TAKEoff@RWU

Preparatory semester

Studienvorbereitende Maßnahmen

Module Manual

Valid winter semester 2025/26

Preparatory semester

Program Objectives

The main objective of “studienvorbereitende Maßnahmen” is to prepare students for an English speaking/bilingual Bachelor’s degree program at the Ravensburg-Weingarten University and to improve their knowledge in the fields of mathematics, computer science, natural sciences and engineering as well as language and cultural orientation. The curriculum includes the teaching of fundamental knowledge in mathematics, physics and programming. It also includes German classes and an intercultural course. Additionally, students will get to know local companies and future career fields in various industry networking formats. With prior arrangement, students can take part in specially selected courses in our English Bachelor's degree programs worth up to 10 ECTS and sit an exam.

German as a foreign language A1

Course of study:	TAKEoff@RWU (TO)
Degree:	None
Module number:	tbd
Module title:	German as a foreign language A1
Module responsibility:	Natalia De Pascale Speck
Language of instruction:	German
Type of module:	Mandatory module
Undergraduate/Major:	Preparatory semester TAKEoff@RWU
Module content:	Designed for students with little or no previous knowledge of German, this course provides an introduction to the German language. The main focus is on language learning skills such as speaking, listening, writing and reading based on everyday situations. The systematic presentation of the necessary grammar is based on realistic speaking situations. Students acquire a German language level based on their previous knowledge. This can be between level A1 and B1 of the Common European Framework of Reference for Languages. Exemplary topics for level A1: Getting to know each other Living Leisure and friends Food Health Daily life and family Study and work Travel and holidays In individual cases, the regular German course program (DaF A2-B1) can be attended after a placement test at CLIC.
Courses:	German as a foreign language A1
Teaching and learning forms:	Seminar + exercises: The selection of materials and activities focuses on the learner's autonomy and social competence. Active participation in discussions and class activities is expected.
Prerequisites for participation:	None
Requirements for ECTS allocation:	None
ECTS:	None
Grading:	None (participation in tests for the verification of the record of achievement, but without being graded)
Workload:	5 SWS: approx. 75 hours for the lecture, approx. 125 hours self-study (preparation and follow-up)
Duration of module:	One semester
Frequency of module:	Winter Semester
Literature:	DaF textbooks in a printed version

Attendance:	Mandatory: In general, students cannot acquire the subject matter through self-study. In addition, the language course thrives on debate and discourse. Attendance is therefore essential for the success of the course. Absences for very important reasons must be verified by the head of CLIC management and reported in good time or accompanied by a medical certificate.

Competence dimensions

The objectives of the DaF courses are based on the Common European Framework of Reference for Languages (CEFR).
https://rm.coe.int/common-european-framework-of-reference-for-languages-learning-teaching/16809ea0d4

Knowledge and understanding: Broadening of prior knowledge

Students know the necessary vocabulary and grammar of the German language. They will use their own language and previous knowledge of the languages as basis for discovering the German one.

Use, application and generation of knowledge/art: Use and transfer

Students, according to level A1

- can follow speech which is very slowly and carefully articulated with long pauses to allow to take in meaning.
- can recognize concrete information (e.g. place and time) on familiar everyday topics when spoken slowly and clearly.
- can understand very short simple texts, one sentence at a time, picking up familiar names, words and basic phrases and rereading as necessary.
- can produce simple, mainly isolated sentences to talk about topics of personal relevance (e.g. family, place of residence, occupation, hobbies, pets).

Communication and cooperation

Students can communicate appropriately in different social and intercultural contexts corresponding to level A1.

Scientific/artistic self-image and professionalism

Students will be able to

- evaluate and classify the structure of the target language.
- assess the criteria for vocabulary, grammar, pronunciation and different text forms (each corresponding to level A1) and cultural differences.

Intercultural Take-off

Course of study:	TAKEoff@RWU (TO)
Degree:	None
Module number:	tbd
Module title:	Intercultural Take-off
Module responsibility:	Natalia De Pascale Speck
Language of instruction:	English
Type of module:	Mandatory module
Undergraduate / Major:	Preparatory semester TAKEoff@RWU
Module content:	This module will explore the complexities of managing intercultural aspects in Germany, specifically in an academic and personal context. The module will cover key concepts related to cultural differences and an effective communication. • Living & Studying in Germany • Intercultural Sensitization • Writing Skills
Courses:	Intercultural Take-off
Teaching and learning forms:	Seminar + Exercises: The course uses an interactive teaching method. Active participation in discussions and teaching activities is required.
Prerequisites for participation:	None
Requirements for ECTS allocation:	No ECTS are allocated. For Intercultural Sensitization 1 ECTS can be requested after passing the final test.
ECTS:	None
Grading:	None
Workload:	2 SWS: approx. 30 hours for the lecture, approx. 60 hours self-study (preparation and follow-up)
Duration of module:	One semester
Frequency of module:	Winter Semester
Literature:	Material will be provided.
Attendance:	Mandatory: In general, students cannot acquire the subject matter through self-study. In addition, the course thrives on debate and discourse. Attendance is therefore essential for the success of the course. Absences for very important reasons must be verified by the head of CLIC management and reported in good time or accompanied by a medical certificate.

Competence dimensions

Knowledge and understanding: Broadening of prior knowledge

Students will be able to understand the most important ideas of culture in the form of analyzing their own

culture and using this analysis to understand the German culture. Students will be able to overcome and understand culture-based problems.

Use, application and generation of knowledge: Use and transfer

At the end of the module, students will be able to use important tools and methods necessary for living and studying in Germany, thus becoming interculturally competent.

Communication and Cooperation

Students recognize potential conflicts in communication with others and reflect on them against the background of cross-situation conditions. Through constructive, conceptual action, they can initiate the implementation of solution processes that are appropriate to the situation.

Scientific / artistic self-image and professionalism

The knowledge of the methods of intercultural communication enables students to understand cultural differences and thus, aids in performing in different cultures.

Precalculus

Course of study:	TAKEoff@RWU (TO)
Degree:	None
Module number:	tba
Module title:	Precalculus
Module responsibility:	Prof. Dr.-Ing. Zerrin Harth
Language of instruction:	English
Type of module:	Mandatory module
Undergraduate / Major:	Preparatory semester TAKEoff@RWU
Module content:	1. Basics: sets, numbers, percentage and ratio 2. Functions and mathematical models 3. Basic notions of geometry 4. Polynomial equations, inequalities, partial fractions and proportionality 5. Logarithms and exponentials 6. Trigonometry 7. Graph of elementary functions
Courses:	Precalculus
Teaching and learning forms:	Lecture and exercises
Prerequisites for participation:	High school math
Requirements for ECTS allocation:	None
ECTS:	None
Grading:	Not graded
Workload:	4 SWS: approx. 60 hours for the lecture, approx. 90 hours self-study (preparation and follow-up)
Duration of the module:	One semester
Frequency of module:	Winter semester
Literature:	• Anthony Croft and Robert Davison: "Mathematics for Engineers", PEARSON Education Limited, ISBN:978-1-292-06593-9 • Michael Sullivan: Precalculus, Global Edition; Pearson; 11th Edition; ISBN-10: 1-292-44452-5 • Luciano Battaia, Giacomo Bormetti, Giulia Livieri: "Precalculus" • Omar Hijab: "Introduction to Calculus and Classical Analysis", Springer
Attendance:	Mandatory: Regular attendance will ensure that the objectives of the module are met. The module aims to balance the different levels of mathematical knowledge of the students. This is achieved through continuous group work, where content is developed and reviewed together. At the same time, technical terms are gradually introduced and the level of learning is regularly checked by means of short tests so that didactic adjustments can be made if necessary. Group work also encourages

	interactive dialogue with fellow students and the teacher, which strengthens the international students' ability to integrate in different challenging situations. Regular active participation is crucial for the acquisition of the desired skills, preparation for a subsequent Bachelor's program and long-term success in the German labour market and society. Absences for very important reasons must be verified by the head of the preparatory semester and reported in good time or accompanied by a medical certificate.

Competence dimensions

Knowledge and understanding: Broadening of prior knowledge

Graduates gain an insight into the basic workings of the following topics: Set theory, numbers, percentages and ratios, functions and mathematical models, basic concepts of geometry, polynomial equations, inequalities, partial fractions and proportionality, logarithms and exponentials, trigonometry, graphs of elementary functions.

Use, application and generation of knowledge/art: Utilization and transfer

Graduates will be able to apply the following knowledge: Problem solving skills in basic mathematical contexts, basic principles for working in the above subject areas, and abstract description of simple problems.

Communication and cooperation

Graduates will be able to discuss solutions to mathematical problems in groups and argue for them. This strengthens their intercultural and communication skills.

Scientific / artistic self-image and professionalism

Graduates acquire a high degree of professionalism in carrying out mathematical calculations. In particular, conscientious and correct execution is of great importance. Such accuracy is also important in an industrial environment. They acquire the ability to manage the learning process on their own (time, self-study) and to perform in an economic environment towards different stakeholders. These competences are important for their future career.

Bridging Course Physics

Course of study:	TAKEoff@RWU (TO)
Degree:	None
Module number:	Tbd
Module title:	Bridging Course Physics
Module responsibility:	Prof. Dr.-Ing. Samuel Vogel
Language of instruction:	English
Type of module:	Mandatory module
Undergraduate / Major:	Preparatory semester TAKEoff@RWU
Module content:	The course shall illustrate principles and working methods of Physics by choosing examples from the following fields: • Physical measurements and units • Mechanics • Optics • Electrical and Magnetic Field • Electronics • Thermodynamics • Matter (Atom and Material Models) • Tools (spreadsheets, drawing graphs and others) The topics start with entry test or quizzes to support the self-assessment of the prospective students.
Courses:	Bridging Course Physics
Teaching and learning forms:	The main course concept is that the students go through various "learning stations" over the semester visiting different locations, such as laboratories, lecture and computer rooms as well as tutorial rooms. • Demonstration Experiments • Hands-On Experiments • Group Experiments • Virtual Experiments • Lecture • Exercise
Prerequisites for participation:	None
Requirements for ECTS allocation:	None
ECTS:	None
Grading:	Not graded
Workload:	4 SWS: approx. 60 hours for the lecture, approx. 90 hours self-study (preparation and follow-up)
Duration of the module:	One semester
Frequency of module:	Winter semester
Literature:	• Young, H.D., Freedman, R.A., "University Physics" • Munroe, R: "What if", "What if 2"
Attendance:	Mandatory: Regular attendance ensures the achievement of the objectives of the module. The module aims to equalize the varying levels of physics knowledge among the students. This

	knowledge will be strengthened by entry tests, quizzes and specially selected examples of physical problems, which will be developed and discussed collaboratively with fellow students and the teacher. Participation in the course concept of "learning stations" requires attendance. Regular active participation is crucial for acquiring the desired skills, preparing for a subsequent Bachelor's degree program, and ensuring long-term success in the German labour market and society. Absences for very important reasons must be verified by the head of the preparatory semester and reported in good time or accompanied by a medical certificate.

Competence dimensions

Knowledge and understanding: Broadening of prior knowledge

Students are aware of the main topics of physics. They will be able to apply basic methods used in experimental physics. They will be able to calculate with physical units and perform basic consistency checks on results of calculations in science and technologies. They will have seen and practiced typical phenomena and challenges that are described and solved using basic calculus.

Use, application and generation of knowledge/art: Use and transfer

Students have a basic understanding of the main aims and methods appearing in the science and technology lectures in the next semesters. The course enables participants to transfer physical methods more easily into engineering applications in subsequent degree programs.

Communication and cooperation

Students learn about the type of questions and arguments they are expected to focus on when solving physics problems in groups or doing lab-work. Beyond interactions during their studies, this also allows them to gain trust and respect and interact constructively with other people active in the areas of science and technology.

Scientific / artistic self-image and professionalism

Understanding the main methods and aims in physics and beyond is an important step towards a realistic self-perception as scientist/technologist for the students.

Programming

Course of study:	TAKEoff@RWU (TO)
Degree:	None
Module number:	Tbd
Module title:	Programming
Module responsibility:	Prof. Dr. André Kaufmann
Language of instruction:	English
Type of module:	Mandatory module (the exam does not have to be passed, if ECTS-allocation is not strived for)
Undergraduate / Major:	Preparatory semester TAKEoff@RWU
Module content:	• General basics of programming (computer, operating system, compiler) • Structure of a program • Elementary constructs of the C programming language (main program, variables, elementary data types, operators, branches, loops) • Functions, parameter passing • Complex data types (arrays, structures, pointers) • Dynamic memory management • File input/output • Enumeration types • Libraries • Preprocessor instructions
Courses:	4341 Programming
Teaching and learning forms:	Lecture, programming exercises in a laboratory
Prerequisites for participation:	No previous knowledge is required; some knowledge of mathematics, especially of number systems, is helpful.
Requirements for ECTS allocation:	K90
ECTS:	5
Grading:	Graded (the exam does not have to be passed, if ECTS-allocation is not strived for)
Workload:	4 SWS: approx. 60 hours for the lecture, approx. 90 hours self-study (preparation and follow-up)
Duration of the module:	One semester
Frequency of module:	Winter semester
Literature:	Script or lessons, exercises; and additionally: • Gazi; Modern C Programming, Springer (https://link.springer.com/book/10.1007/978-3-031-45361-8) • Gonzalez-Morris; Beginning C, Apress (https://link.springer.com/book/10.1007/978-1-4842-5976-4) • Goll, Dausmann; C als erste Programmiersprache, Springer (https://link.springer.com/book/10.1007/978-3-8348-2271-0) • Asadi; Essentials of C Programming with VS, Springer (https://link.springer.com/book/10.1007/978-3-031-35711-4) • Ernst; Grundkurs Informatik, Springer (https://link.springer.com/book/10.1007/978-3-658-41779-6)

	• Wolf, Jürgen: C von A bis Z. Galileo Press, Bonn, 2005 (ISBN 3-89842-392-1) • Schildt, Herbert: C: The Complete Reference. Osborne, McGraw-Hill, 2000 (ISBN 0-07-212124-6) • Darnell, Peter A. und Philip E. Margolis: C: A Software Engineering Approach. Springer-Verlag, New York, 1996 (ISBN: 0-387-94675-6)
Attendance:	Mandatory: Regular attendance ensures the achievement of the objectives of the module. The module builds up students' basic knowledge in the field of programming. This knowledge will be put into practice by real-time programming exercises in laboratories and developed and discussed collaboratively with fellow students and the teacher. Regular active participation is crucial for acquiring the desired skills, preparing for a subsequent Bachelor's degree program, and ensuring so a long-term success in the German labour market and society. Absences for very important reasons must be verified by the head of the preparatory semester and reported in good time or accompanied by a medical certificate.

Competence dimensions

Knowledge and understanding: Broadening of prior knowledge

Successful participation enables students to explain the language concepts of the C programming language and to apply them in smaller programming tasks.

Use, application and generation of knowledge/art: Use and transfer

Successful participation enables students to program and implement programs using the basic concepts of the programming language.

Communication and cooperation

Successful participation enables students to apply programming skills in projects with several participants.

Scientific / artistic self-image and professionalism

Successful participation enables students to apply the basic knowledge of procedural programming in the C programming language in the same way as required in the advanced subjects of microcontrollers, real-time programming and embedded GUI.

Industry Experience

Course of study:	TAKEoff@RWU (TO)
Degree:	None
Module number:	tba
Module title:	Industry Experience
Module responsibility:	Vice-Rector for Research, International Affairs and Transfer
Language of instruction:	English
Type of module:	Mandatory module
Undergraduate / Major:	Preparatory semester TAKEoff@RWU
Module content:	Students will visit local companies and be introduced to future career fields. Each company offers an individual industry networking format. The concrete format and the distribution among the students will be communicated by the beginning of the semester. Practical parts on campus can furthermore complement the content of the module.
Courses:	tbd
Teaching and learning forms:	According to the practical unit or to the conditions predetermined by the companies.
Prerequisites for participation:	None
Requirements for ECTS allocation:	None
ECTS:	None
Grading:	Not graded
Workload:	Approximately eight days per semester once a week: according to the conditions predetermined by the companies.
Duration of the module:	One semester
Frequency of module:	Winter semester
Literature:	None
Attendance:	Mandatory: Attendance is mandatory for all scheduled activities within this module, including company visits, industry networking events, and any practical session. Active participation is essential to achieve the learning objectives and to benefit from the hands-on industry exposure. Absences for very important reasons must be verified by the head of the preparatory semester and reported in good time or accompanied by a medical certificate.

Competence dimensions

Knowledge and understanding: Broadening of prior knowledge

Students have deepened their understanding of the German labour market and industry practices. By visiting local companies and engaging with professionals, they have broadened their existing knowledge and gained valuable insights into specific career fields. This experience serves as a basis for understanding industry trends, workplace cultures and employment opportunities in Germany.

Use, application and generation of knowledge/art: Use and transfer

The module allows the transfer of theoretical knowledge into practice. By engaging with professionals, students are able to gain an insight into the practical application of academic knowledge in a business context. This facilitates the development of new perspectives through observation and participation.

Communication and cooperation

Through direct interaction with industry professionals and peers during company visits and networking formats, students will develop their communication and teamwork skills. The module fosters collaboration in both academic and professional contexts, encouraging students to engage in meaningful dialogue, build relationships with industry contacts and practice effective interpersonal communication.

Scientific / artistic self-image and professionalism

By interacting with industry professionals and experiencing the work environments of different companies, students can reflect on their career goals and align their academic with their future career path. Such experience ensures that students are adequately prepared for the transition from academia to the professional world, with practical experience and industry connections.