JACOBS
UNIVERSITY

Study Program Handbook

Physics

Bachelor of Science

Contents

1 The Physics Study Program

1.1 Concept

Physics has shaped our view of the universe by studying the basic concepts of space, time and matter. Physics not only lays the foundation for other natural sciences and many engineering disciplines, but is also a fundamental part of modern technology. The Jacobs University physics major is a three year BSc program with emphasis on early involvement in research. The first year starts with a broad introduction to classical and modern physics and their mathematical foundations, complemented by a choice of other subjects. The second year of studies features a thorough education in the theoretical foundations of physics (analytical mechanics, electrodynamics, relativity, and quantum mechanics), more applied fields (solid state and statistical physics, semiconductor devices), computational physics and renewable energy. Lectures are complemented by teaching labs and students are encouraged to join a research group. The third year features a varying selection of specialization courses and guided research leading to the BSc thesis. Students have the opportunity to use the fifth semester for an extended internship or studies abroad.

1.2 Specific Advantages of the Physics Program at Jacobs University

- The three year Jacobs University physics BSc program is unique in its internationality and focus on research. The courses are quite advanced, with a difficulty level comparable to other top international programs, providing an ideal preparation for postgraduate studies of physics and related fields at worldwide leading universities.

- Our graduates are very successful in either getting admitted to top postgraduate programs (MSc/PhD) in physics and related fields, directly entering employment, or starting their own businesses. We use the feedback from our graduates to continuously improve our study program and the graduates themselves benefit from our international alumni network.

- For students with a strong interdisciplinary interest the program easily allows to pursue a minor in one of the other BSc programs at Jacobs University in addition to the regular physics major.

1.3 Program-Specific Qualification Aims

Our main objective is a broad and thorough education in physics with many advanced topics and early exposure to research.

- Students will learn the foundations and advanced concepts of classical and modern physics necessary to explain and understand natural phenomena and to develop new materials, technologies, and advance the description and understanding of nature.

- Students will learn a variety of approaches to describe physical systems using a mathematical formalism. They will be able to develop quantitative mathematical descriptions

and computational models to analyze complex systems.

- In lab courses and research projects students will be trained hands-on in advanced experimental methods and techniques in physics to independently design new experiments and evaluate the obtained experimental data.

- Through presentations, lab report preparations, term papers, and the BSc thesis, students will gain familiarity with tools and approaches to access scientific information. They will learn the field-specific terms of physics, and are trained to communicate using the appropriate language of the scientific community.

The analysis of complex systems, logical and quantitative thinking, solid mathematical skills and a broad background in diverse physical phenomena will be a valuable asset for any profession in modern society.

1.4 The Jacobs University Employability and Personal Development Concept

Jacobs University's educational concept aims at fostering employability which refers to skills, capacities, and competencies which transcend disciplinary knowledge and allow graduates to quickly adapt to professional contexts. Jacobs University defines employability as encompassing not just technical skills and understanding but also personal attributes and qualities enabling students to become responsible members of their professional and academic fields as well as of the societies they live in.

Graduates of JU will be equipped with the ability to find employment and to pursue a successful professional career, which means that

- graduates possess the ability to acquire knowledge rapidly, to assess information and to evaluate new concepts critically;

- graduates have communicative competences which allow them to present themselves and their ideas and to negotiate successfully;

- graduates are familiar with business-related processes and management skills and are able to manage projects efficiently and independently.

Graduates of JU will also be equipped with a foundation to become globally responsible citizens, which includes the following attributes and qualities:

- graduates have gained intercultural competence; they are aware of intercultural differences and possess skills to deal with intercultural challenges; they are familiar with the concept of tolerance;

- graduates can apply problem-solving skills in negotiating and mediating between different points of view;

- graduates can rely on basic civic knowledge and have an understanding for ethical reasoning; students are familiar with the requirements for taking on responsibility.

1.5 Career Options

A Jacobs University BSc in Physics provides a solid and at the same time flexible foundation for careers in diverse fields, from basic research over engineering and life sciences, to finance and management. The scientific knowledge, the international network, the problem solving and social skills acquired during the studies of physics at Jacobs University guarantee success in our increasingly technology-driven society, as demonstrated by our many very successful graduates. The physics curriculum at Jacobs University is designed to ensure that graduates will be well prepared for postgraduate programs in physics and related fields at world-wide leading universities. The physics program exceeds recommendations of the German Physical Society and all topics required for the GRE physics test are included.

Physicists are the all-rounders among the natural scientists. About two thirds work on advancing our scientific knowledge or develop new technologies, products, and processes. Research positions are found in research centers, scientific institutes, and universities. In industry, physicists work in the fields like IT, software development, electronics, lasers, optics, and semiconductors. An increasing demand for physicists comes also from medical technology. Another large fraction of physicists hold faculty positions at universities and colleges or work in other branches of education. The broad training in analytical skills, technical thinking and the appreciation of complexity and subtlety allows physicists to work - often with additional qualification - as management consultants, patent attorneys, market analysts, or risk managers. Many BSc degree recipients go on to graduate school in physics and other fields, as careers in research and development usually require a postgraduate degree. Here we have an excellent placement record in the top graduate programs. Very helpful for career development is also the opportunity for international network building with Jacobs University students coming from more than a hundred different nations. Good communication skills are essential, since many physicists work as part of a team, have contact to clients with non-physics background, and need to write research papers and proposals. These skills are particularly well developed in the broad and multidisciplinary undergraduate program at Jacobs University.

1.6 More Information and Contact

For more information please contact the study program coordinator:

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or visit our program website: www.jacobs-university.de/physics-program

2 The Curricular Structure

2.1 General

The undergraduate education at Jacobs University equips students with the key qualifications necessary for a successful academic, as well as professional career. By combining disciplinary depth and transdisciplinary breadth, supplemented by skills education and extracurricular elements, students are prepared to be responsible and successful citizens within the societies they work and live in.

The curricular structure provides multiple elements enhancing employability, transdisciplinarity, and internationality. The unique Jacobs Track, offered across all study programs, provides a broad range of tailor-made courses designed to foster career competencies. These include courses which promote communication, technology, business, (German) language, and management skills. The World Track, included in the third year of study, provides extended company internships or study abroad options. Thus students gain training on the job and intercultural experiences. All undergraduate programs at Jacobs University are based on a coherently modularized structure, which provides students with a broad and flexible choice of study plans to meet their major as well as minor study interests.

The policies and procedures regulating undergraduate study programs at Jacobs University in general can be found on the website.

2.2 The Jacobs University 3C-Model

Jacobs University offers study programs according to the regulations of the European Higher Education Area. All study programs are structured along the European Credit Transfer System (ECTS), which facilitates credit transfer between academic institutions. The three-year undergraduate program involves six semesters of study with a total of 180 ECTS credits. The curricular structure follows an innovative and student-centered modularization scheme - the 3C-Model - which groups the disciplinary content of the three study years according to overarching themes:

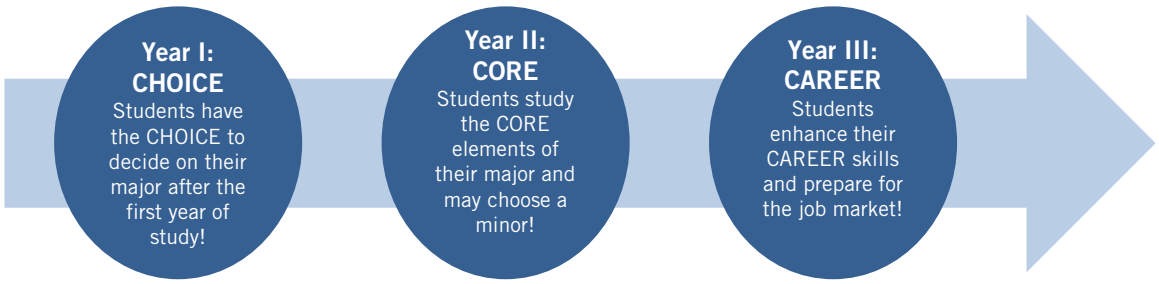


Figure 1: The Jacobs University 3C-Model

2.2.1 YEAR 1 - CHOICE

The first study year is characterized by a broad offer in disciplinary and interdisciplinary education. Students select three CHOICE modules from a variety of study programs. As a unique asset, our curricula allow students to select their study program freely from among the three selected CHOICE modules during their first year of study.

2.2.2 YEAR 2 - CORE

In the second year, students take three in-depth, discipline-specific CORE modules. One CORE module can also be taken from a second, complementary discipline, which allows students to incorporate a minor study track into their undergraduate education. Students will generally qualify for a minor if they have successfully taken at least one CHOICE module and one CORE module in a second field, and this extra qualification will be highlighted in the transcript.

2.2.3 YEAR 3 - CAREER

During their third year, students must decide on their career after graduation. In order to facilitate this decision, the fifth semester introduces two separate tracks. By default students are registered for the World Track.

1. **The World Track**
   In this track there are two mandatory elective options:
   - **Internship**
     The internship program is a core element of Jacobs Universitys employability approach. It includes a mandatory semester-long internship off-campus (minimum 16 weeks in full-time) which provides insight into the labor market as well as practical work experience related to the respective area of study. Successful internships may initiate career opportunities for students. For more information, please contact the Career Services Center (http://www.jacobs- university.de/career-services/contact).
   - **Study Abroad**
     Students can take the opportunity to study abroad at one of our partner universities. Courses recognized as study abroad credits need to be pre-approved according to the Jacobs University study abroad procedures and carry minimum of 20 ECTS credits in total. Several exchange programs allow you to be directly enrolled at prestigious partner institutions worldwide. Jacobs University's participation in Erasmus+, the European Unions exchange program, provides an exchange semester at a number of European universities including Erasmus study abroad funding.
     For more information, please contact the International Office (http://intoffice.user.jacobs-university.de/outgoing/).
2. **The Campus Track**
   Alternatively, students may also opt to follow the Campus Track by continuing their undergraduate education at Jacobs, namely by selecting an additional CORE module during their third year and redistributing the remaining courses and modules across the

third year. This opportunity can be used by students to more intensively focus on their major or to fulfill the minor requirements for a second field of interest.

In the sixth semester, all students select from a range of specialization courses within their study program and concentrate on their Bachelor thesis in the context of a Project/Thesis Module.

All students attend a mandatory set of career skills courses and events throughout their studies. These equip them with necessary skills for their 5th semester and their future career.

2.3 The Jacobs Track

The Jacobs Track, another stand-alone feature of Jacobs University, runs parallel to the disciplinary CHOICE, CORE, and CAREER modules across all study years and is an integral part of all study programs. It reflects our commitment to an in-depth methodological education, it fosters our transdisciplinary approach, it enhances employability, and equips students with extra skills desirable in your general field of study. Additionally, it integrates essential language courses.

Mathematics, statistics, and other methods courses are offered to all students within a comprehensive Methods Module. This module provides students with general foundations and transferable techniques which are invaluable to follow the study content not only in the study program itself but also in related fields.

The Skills Module equips students with general academic skills which are indispensable for their chosen area of study. These could be, for example, programming, data handling, presentation skills, and academic writing, scientific and experimental skills.

The transdisciplinary Triangle Module offers courses with a focus on at least one of the areas of business, technology and innovation, and societal context. The offerings comprise essential knowledge of these fields for students from other majors as well as problem-based courses that tackle global challenges from different disciplinary backgrounds. Working together with students from different disciplines and cultural backgrounds in these courses broadens the students horizon by crossing the boundaries of traditional disciplines.

Foreign languages are integrated within the Language Module. Communicative skills and foreign language competence foster students intercultural awareness and enhance their employability in a globalized and interconnected world. Jacobs University supports its students in acquiring and improving these skills by offering a variety of language courses at all proficiency levels. Emphasis is put on fostering German language skills, as they are an important prerequisite for students to learn about, explore, and eventually integrate into their host country. Hence, acquiring 10 ECTS credits in German is a requirement for all students. Students who meet the requirements of the German proficiency level (e.g. native speakers) are required to select courses in any other language program offered.

2.4 Modularization of the Physics Program

2.4.1 Content

Year 1
Take two mandatory modules listed below and select one further CHOICE module from a different study area.

Physics of Natural Systems (CH05-PhysNatSys)
provides an introduction to the physical description of natural phenomena and covers fundamental topics in physics and earth and environmental sciences (EES). Important concepts from mechanics, thermodynamics, fluid dynamics, electromagnetism, atoms and nuclei are introduced and applied to essential processes in Earth, marine, and planetary sciences. Structure and dynamics of natural systems are studied with moderate use of mathematics. Practical sessions will cover important experimental techniques and tools. This module provides a foundation for the higher level EES and Physics modules Earth, Ocean, and Environmental Physics, Physics and Technology, Theoretical Physics, and Physics of Matter.

Physics and Applied Mathematics (CH06-PhysAppMath)
is an introduction to the mathematical description of natural phenomena. Mathematics is the language and physics is the foundation of all other natural sciences and many engineering disciplines. In this module, we will study fundamental laws of physics and the underlying mathematical concepts and applications. Topics include vector calculus, differential equations, complex analysis; mechanics of systems of particles, oscillations, waves, relativity, electrodynamics, and quantum physics. Lectures are complemented by practical sessions that provide training in computational and experimental skills, including a quantitative analysis of measurements.

Year 2
Take all three modules or replace one with a CORE module from a different study program.

Theoretical Foundations of Physics (CO15-TheoPhys)
The module provides a thorough overview of the theoretical foundations of physics. We will study the physics of particles, fields and quanta, while exploring the mathematical structure of nature. The module covers several core topics of physics, including analytical mechanics, electrodynamics, special relativity, and quantum mechanics. Additional lab courses give deeper insights into the systems discussed in the lectures and provide instructive examples in advanced physics.

Physics of Matter (CO13-PhysMatter)
The module provides an introduction to the physics of systems of many interacting particles. In the first part, classical thermodynamics is introduced and extended to a microscopic statistical description of many particle systems. The second part focuses on the physics of solid materials, their electronic and magnetic properties, different modes of excitations and applications especially in modern electronics and information technology. Additional lab courses give deeper insights into the systems discussed in the lectures and provide instructive examples of experiments in advanced physics.

Physics and Technology (CO14-PhysTech)
The module discusses advanced applications of physics in modern technology using a descriptive and experimental approach. It builds on the general concepts and methods developed in the Physics of Natural Sciences Module. The first part focuses on energy sources and energy storage technology, and includes pertinent concepts of thermodynamics and physical chemistry. The second part introduces computational simulation methods as an important tool, useful for the understanding and investigation of physical systems and for a speed up of the development of new technologies. Additional lab courses give deeper insights into the systems discussed in the lectures and provide instructive examples of experiments in advanced physics.

Some CORE Modules require students to have taken a specific CHOICE Module. Please see the Module Handbook for details regarding pre-requisites.

Year 3
In the 3rd year students follow the World Track by default:

1. **World Track**
   5th Semester
   - Internship / study abroad

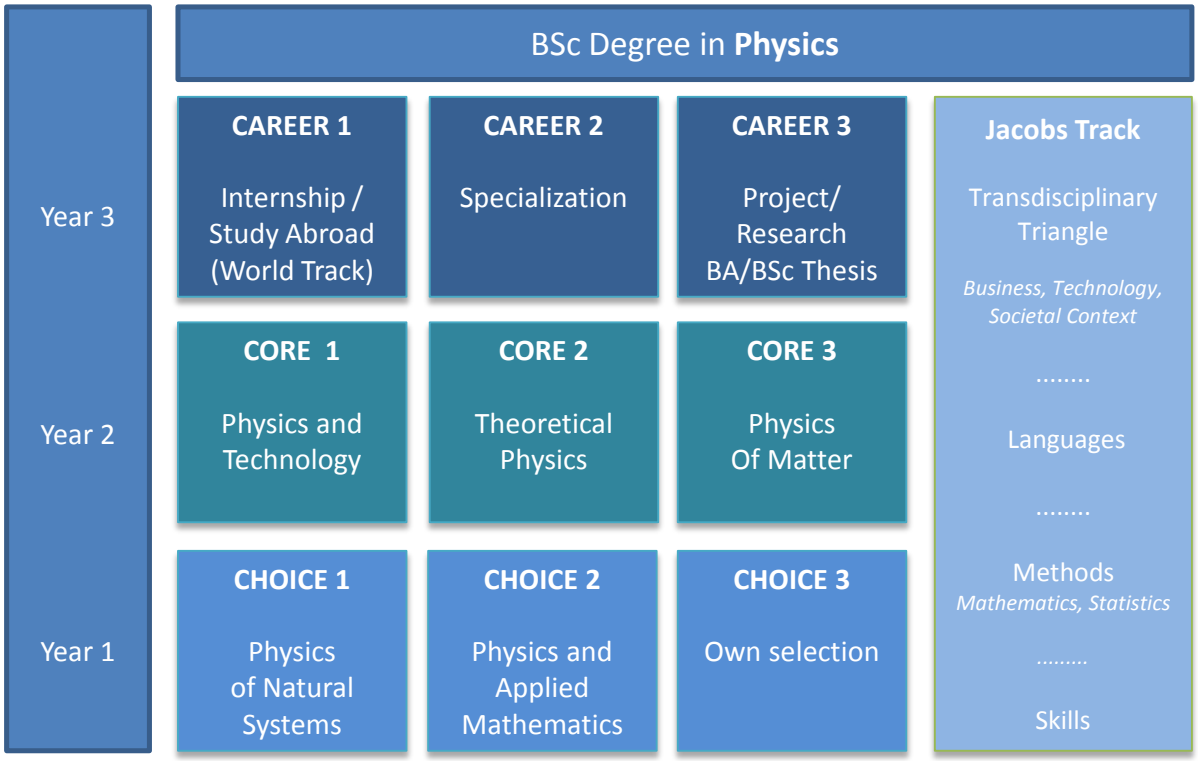
   6th Semester
   - Physics Project / Thesis Module

   - Program-specific Specialization Module
     Exemplary course offering:
     - Advanced Quantum Physics
     - Biophysics
     - Computer Simulations with Biomedical Applications
     - Gravity, Cosmology and Black Holes
     - Laser Spectroscopy in Physical and Life Sciences
     - Nanoscience
     - Particles and Fields
     - Physics of Information Technology
2. **Campus Track**
   Students who do not enter the World Track follow the Campus Track.
   5th and 6th Semester
   - Program-specific Project / Thesis Module

   - Program-specific Specialization Module
     (please see World Track for exemplary course offering)

   - Additional CORE Module

2.4.2 Structure



YEAR 1 *Take three CHOICE modules, one free selection*
YEAR 2 *Take three CORE modules, one CORE module can be substituted by a CORE module from a second study program to pursue a minor*
YEAR 3 *Alternatively Campus Track with a 4th CORE module instead of internship/study abroad module*

Figure 2: Physics Module Structure

3 Appendix 1a/1b: Mandatory Course Plans for World Track and Campus Track

Jacobs University Bremen reserves the right to substitute courses by replacements and/or reduce the number of mandatory/mandatory elective courses offered

Appendix 1a - Mandatory Course Plan for World Track

JACOBS UNIVERSITY

Physics – World Track

Matriculation Fall 2015

	Program-Specific Modules	Type	Status[1]	Semester	Credits		Jacobs Track Modules (General Education)	Type	Status[1]	Semester	Credits
Year 1 - CHOICE					**45**						**20**
Take the two mandatory CHOICE modules listed below, these are a requirement for the Physics program.											
CH06-PhysAppMath	**Module: Physics and Applied Mathematics**		**m**		**15**		**JT-ME-MethodsMath**	**Module: Methods / Mathematics**		**m**		**10**
CH06-100101	Applied Mathematics	Lecture	m	1	5		JT-ME-120103	Calculus I	Lecture	m	1	2,5
CH06-100111	Applied Mathematics Lab	Lab	m	1	2,5		JT-ME-120104	Calulus II	Lecture	m	1	2,5
CH06-200102	Modern Physics	Lecture	m	2	5		JT-ME-120112	Foundations of Linear Algebra I	Lecture	m	2	2,5
CH06-200112	Modern Physics Lab	Lab	m	2	2,5		JT-ME-120113	Foundations of Linear Algebra II	Lecture	m	2	2,5
CH05-PhysNatSys	**Module: Physics of Natural Systems**		**m**		**15**		**JT-SK-Skills**	**Module: Skills**		**m**		**2,5**
CH05-200104	Classical Physics	Lecture	m	1	5		JT-SK-990103	Scientific and Experimental Skills	Lecture	m	1	2,5
CH05-200114	Classical Physics Lab	Lab	m	1	2,5							
CH05-210132	Introduction to Earth and Marine Systems	Lecture	m	2	5		**JT-TA-TriArea**	**Module: Triangle Area**		**m**		**2,5**
CH05-210133	Introduction to Mineralogy	Lab	m	2	2,5			Take one course from the triangle (BUSINESS, TECHNOLOGY & INNOVATION, SOCIETAL CONTEXT) area. Each counts 2,5 ECTS [3]		me	1/2	2,5
	Module: CHOICE (own selection)		**e**	**1/2**	**15**		**JT-LA-Language**	**Module: Language**		**m**		**5**
Students take one further CHOICE module from those offered for all other study programs. [2]								Take two German courses (2,5 ECTS each). Native German speakers take courses in another offered language	Seminar	me	1/2	5
Year 2 - CORE					**45**							**20**
Take all three modules or replace one with a CORE module from a different study program. [2]												
CO13-PhysMatter	**Module: Physics of Matter**		**me**		**15**		**JT-ME-MethodsMath**	**Module: Methods / Mathematics**		**m**		**5**
CO13-200212	Statistical Physics	Lecture	m	3	5			Take two Methods (mandatory) elective courses (2,5 ECTS each). [2]	Lecture	me	3/4	5
CO13-200311	Condensed Matter and Devices	Lecture	m	4	5							
CO13-200222	Physics of Matter - Advanced Lab	Lab	m	4	5							
CO14-PhysTech	**Module: Physics and Technology**		**me**		**15**		**JT-TA-TriArea**	**Module: Triangle Area**		**m**		**10**
CO14-201231	Renewable Energy	Lecture	m	3	5			Take four courses from the triangle (BUSINESS, TECHNOLOGY & INNOVATION, SOCIETAL CONTEXT) area. Each counts 2,5 ECTS [3]		me	3/4	10
CO14-200221	Renewable Energy - Advanced Lab	Lab	m	3	5							
CO14-200331	Introduction to Computer Simulation Methods	Lecture	m	4	5							
CO15-TheoPhys	**Module: Theoretical Physics**		**me**		**15**		**JT-LA-Language**	**Module: Language**		**m**		**5**
CO15-200201	Analytical Mechanics & Electrodynamics	Lecture	m	3	5			Take two German courses (2,5 ECTS each). Native German speakers take courses in another offered language	Seminar	me	3/4	5
CO15-200223	Theoretical Physics - Advanced Lab	Lab	m	4	5							
CO15-200202	Quantum Mechanics	Lecture	m	4	5							
Year 3 - CAREER					**45**							**5**
CA02 / CA03	**Module: Internship / Study Abroad**		**m**	**5**	**20**		**JT-SK-Skills**	**Module: Skills**		**m**		**2,5**
CA01-CarSkills	**Module: Career Skills**		**m**				JT-SK-990103	Advanced Scientific and Experimental Skills		m	6	2,5
CA08-PHY	**Module: Project/Thesis PHY**		**m**		**15**							
CA08-200303	Project PHY		m	6	5							
CA08-200304	Thesis PHY		m	6	10							
CA-S-PHY	**Module: Specialization Area PHY**		**m**		**10**		**JT-TA-TriArea**	**Module: Triangle Area**		**m**		**2,5**
	Take four specialization courses (2.5 ECTS each) [2]		me	5/6	10			Take one course from the triangle (BUSINESS, TECHNOLOGY & INNOVATION, SOCIETAL CONTEXT) area. Each counts 2,5 ECTS [3]		me	6	2,5
Total ECTS												**180**

[1] Status (m = mandatory, e = elective, me = mandatory elective)

[2] For a full listing of all CHOICE / CORE / CAREER / Jacobs Track modules please consult the **CampusNet online catalogue** and / or the module handbook (on our website).

[3] You are required to take six Triangle Area courses in total. Select two from each of the three triangle areas (BUSINESS, TECHNOLOGY & INNOVATION, SOCIETAL CONTEXT).

Appendix 1b - Mandatory Course Plan for Campus Track

Physics – Campus Track

Matriculation Fall 2015

	Program-Specific Modules	Type	Status[1]	Semester	Credits		Jacobs Track Modules (General Education)	Type	Status[1]	Semester	Credits
Year 1 - CHOICE					**45**						**20**
Take the two mandatory CHOICE modules listed below, these are a requirement for the Physics program.											
CH06-PhysAppMath	**Module: Physics and Applied Mathematics**		**m**		**15**		**JT-ME-MethodsMath**	**Module: Methods / Mathematics**		**m**		**10**
CH06-100101	Applied Mathematics	Lecture	m	1	5		JT-ME-120103	Calculus I	Lecture	m	1	2,5
CH06-100111	Applied Mathematics Lab	Lab	m	1	2,5		JT-ME-120104	Calulus II	Lecture	m	1	2,5
CH06-200102	Modern Physics	Lecture	m	2	5		JT-ME-120112	Foundations of Linear Algebra I	Lecture	m	2	2,5
CH06-200112	Modern Physics Lab	Lab	m	2	2,5		JT-ME-120113	Foundations of Linear Algebra II	Lecture	m	2	2,5
CH05-PhysNatSys	**Module: Physics of Natural Systems**		**m**		**15**		**JT-SK-Skills**	**Module: Skills**		**m**		**2,5**
CH05-200104	Classical Physics	Lecture	m	1	5		JT-SK-990103	Scientific and Experimental Skills	Lecture	m	1	2,5
CH05-200114	Classical Physics Lab	Lab	m	1	2,5							
CH05-210132	Introduction to Earth and Marine Systems	Lecture	m	2	5		**JT-TA-TriArea**	**Module: Triangle Area**		**m**		**2,5**
CH05-210133	Introduction to Mineralogy	Lab	m	2	2,5			Take one course from the triangle (BUSINESS, TECHNOLOGY & INNOVATION, SOCIETAL CONTEXT) area. Each counts 2,5 ECTS [3]		me	1/2	2,5
	Module: CHOICE (own selection)		**e**	**1/2**	**15**		**JT-LA-Language**	**Module: Language**		**m**		**5**
Students take one further CHOICE module from those offered for all other study programs. [2]								Take two German courses (2,5 ECTS each). Native German speakers take courses in another offered language	Seminar	me	1/2	5
Year 2 - CORE					**45**							**20**
Take all three modules or replace one with a CORE module from a different study program. [2]												
CO13-PhysMatter	**Module: Physics of Matter**		**me**		**15**		**JT-ME-MethodsMath**	**Module: Methods / Mathematics**		**m**		**5**
CO13-200212	Statistical Physics	Lecture	m	3	5			Take two Methods (mandatory) elective courses (2,5 ECTS each). [2]	Lecture	me	3/4	5
CO13-200311	Condensed Matter and Devices	Lecture	m	4	5							
CO13-200222	Physics of Matter - Advanced Lab	Lab	m	4	5							
CO14-PhysTech	**Module: Physics and Technology**		**me**		**15**		**JT-TA-TriArea**	**Module: Triangle Area**		**m**		**10**
CO14-201231	Renewable Energy	Lecture	m	3	5			Take four courses from the triangle (BUSINESS, TECHNOLOGY & INNOVATION, SOCIETAL CONTEXT) area. Each counts 2,5 ECTS [3]		me	3/4	10
CO14-200221	Renewable Energy - Advanced Lab	Lab	m	3	5							
CO14-200331	Introduction to Computer Simulation Methods	Lecture	m	4	5							
CO15-TheoPhys	**Module: Theoretical Physics**		**me**		**15**		**JT-LA-Language**	**Module: Language**		**m**		**5**
CO15-200201	Analytical Mechanics & Electrodynamics	Lecture	m	3	5			Take two German courses (2,5 ECTS each). Native German speakers take courses in another offered language	Seminar	me	3/4	5
CO15-200223	Theoretical Physics - Advanced Lab	Lab	m	4	5							
CO15-200202	Quantum Mechanics	Lecture	m	4	5							
Year 3 - CAREER					**45**							**5**
COXX	**Module: Additional (4th) CORE module**		**m**	**5/6**	**15**		**JT-SK-Skills**	**Module: Skills**		**m**		**2,5**
CA01-CarSkills	**Module: Career Skills**		**m**				JT-SK-990103	Advanced Scientific and Experimental Skills		m	6	2,5
CA08-PHY	**Module: Project/Thesis PHY**		**m**		**15**							
CA08-200303	Project PHY		m	5	5							
CA08-200304	Thesis PHY		m	6	10							
CA-S-PHY	**Module: Specialization Area PHY**		**m**		**15**		**JT-TA-TriArea**	**Module: Triangle Area**		**m**		**2,5**
	Take six specialization courses (2.5 ECTS each) [2]		me	5/6	15			Take one course from the triangle (BUSINESS, TECHNOLOGY & INNOVATION, SOCIETAL CONTEXT) area. Each counts 2,5 ECTS [3]		me	5	2,5
Total ECTS												**180**

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[2] For a full listing of all CHOICE / CORE / CAREER / Jacobs Track modules please consult the **CampusNet online catalogue** and / or the module handbook (on our website).

[3] You are required to take six Triangle Area courses in total. Select two from each of the three triangle areas (BUSINESS, TECHNOLOGY & INNOVATION, SOCIETAL CONTEXT).