Institutions in the field of engineering, electrical engineering, mechatronics, embedded system, control system, electronics, provided that the said degree gives access to the official Postgraduate (European Qualifications Framework (EQF) – Level 7) learnings in the country where the degree was awarded.
- 6.14. An applicant with a native language other than English needs to prove that he/she has sufficient fluency in English. Fluency in English will be established according to Clause 8.2 and 8.3.
- 6.15. The relevance of the BSc degree (or equivalent) of the applicant will be assessed. In cases of doubt regarding the quality of the issuing institution, external advisors will be consulted in order to establish the status and quality of the institution concerned. Students will be selected based on the quality of their degree and an applicant's grade average from his/her previous study should establish the high qualification level of the applicant and will normally be a grade average of 'B' or higher in terms of the ECTS grading scale. An applicant must show evidence of maturity, stability, adaptability, self-discipline and strong academic motivation. This can be achieved by providing a letter setting out the reasons he/she is motivated to participate in the Programme. Relevance of work experience and future career objectives will also be taken into consideration by the selection committee for reaching a final decision.
- 6.16. Offers will be made only to those applicants that satisfy the requirements for entry set out above, and for whom the supplemental information is deemed satisfactory according to the JPB.
- 6.17. In order to facilitate evaluation and determination of suitability of students for the Programme, the Parties will provide to each other current syllabuses, descriptions of study parts contributed to the Programme and any other relevant material to assist in ensuring that the Parties concur in relation to the level of knowledge, skills, academic qualifications and English language proficiency required to ensure that the part of the Programme taught at one Party is compatible with progression onto the part of the Programme taught at another Party.
- 6.18. The application procedure for the Programme will be centralised by the Coordinator which will collect the applications and make all preparations for the Selection Committee.
- 6.19. The Selection Committee will evaluate each applicant's capability to complete the Programme successfully in two years. All decisions on the acceptance of students' applications to study on the Programme must have the unanimous agreement of the JPB and shall be based on the criteria set out in Clause 6.4. All Students must satisfy the requirements for admission and provide supporting documentation and proof of the required level of English language proficiency.
- 6.20. The Parties agree that they will co-operate to ensure that all students applying for selection onto the Programme are aware of the whole set of admission and progression criteria set out in Chapter 6 of this Consortium Agreement.

- 6.21. The JPB shall complete the selection of students for enrolment on the Programme by the first half of April each year of this Consortium Agreement. The students selected must have the original supporting documentation listed in Article 6.1 of this Consortium Agreement.
- 6.22. A student who participates in the Programme is required to register and enroll as a student at the Parties where he or she is attending the Programme.
- 6.23. A student participating in the Programme shall be subject to the rules and regulations of the Party at which he or she is registered and shall abide by and be subject to the rules and regulations of the Programme and relevant national laws, in particular but not limited to those pertaining to student visas. A students participating in the Programme will be granted the same rights and privileges enjoyed by other students registered at the Party at which the student is registered.

## **Appendix: Module overview**

As at:

04.05.2020

(not part of the Rules)

### **Glossary**

Compulsory – Pflicht

Compulsory Module – Pflichtmodul

Compulsory Elective – Wahlpflicht

Compulsory Elective Module - Wahlpflichtmodul

Contact hours per week (weekly 45-minute teaching units) – Semesterwochenstunden (SWS)

Core Module - Kernmodul

Course Type – Lehrform

Cumulative Exercises – Kumulative Leistungen

Duration – Dauer

ECTS Credits – Leistungspunkte (LP)

Evaluation – Bewertungsart

Examination – Prüfungsleistung

Exercise – Übung

Graded – benotet

In-depth Module - Vertiefungsmodul

Lab Course / Laboratory Course – Praktikum

Lecture – Vorlesung

Module Course – Modullehrveranstaltung

None – keine

Not Graded – unbenotet

Oral Examination – Mündliche Prüfung

Practical Exercise – Praktische Übung

Prerequisites - Zulassungsvoraussetzungen

Project - Projekt

Semester – Semesterlage

Seminar - Seminar

Summer Semester – Sommersemester (SoSe)

Status – Status

Weighting – Gewichtung

Workload – Arbeitsaufwand

Winter Semester – Wintersemester (WiSe)

Written Examination – Klausur

## Semester 1: Core Modules at Centrale Nantes

All core modules offered by Centrale Nantes for the first semester are compulsory (30 ECTS Credits).

Control Systems							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
1st semester	1 Semester			Compulsory	None	4 / 120	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Control Systems	See module handbook		4	Compulsory	Examination in accordance with Section 7	Graded	100 %
Research Methodology							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
1st semester	1 Semester			Compulsory	None	4 / 120	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Research Methodology	See module handbook		4	Compulsory	Examination in accordance with Section 7	Graded	100 %
Embedded Software Systems							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
1st semester	1 Semester			Compulsory	None	4 / 120	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Embedded Software Systems	See module handbook		4	Compulsory	Examination in accordance with Section 7	Graded	100 %
Statistical Signal Processing and Estimation Theory							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
1st semester	1 Semester			Compulsory	None	4 / 120	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Statistical Signal Processing and Estimation Theory	See module handbook		4	Compulsory	Examination in accordance with Section 7	Graded	100 %
Fundamentals of Electric Vehicle System							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
1st semester	1 Semester			Compulsory	None	4 / 120	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Fundamentals of Electric Vehicle System	See module handbook		4	Compulsory	Examination in accordance with Section 7	Graded	100 %

<b>Electric Vehicle Modeling and Simulation</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
1st semester	1 Semester			Compulsory	None	4 / 120	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Electric Vehicle Modeling and Simulation	See module handbook		4	Compulsory	Examination in accordance with Section 7	Graded	100 %
<b>Project</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
1st semester	1 Semester			Compulsory	None	3 / 90	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Project	See module handbook		3	Compulsory	Examination in accordance with Section 7	Graded	100 %
<b>French Language Course</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
1st semester	1 Semester			Compulsory	None	3 / 90	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
French Language Course	See module handbook		3	Compulsory	Examination in accordance with Section 7	Graded	100 %

## Semester 2: In-depth Modules

### a) In-depth Modules at the University of L'Aquila

If the University of L'Aquila is chosen as place of study for the second semester, all in-depth modules offered by the University of L'Aquila have to be taken (30 ECTS Credits).

Electrical Machines							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
2nd semester	1 Semester			Compulsory	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Electrical Machines	See module handbook		5	Compulsory	Examination in accordance with Section 7	Graded	100 %
Power Electronic Converters							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
2nd semester	1 Semester			Compulsory	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Power Electronic Converters	See module handbook		5	Compulsory	Examination in accordance with Section 7	Graded	100 %
Renewable Power Energy and Storage Systems							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
2nd semester	1 Semester			Compulsory	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Renewable Power Energy and Storage Systems	See module handbook		5	Compulsory	Examination in accordance with Section 7	Graded	100 %
Nonlinear Control Systems							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
2nd semester	1 Semester			Compulsory	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Nonlinear Control Systems	See module handbook		5	Compulsory	Examination in accordance with Section 7	Graded	100 %

**For information purposes only, the German original is binding.**

Hybrid Systems Control and Simulation							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
2nd semester	1 Semester			Compulsory	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Hybrid Systems Control and Simulation	See module handbook		5	Compulsory	Examination in accordance with Section 7	Graded	100 %
Italian Language Course							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
2nd semester	1 Semester			Compulsory	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Italian Language Course	See module handbook		5	Compulsory	Examination in accordance with Section 7	Graded	100 %

## b) In-depth Modules at the University of Bucharest

If the University of Bucharest is chosen as place of study for the second semester, all in-depth modules offered by the University of Bucharest have to be taken (30 ECTS Credits).

Electrical Machines							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
2nd semester	1 Semester			Compulsory	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Electrical Machines	See module handbook		5	Compulsory	Examination in accordance with Section 7	Graded	100 %
Power Electronic Converters							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
2nd semester	1 Semester			Compulsory	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Power Electronic Converters	See module handbook		5	Compulsory	Examination in accordance with Section 7	Graded	100 %
Renewable Energy and Storage Systems							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
2nd semester	1 Semester			Compulsory	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Renewable Energy and Storage Systems	See module handbook		5	Compulsory	Examination in accordance with Section 7	Graded	100 %
Nonlinear Control Systems							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
2nd semester	1 Semester			Compulsory	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Nonlinear Control Systems	See module handbook		5	Compulsory	Examination in accordance with Section 7	Graded	100 %
Machine Learning for Autonomous Systems							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
2nd semester	1 Semester			Compulsory	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Machine Learning for Autonomous Systems	See module handbook		5	Compulsory	Examination in accordance with Section 7	Graded	100 %

**For information purposes only, the German original is binding.**

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Romanian Culture, Civilization and Language							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
2nd semester	1 Semester			Compulsory	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Romanian Culture, Civilization and Language	See module handbook		5	Compulsory	Examination in accordance with Section 7	Graded	100 %

### c) In-depth Modules at Kiel University

If Kiel University is chosen as place of study for the second semester, all compulsory in-depth modules offered by Kiel University have to be taken (20 ECTS Credits). Furthermore, one of the compulsory elective in-depth modules (5 ECTS Credits) and one German Language Course (5 ECTS Credits) offered by Kiel University have to be taken.

Students who are in the second semester at Kiel University and will be studying at the University of L'Aquila in the third semester and would like to obtain a degree from the University of L'Aquila must take either the module "etit6004-01a Applied Nonlinear Dynamics" or the module "etit6021-01a Advanced Methods in Nonlinear Control" as compulsory elective module in the second semester at Kiel University.

#### i. Compulsory Modules within the in-depth modules offered at Kiel University

<b>etit5002-01a</b>							
<b>Design of Power Electronics Converters</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
2nd semester	1 Semester			Compulsory	None	5 / 150	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Design of Power Electronics Converters	Lecture + Exercise	2 + 1.5	5	Compulsory	Written or Oral Examination	Graded	100 %
<b>etit5013-01a</b>							
<b>Nonlinear Control Systems</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
2nd semester	1 Semester			Compulsory	None	5 / 150	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Nonlinear Control Systems	Lecture + Exercise	3 + 1	5	Compulsory	Oral Examination	Graded	100 %
<b>etit6007-01a</b>							
<b>Electric Drives</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
2nd semester	1 Semester			Compulsory	None	5 / 150	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Electric Drives	Lecture + Exercise	2 + 1.5	5	Compulsory	Oral Examination	Graded	100 %
<b>etit6016-01a</b>							
<b>Renewable Energy Systems</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
2nd semester	1 Semester			Compulsory	None	5 / 150	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Renewable Energy Systems	Lecture + Exercise	2 + 1.5	5	Compulsory	Oral Examination	Graded	100 %

ii. Compulsory Elective Modules within the In-depth modules offered at Kiel University

The module “Embedded Real-time Systems” is not offered every summer semester.

<b>etit5009-01a</b>							
<b>Mathematical Methods in Field Theory</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
2nd semester	1 Semester			Compulsory Elective	None	5 / 150	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Mathematical Methods in Field Theory	Lecture + Exercise	2 + 1	5	Compulsory	Oral Examination	Graded	100 %
<b>etit6004-01a</b>							
<b>Applied Nonlinear Dynamics</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
2nd semester	1 Semester			Compulsory Elective	None	5 / 150	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Applied Nonlinear Dynamics	Lecture + Exercise	2 + 1	5	Compulsory	Oral Examination	Graded	100 %
<b>etit6006-01a</b>							
<b>Control of PDE Systems</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
2nd semester	1 Semester			Compulsory Elective	None	5 / 150	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Control of PDE Systems	Lecture + Exercise	2 + 1	5	Compulsory	Oral Examination	Graded	100 %
<b>etit6021-01a</b>							
<b>Advanced Methods in Nonlinear Control</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
2nd semester	1 Semester			Compulsory Elective	None	5 / 150	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Advanced Methods in Nonlinear Control	Lecture + Exercise	2 + 1	5	Compulsory	Oral Examination	Graded	100 %
<b>Inf-EntEinSys</b>							
<b>Embedded Real-time Systems</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
2nd semester	1 Semester			Compulsory Elective	Prerequisite for admission to exam: received at least 50% of homework assignment points.	8 / 240	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Embedded Real-time	Lecture +	4 + 2	8	Compulsory	Written Examination	Graded	100 %

**For information purposes only, the German original is binding.**

Systems	Exercise						
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iii. German Language Courses offered at Kiel University

Deutsch als Fremdsprache A1.1 *							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
2nd semester	1 Semester			Compulsory Elective	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Deutsch als Fremdsprache Grundstufe 1	Practical degree-specific examination	5	5	Compulsory	Cumulative Exercises	Graded	100 %
Deutsch als Fremdsprache A1.2 *							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
2nd semester	1 Semester			Compulsory Elective	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Deutsch als Fremdsprache Grundstufe 2	Practical degree-specific examination	5	5	Compulsory	Cumulative Exercises	Graded	100 %
Deutsch als Fremdsprache A2.1 *							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
2nd semester	1 Semester			Compulsory Elective	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Deutsch als Fremdsprache Grundstufe 3	Practical degree-specific examination	5	5	Compulsory	Cumulative Exercises	Graded	100 %
Deutsch als Fremdsprache A2.2 *							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
2nd semester	1 Semester			Compulsory Elective	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Deutsch als Fremdsprache Grundstufe 4	Practical degree-specific examination	5	5	Compulsory	Cumulative Exercises	Graded	100 %

\* Evidence of attendance at lecture is required for the admission to the exam.

Deutsch als Fremdsprache B1.1 *							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
2nd semester	1 Semester			Compulsory Elective	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Deutsch als Fremdsprache Mittelstufe 1	Practical degree-specific examination	5	5	Compulsory	Cumulative Exercises	Graded	100 %
Deutsch als Fremdsprache B1.2 *							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
2nd semester	1 Semester			Compulsory Elective	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Deutsch als Fremdsprache Mittelstufe 2	Practical degree-specific examination	5	5	Compulsory	Cumulative Exercises	Graded	100 %
Deutsch als Fremdsprache B2.1 *							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
2nd semester	1 Semester			Compulsory Elective	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Deutsch als Fremdsprache Mittelstufe 3	Practical degree-specific examination	5	5	Compulsory	Cumulative Exercises	Graded	100 %
Deutsch als Fremdsprache B2.2 *							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
2nd semester	1 Semester			Compulsory Elective	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Deutsch als Fremdsprache Mittelstufe 4	Practical degree-specific examination	5	5	Compulsory	Cumulative Exercises	Graded	100 %

\* Evidence of attendance at lecture is required for the admission to the exam.

### Semester 3: Specialisation Modules

a) Specialisation 1 offered at L'Aquila University (Specialisation for students who have spent their second semester at Kiel University or the University of L'Aquila.)

If the University of L'Aquila is chosen as place of study for the third semester and the Specialisation 1 is chosen, all specialisation modules offered by the University of L'Aquila for this Specialisation have to be taken (30 ECTS credits).

Students who were at Kiel University in the second semester and study at the University of L'Aquila in the third semester and wish to obtain a degree from the University of L'Aquila must have taken either the module "etit6004-01a Applied Nonlinear Dynamics" or the module "etit6021-01a Advanced Methods in Nonlinear Control" as compulsory elective modules in the second semester at Kiel University.

System Identification and Data Analysis							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
3rd semester	1 Semester			Compulsory	None	6 / 180	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
System Identification and Data Analysis	See module handbook		6	Compulsory	Examination in accordance with Section 7	Graded	100 %
Embedded Systems							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
3rd semester	1 Semester			Compulsory	None	9 / 270	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Embedded Systems	See module handbook		9	Compulsory	Examination in accordance with Section 7	Graded	100 %
Advanced Control Systems							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
3rd semester	1 Semester			Compulsory	None	9 / 270	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Advanced Control Systems	See module handbook		9	Compulsory	Examination in accordance with Section 7	Graded	100 %
Optimization Models and Algorithms							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
3rd semester	1 Semester			Compulsory	None	6 / 180	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Optimization Models and Algorithms	See module handbook		6	Compulsory	Examination in accordance with Section 7	Graded	100 %

**b) Specialisation 2 offered at L'Aquila University (Specialisation only for students who have spent their second semester at the University of Bucharest.)**

If the University of L'Aquila is chosen as place of study for the third semester and the Specialisation 2 is chosen, all specialisation modules offered by the University of L'Aquila for this Specialisation have to be taken (30 ECTS credits).

System Identification and Data Analysis							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
3rd semester	1 Semester			Compulsory	None	6 / 180	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
System Identification and Data Analysis	See module handbook		6	Compulsory	Examination in accordance with Section 7	Graded	100 %
Embedded Systems							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
3rd semester	1 Semester			Compulsory	None	4 / 120	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Embedded Systems	See module handbook		4	Compulsory	Examination in accordance with Section 7	Graded	100 %
Advanced Control Systems							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
3rd semester	1 Semester			Compulsory	None	9 / 270	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Advanced Control Systems	See module handbook		9	Compulsory	Examination in accordance with Section 7	Graded	100 %
Optimization Models and Algorithms							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
3rd semester	1 Semester			Compulsory	None	6 / 180	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Optimization Models and Algorithms	See module handbook		6	Compulsory	Examination in accordance with Section 7	Graded	100 %
Optimal Control							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
3rd semester	1 Semester			Compulsory	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Optimal Control	See module handbook		5	Compulsory	Examination in accordance with Section 7	Graded	100 %

### c) Specialisation offered at the University of Bucharest

If the University of Bucharest is chosen as place of study for the third semester, all specialisation modules offered by the University of Bucharest have to be taken (30 ECTS credits).

<b>Sensorless Control of Electric Machines</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
3rd semester	1 Semester			Compulsory	None	6 / 180	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Sensorless Control of Electric Machines	See module handbook		6	Compulsory	Examination in accordance with Section 7	Graded	100 %
<b>Battery Chargers</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
3rd semester	1 Semester			Compulsory	None	6 / 180	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Battery Chargers	See module handbook		6	Compulsory	Examination in accordance with Section 7	Graded	100 %
<b>Energy Storage Requirements</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
3rd semester	1 Semester			Compulsory	None	6 / 180	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Energy Storage Requirements	See module handbook		6	Compulsory	Examination in accordance with Section 7	Graded	100 %
<b>Battery Management Systems and Battery Life Cycle</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
3rd semester	1 Semester			Compulsory	None	6 / 180	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Battery Management Systems and Battery Life Cycle	See module handbook		6	Compulsory	Examination in accordance with Section 7	Graded	100 %
<b>Microprocessor Applications for Real-time Systems</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
3rd semester	1 Semester			Compulsory	None	6 / 180	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Microprocessor Applications for Real-time Systems	See module handbook		6	Compulsory	Examination in accordance with Section 7	Graded	100 %

#### d) Specialisation offered at Centrale Nantes

If Centrale Nantes is chosen as place of study for the third semester, all specialisation modules offered by Centrale Nantes have to be taken (30 ECTS credits).

<b>Optimization, Application to Energy Management of Electric Vehicle Charging</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
3rd semester	1 Semester			Compulsory	None	5 / 150	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Optimization, Application to Energy Management of Electric Vehicle Charging	See module handbook		5	Compulsory	Examination in accordance with Section 7	Graded	100 %
<b>Control of Power Converters for Electric Propulsion System</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
3rd semester	1 Semester			Compulsory	None	5 / 150	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Control of Power Converters for Electric Propulsion System	See module handbook		5	Compulsory	Examination in accordance with Section 7	Graded	100 %
<b>Observation and Diagnosis, Application for Electrical Systems</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
3rd semester	1 Semester			Compulsory	None	5 / 150	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Observation and Diagnosis, Application for Electrical Systems	See module handbook		5	Compulsory	Examination in accordance with Section 7	Graded	100 %
<b>Advanced Control of Electric Propulsion Systems</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
3rd semester	1 Semester			Compulsory	None	5 / 150	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Advanced Control of Electric Propulsion Systems	See module handbook		5	Compulsory	Examination in accordance with Section 7	Graded	100 %
<b>Case Study Application Dedicated Electric Vehicle Topology</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
3rd semester	1 Semester			Compulsory	None	5 / 150	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Case Study Application Dedicated Electric Vehicle Topology	See module handbook		5	Compulsory	Examination in accordance with Section 7	Graded	100 %

Project: Simulation and Control of Propulsion System of Electric Vehicle							
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
3rd semester	1 Semester			Compulsory	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Project: Simulation and Control of Propulsion System of Electric Vehicle	See module handbook		5	Compulsory	Examination in accordance with Section 7	Graded	100 %

## e) Specialisation “Control of Complex Dynamical Systems” offered at Kiel University

If the Specialisation “Control of Complex Dynamical Systems” offered at Kiel University is chosen for the third semester, all compulsory modules within the Specialisation “Control of Complex Dynamical Systems” have to be taken (20 ECTS credits). Furthermore, two of the compulsory elective modules within the Specialisation “Control of Complex Dynamical Systems” have to be taken (10 ECTS credits).

### i. Compulsory Modules within the Specialisation “Control of Complex Dynamical Systems”

etit5015-01a		Optimization and Optimal Control					
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
3rd semester	1 Semester			Compulsory	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Optimization and Optimal Control	Lecture + Exercise	3 + 1	5	Compulsory	Oral Examination	Graded	100 %
etit5018-01a		Rigid Body Dynamics and Robotics					
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
3rd semester	1 Semester			Compulsory	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Rigid Body Dynamics and Robotics	Lecture + Exercise	2 + 1	5	Compulsory	Written Examination	Graded	100 %
etit7009-01a		Seminar on Selected Topics in Systems and Control *					
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
3rd semester	1 Semester			Compulsory	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
Seminar on Selected Topics in Systems and Control	Seminar	2	5	Compulsory	Presentation and Paper	Not Graded	0 %
etit8001-01a		M.Sc. Laboratory Advanced Control *					
Semester	Duration			Status	Prerequisites	ECTS Credits / Workload	
3rd semester	1 Semester			Compulsory	None	5 / 150	
Module Courses	Course Type	Contact Hours per Week	ECTS Credits	Status	Examination	Evaluation	Weighting
M.Sc. Laboratory Advanced Control	Practical Exercise	4	5	Compulsory	Colloquia, Practical Tasks and Protocols	Not Graded	0 %

\* Evidence of attendance at lecture is required for the admission to the exam.

ii. Compulsory Elective Modules within the Specialisation “Control of Complex Dynamical Systems”

<b>etit5001-01a</b>							
<b>Advanced Digital Signal Processing</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
3rd semester	1 Semester			Compulsory Elective	Presentation	5 / 150	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Advanced Digital Signal Processing	Lecture + Exercise	2 + 2	5	Compulsory	Oral Examination	Graded	100 %
<b>etit5011-01a</b>							
<b>Modeling and Control of Power Electronics Converters</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
3rd semester	1 Semester			Compulsory Elective	None	5 / 150	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Modeling and Control of Power Electronics Converters	Lecture + Exercise	2 + 1.5	5	Compulsory	Written or Oral Examination	Graded	100 %
<b>Inf-CV</b>							
<b>Image-based 3D Scene Reconstruction</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
3rd semester	1 Semester			Compulsory Elective	None	8 / 240	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Image-based 3D Scene Reconstruction	Lecture + Exercise	4 + 2	8	Compulsory	Written Examination	Graded	100 %
<b>Inf-EntEinSys</b>							
<b>Embedded Real-Time Systems</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
3rd semester	1 Semester			Compulsory Elective	Prerequisite for admission to exam: received at least 50% of homework assignment points.	8 / 240	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Embedded Real-Time Systems	Lecture + Exercise	4 + 2	8	Compulsory	Written Examination	Graded	100 %

e) Specialisation “Power Electronics Drives Technologies” offered at Kiel University

If the Specialisation “Power Electronics Drives Technologies” at Kiel University is chosen for the third semester, all compulsory modules within the Specialisation “Power Electronics Drives Technologies” have to be taken (20 ECTS credits). Furthermore, two of the compulsory elective modules within the Specialisation “Power Electronics Drives Technologies” have to be taken (10 ECTS credits).

i. Compulsory Modules within the Specialisation “Power Electronics Drives Technologies”

<b>etit5011-01a</b>							
<b>Modeling and Control of Power Electronics Converters</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
3rd semester	1 Semester			Compulsory	None	5 / 150	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Modeling and Control of Power Electronics Converters	Lecture + Exercise	2 + 1.5	5	Compulsory	Written or Oral Examination	Graded	100 %
<b>etit6009-01a</b>							
<b>Grid Converters for Renewable Energy Systems</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
3rd semester	1 Semester			Compulsory	None	5 / 150	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Grid Converters for Renewable Energy Systems	Lecture + Exercise	2 + 1.5	5	Compulsory	Oral Examination	Graded	100 %
<b>etit7010-01a</b>							
<b>Seminar Power Electronics *</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
3rd semester	1 Semester			Compulsory	None	5 / 150	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Seminar Power Electronics	Seminar	2	5	Compulsory	Presentation and Paper	Not Graded	0 %
<b>etit8006-01a</b>							
<b>M.Sc. Laboratory Power Electronics - Renewable Energy - Drive Engineering *</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
3rd semester	1 Semester			Compulsory	None	5 / 150	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
M.Sc. Laboratory Power Electronics - Renewable Energy - Drive Engineering	Practical Exercise	5	5	Compulsory	Colloquia, Practical Tasks and Protocols	Not Graded	0 %

\* Evidence of attendance at lecture is required for the admission to the exam.

ii. Compulsory Elective Modules within the Specialisation “Power Electronics Drives Technologies”

<b>etit5001-01a</b>							
<b>Advanced Digital Signal Processing</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
3rd semester	1 Semester			Compulsory Elective	Presentation	5 / 150	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Advanced Digital Signal Processing	Lecture + Exercise	2 + 2	5	Compulsory	Oral Examination	Graded	100 %
<b>etit5015-01a</b>							
<b>Optimization and Optimal Control</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
3rd semester	1 Semester			Compulsory Elective	None	5 / 150	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Optimization and Optimal Control	Lecture + Exercise	3 + 1	5	Compulsory	Oral Examination	Graded	100 %
<b>etit6020-01a</b>							
<b>Wide-Bandgap Semiconductors</b>							
<b>Semester</b>	<b>Duration</b>			<b>Status</b>	<b>Prerequisites</b>	<b>ECTS Credits / Workload</b>	
3rd semester	1 Semester			Compulsory Elective	None	5 / 150	
<b>Module Courses</b>	<b>Course Type</b>	<b>Contact Hours per Week</b>	<b>ECTS Credits</b>	<b>Status</b>	<b>Examination</b>	<b>Evaluation</b>	<b>Weighting</b>
Wide-Bandgap Semiconductors	Lecture + Exercise	2 + 1	5	Compulsory	Written or Oral Examination	Graded	100 %