

Course Handbook Mechatronics and Sensor Technology

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Mechatronics and Sensor Technology - mandatory courses (overview)

Module name (EN)	Code	Semester	Hours per semester week / Teaching method	ECTS	Module coordinator
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(0 modules)

Mechatronics and Sensor Technology - optional courses (overview)

Module name (EN)	Code	Semester	Hours per semester week / Teaching method	ECTS	Module coordinator
"Engineering Visions" Intensive Program	MST.IPE	4	2PA+1S international course	4	Prof. Dr. Martin Löffler-Mang
Basic Principles Governing the Qualification of Trainers and Instructors in Germany's Dual Education and Vocational Training System	MST.GAU	-	2V	2	Prof. Dr.-Ing. Dietmar Brück
Chinese for Beginners I	MST.CA1	-	2V	2	Prof. Dr. Thomas Tinnefeld
Computer Vision	MST.CVI	6	4V	5	N.N.
Error-Identification and Error-Correcting Codes	MST.FKC	-	2V	3	Dipl.-Math. Wolfgang Braun
French I	MST.FR1	5	2V	2	Prof. Dr. Christine Sick
French II	MST.FR2	6	2V	2	Prof. Dr. Christine Sick

French for Beginners I	MST.FA1	5	2V	2	Prof. Dr. Christine Sick
French for Beginners II	MST.FA2	6	2V	2	Prof. Dr. Christine Sick
Introduction to Astronomy	MST.EAS	5	2V	2	Prof. Dr. Martin Löffler-Mang
Numerical Software	MST.NSW	-	2V+2PA	5	N.N.
Oral Presentation Skills	MST.RPR	-	2V	2	Dr. Peter Ludwig
Running RoboNight Workshops	MST.RNW	-	1PA+1S international course	3	Prof. Dr. Martina Lehser
Software development for collaborative industrial robotics	MST.SKI	5	4PA	5	Prof. Dr. Martina Lehser
Spanish for Beginners I	MST.SA1	5	2V	2	Prof. Dr. Christine Sick
Spanish for Beginners II	MST.SA2	6	2V	2	Prof. Dr. Christine Sick
Technical Documentation	MST.TDO	6	2V	2	Prof. Dr. Walter Calles

(17 modules)

Mechatronics and Sensor Technology - mandatory courses

Mechatronics and Sensor Technology - optional courses

"Engineering Visions" Intensive Program

Module name (EN): "Engineering Visions" Intensive Program
Degree programme: Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012
Module code: MST.IPE
Hours per semester week / Teaching method: 2PA+1S (3 hours per week)
ECTS credits: 4
Semester: 4
Mandatory course: no
Language of instruction: English
Assessment: Written composition with presentation

Curricular relevance:

BMT553 Biomedical Engineering, Bachelor, ASPO 01.10.2011, optional course, non-technical
KI606 Computer Science and Communication Systems, Bachelor, ASPO 01.10.2014, semester 4, optional course, non-technical
KIB-IPRE Computer Science and Communication Systems, Bachelor, ASPO 01.10.2017, semester 4, optional course, non-technical
MAB.4.2.1.29 Mechanical and Process Engineering, Bachelor, ASPO 01.10.2013, semester 3, optional course, general subject
MST.IPE Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012, semester 4, optional course, non-technical
MST.IPE Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2019, semester 4, optional course, non-technical
PIBWN68 Applied Informatics, Bachelor, ASPO 01.10.2011, semester 4, optional course, not informatics specific
PIB-IPRE Applied Informatics, Bachelor, ASPO 01.10.2017, semester 4, optional course, not informatics specific
Suitable for exchange students (learning agreement)

Workload:

45 class hours (= 33.75 clock hours) over a 15-week period.
The total student study time is 120 hours (equivalent to 4 ECTS credits).
There are therefore 86.25 hours available for class preparation and follow-up work and exam preparation.

Recommended prerequisites (modules):

None.

Recommended as prerequisite for:**Module coordinator:**

Prof. Dr. Martin Löffler-Mang

Lecturer: Prof. Dr. Martin Löffler-Mang

[updated 30.01.2019]

Learning outcomes:

After successfully completing this module, students will be able to analyze and evaluate global challenges. They will have acquired new working techniques that will help them develop innovative and technical visions for the future. They will be familiar with the most important basic concepts of conscious communication and discussions in interdisciplinary work. They can present and document work results in an appropriate manner. In addition, students will have expanded their intercultural and foreign language skills through work in international teams.

[updated 19.02.2018]

Module content:

Students will discuss the challenges of today's world and develop technical visions for what they believe life on earth will be like in 10 to 50 years. In international project groups, they will develop and discuss their own technical visions from fields such as bionics, mechatronics, nanotechnology, intelligent materials, renewable energies, optical technologies and information technologies (selection) for a sustainable life on earth.

[updated 24.02.2018]

Teaching methods/Media:

The initial phase will focus on inspiring, future-oriented lectures by our speakers on technical topics of the future. The goal of these lectures is to motivate the students and inspire their conceptual work. The lectures will be accompanied by workshops on creative techniques (brainstorming, mind mapping, World Café etc.) and team building.

During the main phase, students will work autonomously in groups supported by mentors (lecturers from our partner universities). At the end of each day, together with the lecturers, the students will reflect on their own results, as well as those from the other groups.

The intensive program will end with a presentation and self-assessment of each group's results in the form of a marketplace.

[updated 24.02.2018]

Recommended or required reading:

Project-related literature

[updated 19.02.2018]

Basic Principles Governing the Qualification of Trainers and Instructors in Germany's Dual Education and Vocational Training System

Module name (EN): Basic Principles Governing the Qualification of Trainers and Instructors in Germany's Dual Education and Vocational Training System
Degree programme: Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012
Module code: MST.GAU
Hours per semester week / Teaching method: 2V (2 hours per week)
ECTS credits: 2
Semester: according to optional course list
Mandatory course: no
Language of instruction: German
Assessment: Written exam

Curricular relevance:

E1582 Electrical Engineering, Bachelor, ASPO 01.10.2012, optional course
EE-K2-546 Energy system technology / Renewable energies, Bachelor, ASPO 01.04.2015, optional course, engineering
FT63 Automotive Engineering, Bachelor, ASPO 01.04.2016, semester 5, optional course, technical
FT63 Automotive Engineering, Bachelor, ASPO 01.10.2019, semester 5, optional course, technical
KI611 Computer Science and Communication Systems, Bachelor, ASPO 01.10.2014, semester 6, optional course, non-technical
KIB-AUSB Computer Science and Communication Systems, Bachelor, ASPO 01.10.2017, semester 6, optional course, non-technical
MAB.4.2.1.20 Mechanical and Process Engineering, Bachelor, ASPO 01.10.2013, semester 4, optional course
MST.GAU Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012, optional course, non-technical
MST.GAU Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2019, optional course, non-technical
PIBWN66 Applied Informatics, Bachelor, ASPO 01.10.2011, semester 6, optional course, not informatics specific
PIB-AUSB Applied Informatics, Bachelor, ASPO 01.10.2017, semester 6, optional course, not informatics specific
MST.GAU Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2011, optional course, non-technical

Workload:

30 class hours (= 22.5 clock hours) over a 15-week period.
The total student study time is 60 hours (equivalent to 2 ECTS credits).
There are therefore 37.5 hours available for class preparation and follow-up work and exam preparation.

Recommended prerequisites (modules):

None.

Recommended as prerequisite for:**Module coordinator:**

Prof. Dr.-Ing. Dietmar Brück

Lecturer:

N.N.

[updated 14.09.2015]

Learning outcomes:

After successfully completing this module, students will be familiar with the legal regulations that apply to vocational training and can implement them responsibly. They will have all of the knowledge necessary for the successful completion of the instructor qualification test at the Chamber of Industry and Commerce (IHK). Students will be capable of training young people in a company in accordance with legal, technical and organizational guidelines and helping their trainees successfully complete their training.

[updated 26.02.2018]

Module content:

- Planning and testing vocational training requirements
- Preparing vocational training and participating in the recruitment of trainees
- Carrying out vocational training
- Completing vocational training

[updated 19.02.2018]

Teaching methods/Media:

Transparencies

[updated 19.02.2018]

Recommended or required reading:

Ausbilder-Eignungsverordnung, Rahmenplan mit Lernzielen, Publisher: DIHK - Deutscher Industrie- und Handelskammertag e. V., Berlin 2009

[updated 19.02.2018]

Chinese for Beginners I

Module name (EN): Chinese for Beginners I
Degree programme: Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012
Module code: MST.CA1
Hours per semester week / Teaching method: 2V (2 hours per week)
ECTS credits: 2
Semester: according to optional course list
Mandatory course: no
Language of instruction: English
Assessment: Written composition with presentation
Curricular relevance: EE-K2-543 Energy system technology / Renewable energies, Bachelor, ASPO 01.04.2015, optional course, general subject, course inactive since 14.03.2018 KI572 Computer Science and Communication Systems, Bachelor, ASPO 01.10.2014, semester 5, optional course, non-technical KIB-CHI1 Computer Science and Communication Systems, Bachelor, ASPO 01.10.2017, semester 5, optional course, non-technical MAB.4.2.1.23 Mechanical and Process Engineering, Bachelor, ASPO 01.10.2013, semester 4, optional course, non-technical MST.CA1 Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012, optional course, non-technical MST.CA1 Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2019, optional course, non-technical PIBWN61 Applied Informatics, Bachelor, ASPO 01.10.2011, semester 5, optional course, not informatics specific PIB-CHI1 Applied Informatics, Bachelor, ASPO 01.10.2017, semester 5, optional course, not informatics specific MST.CA1 Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2011, optional course, non-technical

Workload:

30 class hours (= 22.5 clock hours) over a 15-week period.

The total student study time is 60 hours (equivalent to 2 ECTS credits).

There are therefore 37.5 hours available for class preparation and follow-up work and exam preparation.

Recommended prerequisites (modules):

None.

Recommended as prerequisite for:

MST.CA2

[updated 01.10.2012]

Module coordinator:

Prof. Dr. Thomas Tinnefeld

Lecturer: Prof. Dr. Thomas Tinnefeld

[updated 01.10.2012]

Learning outcomes:

- Introduction to Pinyin, the phonetic Chinese alphabet
- Training of basic listening comprehension skills in relation to lexemes and idiomatic expressions discussed in the course
- Ability to communicate in narrowly defined situational contexts such as greeting someone, providing personal information or introducing one's own family
- Ability to recognize contextually validated Chinese lexemes and expressions in Pinyin
- Development of a basic understanding of Chinese script with regard to radicals and the direction of writing
- Ability to write one's own Chinese name in the correct writing direction
- Raise awareness for the Chinese culture in comparison to one's own culture

[updated 24.02.2018]

Module content:

- Introduction to Chinese
- Basic greeting phrases
- Introduction to the pronunciation system of Mandarin Chinese (Hanyu-Pinyin)
- Introduction to the Chinese script system (radicals and writing direction)
- Questions about one's own Chinese name in oral and written form
- Chinese numbers from 1 to 999
- Asking about the date (day, month, year)
- Asking what time it is
- Introducing oneself in Chinese
- Awareness for the Chinese culture (e.g. Chinese festivities)

[updated 24.02.2018]

Teaching methods/Media:

- Presentations by the lecturer
- Partner work
- Group work phases where work assignments will be completed by the students
- Multimedia language lab
- Short presentations by the students
- Internet research

[*updated 19.02.2018*]

Recommended or required reading:

- Use of free materials developed by the teacher (not textbooks)
- Listening comprehension texts (audio and/or video)
- Internet resources
- Subject-related multimedia programs
- Additional materials on vocabulary and grammar

[*updated 19.02.2018*]

Computer Vision

Module name (EN): Computer Vision
Degree programme: Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012
Module code: MST.CVI
Hours per semester week / Teaching method: 4V (4 hours per week)
ECTS credits: 5
Semester: 6
Mandatory course: no
Language of instruction: German
Assessment: Project work
Curricular relevance: KI692 Computer Science and Communication Systems, Bachelor, ASPO 01.10.2014, semester 6, optional course, technical KIB-CVIS Computer Science and Communication Systems, Bachelor, ASPO 01.10.2017, semester 6, optional course, technical MST.CVI Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012, semester 6, optional course, technical MST.CVI Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2019, semester 6, optional course, technical PIBWI83 Applied Informatics, Bachelor, ASPO 01.10.2011, semester 6, optional course, informatics specific PIB-CVIS Applied Informatics, Bachelor, ASPO 01.10.2017, semester 6, optional course, informatics specific MST.CVI Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2011, semester 6, optional course, technical
Workload: 60 class hours (= 45 clock hours) over a 15-week period. The total student study time is 150 hours (equivalent to 5 ECTS credits). There are therefore 105 hours available for class preparation and follow-up work and exam preparation.

Recommended prerequisites (modules):

MST.MA1

MST.MA2

MST.MA3

*[updated 01.10.2012]***Recommended as prerequisite for:****Module coordinator:**

N.N.

Lecturer: N.N.*[updated 01.10.2012]***Learning outcomes:**

After successfully completing this module, students will be able to explain and apply image processing algorithms such as noise reduction and deblurring. They will be familiar with the design of digital filters. They will be able to manipulate images without using image editing software.

In addition, they will also be able to apply methods that can detect moving objects in a film, reconstruct 3D information based on images and improve the quality of 2D images. Students will learn how robots _see_.

*[updated 19.02.2018]***Module content:**

* Digitization of analog images

* Image transformations (e.g. linear filters, math. Morphology, diffusion filters, wavelet shrinkage, deblurring)

* Color perception and color spaces

* Image editing

* Feature extraction (edges, corners, lines and circles)

* Segmentation

* Extraction of 3D information

* Object detection

*[updated 19.02.2018]***Teaching methods/Media:**

100% of the lecture will take place in the PC lab AMSEL "Angewandte Mathematik, Statistik und eLearning". Computer-supported practical case studies will be worked through using the algorithms taught in this module.

In addition, the eLearning system MathCoach (AMSEL PC laboratory 5306) will be used.

[updated 24.02.2018]

Recommended or required reading:

R.C. Gonzalez, R.e. Woods: Digital Image Processing, Addison-Wesley, SE 2002

K.R. Castelman: Digital Image Procesing, Prentice Hall, 1996

R.Jain, R.Kasturi, B.G. Schunck: Machine Vision, McGraw, 1995

E.Trucco, A. Verri: Introductory Techniques for 3-D Computer Vision, Prentice Hall,1995

R.Klette, K.Schlüns, A.Koschan: Computer Vision:Three-Dimensional Data from Images,
Springer, 1998

[*updated 19.02.2018*]

Error-Identification and Error-Correcting Codes

Module name (EN): Error-Identification and Error-Correcting Codes
Degree programme: Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012
Module code: MST.FKC
Hours per semester week / Teaching method: 2V (2 hours per week)
ECTS credits: 3
Semester: according to optional course list
Mandatory course: no
Language of instruction: German
Assessment:
<p>Curricular relevance: DFBI-346 Computer Science and Web Engineering, Bachelor, ASPO 01.10.2018, semester 6, optional course, informatics specific KI656 Computer Science and Communication Systems, Bachelor, ASPO 01.10.2014, semester 5, optional course, technical KIB-FFKC Computer Science and Communication Systems, Bachelor, ASPO 01.10.2017, semester 5, optional course, technical MST.FKC Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012, optional course, technical MST.FKC Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2019, optional course, technical PIBWI56 Applied Informatics, Bachelor, ASPO 01.10.2011, semester 5, optional course, informatics specific PIB-FFKC Applied Informatics, Bachelor, ASPO 01.10.2017, semester 5, optional course, informatics specific MST.FKC Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2011, optional course, technical</p>

Workload:

30 class hours (= 22.5 clock hours) over a 15-week period.

The total student study time is 90 hours (equivalent to 3 ECTS credits).

There are therefore 67.5 hours available for class preparation and follow-up work and exam preparation.

Recommended prerequisites (modules):

None.

Recommended as prerequisite for:**Module coordinator:**

Dipl.-Math. Wolfgang Braun

Lecturer: Dipl.-Math. Wolfgang Braun

[updated 01.10.2012]

Learning outcomes:

After successfully completing this module, students will have a basic understanding of the importance and problems of error identification and correction. In addition, they will:

- be able to explain basic terms (redundancy, code rate, generator matrix, check matrix, Hamming distance,

- Hamming limit, ...)

- have mastered arithmetics in finite fields of the type $GF(p)$

- Coding and decoding of linear binary block codes: have an understanding of the theoretical interrelationships

- and have mastered execution by means of matrix calculation

- be able to construct Hamming codes

- be able to classify binary block codes according to their performance capability

- Coding and decoding of cyclic codes via $GF(2)$: have an understanding of the theoretical interrelationships

- and have mastered execution by means of polynomial operations

- have knowledge of coding theory applications in various fields

- be able to implement basic algorithms from the lecture in a common programming language

- have gained insights into how the coding theory can be developed further

- have learned how mathematical theories can be translated into practice-relevant algorithms in computer science

[updated 06.09.2018]

Module content:

- Principle of coding a message for error identification and error correction
- Simple error identification and correction procedures (ISBN No., EAN code, repeat code, 2-dimensional parity, ..)
- The ring of integers, residue classes
- Computations in finite fields $GF(p)$
- n -dimensional vector spaces over $GF(p)$
- Linear block codes over $GF(2)$
- Hamming codes
- Cyclic codes over $GF(2)$
- Applications and perspectives (ECC-RAM, CRC-32, CIRC, digital TV, matrix codes, extension of coding theory by $GF(2^n)$, convolutional codes, ..)

The lecture will concentrate on the algebraic methods. A statistical treatment of the transmission channel (e.g. Entropy, Markov sources), as well as an implementation of the algorithms by means of hardware are not part of this lecture.

[updated 19.02.2018]

Teaching methods/Media:

Lecture with integrated exercises using a script, demonstration of basic algorithms using Maple.

[updated 19.02.2018]

Recommended or required reading:

Lecture script with exercises

Werner, M.: Information und Codierung, vieweg, Braunschweig/Wiesbaden 2002

Klimant, H. u.a. : Informations- und Kodierungstheorie, Teubner, Wiesbaden 2006

Schulz, R.-H. : Codierungstheorie, vieweg, Wiesbaden 2003

[updated 19.02.2018]

French I

Module name (EN): French I
Degree programme: Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012
Module code: MST.FR1
Hours per semester week / Teaching method: 2V (2 hours per week)
ECTS credits: 2
Semester: 5
Mandatory course: no
Language of instruction: French
Assessment: Written examination (final exam)
Curricular relevance: KI657 Computer Science and Communication Systems, Bachelor, ASPO 01.10.2014, semester 5, optional course, non-technical KIB-FRA1 Computer Science and Communication Systems, Bachelor, ASPO 01.10.2017, semester 5, optional course, non-technical MAB.4.2.1.16 Mechanical and Process Engineering, Bachelor, ASPO 01.10.2013, semester 5, optional course MST.FR1 Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012, semester 5, optional course MST.FR1 Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2019, semester 5, optional course PIBWN35 Applied Informatics, Bachelor, ASPO 01.10.2011, semester 5, optional course, not informatics specific PIB-FRA1 Applied Informatics, Bachelor, ASPO 01.10.2017, semester 5, optional course, not informatics specific MST.FR1 Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2011, semester 5, optional course

Workload:

30 class hours (= 22.5 clock hours) over a 15-week period.

The total student study time is 60 hours (equivalent to 2 ECTS credits).

There are therefore 37.5 hours available for class preparation and follow-up work and exam preparation.

Recommended prerequisites (modules):

None.

Recommended as prerequisite for:**Module coordinator:**

Prof. Dr. Christine Sick

Lecturer: Prof. Dr. Christine Sick

[*updated 01.10.2012*]

Learning outcomes:

The courses French I and II are based on each other. In the course of the two modules, students will improve their professional French so that they advance from the desired entry level B1 to level B2 of the Common European Framework of Reference for Languages.

Based on a common level of knowledge and motivation amongst the students, the main objective of the language course is to refresh and develop existing French skills, as well as to reduce barriers to learning and negative attitudes towards language learning while strengthening confidence in one's own foreign language competence. Subjects and situations that are relevant for the later professional career will be used to impart skills and knowledge that will enable students to communicate orally and in writing with colleagues and business partners in francophone countries.

To do so, all four skills (speaking, listening comprehension, reading and writing) will be trained equally using, in part, multimedia learning tools. Content development will be supported by the repetition of a basic vocabulary and the relevant grammatical structures, also in self-study.

The course takes a communicative and pragmatic approach that particularly promotes communicative competence in job-relevant situations through the use of role playing and situational dialogues. This also includes intercultural aspects that raise the students' awareness of cultural differences and enable them to assert themselves in specific situations.

[*updated 24.02.2018*]

Module content:

Establishing contact

- Greetings
- Introducing oneself and others
- Receiving someone
- Presenting a company

Job profiles and the workplace

- Company-internal communication:
- Describing professional activities and priorities
- Company structure and workflow
- Raising one's own concerns
- Negotiating proposals

Written communication

- Formal aspects (correct form of a letter, layout etc.)
- Formulating a letter of inquiry
- Formulas for greetings and closings, taking into account different stylistic levels

In addition, we will concentrate on basic grammatical structures. Students are expected to work on and expand their basic vocabulary independently in self-learning phases in the multimedia computer language laboratory.

[updated 24.02.2018]

Teaching methods/Media:

Teaching and learning materials (print media, slides, audio-visual teaching materials), multimedia learning software specially compiled for the learning group.

[updated 19.02.2018]

Recommended or required reading:

- PONS Kompaktwörterbuch für alle Fälle - Französisch-Deutsch/Deutsch-Französisch. Vollständige Neubearbeitung 2002, Klett-Verlag, Stuttgart, ISBN 3-12-517209-8

- M. Grégoire, O. Thiévenaz: Grammaire Progressive du Français - Niveau intermédiaire. (Deutsche Ausgabe); Klett-Verlag, Stuttgart, ISBN 3-12-529873-3

Students will receive a list of recommended teaching and learning materials.

We recommend the following multimedia learning program for independent learning:

Oberstufe Französisch. 6000 Vokabeln zu allen Themen. Vokabellernprogramm auf CD-ROM mit Sprachausgabe. Klett-Verlag, Stuttgart

[updated 19.02.2018]

French II

Module name (EN): French II
Degree programme: Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012
Module code: MST.FR2
Hours per semester week / Teaching method: 2V (2 hours per week)
ECTS credits: 2
Semester: 6
Mandatory course: no
Language of instruction: French
Assessment: Written examination (final exam)
<p>Curricular relevance:</p> <p>EE-K2-523 Energy system technology / Renewable energies, Bachelor, ASPO 01.10.2012, semester 6, optional course</p> <p>EE-K2-523 Energy system technology / Renewable energies, Bachelor, ASPO 01.04.2015, semester 6, optional course, course inactive since 14.03.2018</p> <p>KI658 Computer Science and Communication Systems, Bachelor, ASPO 01.10.2014, semester 6, optional course, non-technical</p> <p>KIB-FRA2 Computer Science and Communication Systems, Bachelor, ASPO 01.10.2017, semester 6, optional course, non-technical</p> <p>MAB.4.2.1.17 Mechanical and Process Engineering, Bachelor, ASPO 01.10.2013, semester 6, optional course</p> <p>MST.FR2 Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012, semester 6, optional course</p> <p>MST.FR2 Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2019, semester 6, optional course</p> <p>PIBWN36 Applied Informatics, Bachelor, ASPO 01.10.2011, semester 6, optional course, not informatics specific</p> <p>PIB-FRA2 Applied Informatics, Bachelor, ASPO 01.10.2017, semester 6, optional course, not informatics specific</p> <p>MST.FR2 Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2011, semester 6, optional course</p>

Workload:

30 class hours (= 22.5 clock hours) over a 15-week period.

The total student study time is 60 hours (equivalent to 2 ECTS credits).

There are therefore 37.5 hours available for class preparation and follow-up work and exam preparation.

Recommended prerequisites (modules):

None.

Recommended as prerequisite for:**Module coordinator:**

Prof. Dr. Christine Sick

Lecturer: Prof. Dr. Christine Sick

[*updated 01.10.2012*]

Learning outcomes:

The courses French 1 and 2 are based on each other. In the course of the two modules, students will improve their professional French so that they advance from the desired entry level B1 to level B2 of the Common European Framework of Reference for Languages.

Based on a common level of knowledge and motivation amongst the students, the main objective of the language course is to refresh and develop existing French skills, as well as to reduce barriers to learning and negative attitudes towards language learning while strengthening confidence in one's own foreign language competence. Subjects and situations that are relevant for the later professional career will be used to impart skills and knowledge that will enable students to communicate orally and in writing with colleagues and business partners in francophone countries.

To do so, all four skills (speaking, listening comprehension, reading and writing) will be trained equally using, in part, multimedia learning tools. Content development will be supported by the repetition of a basic vocabulary and the relevant grammatical structures, also in self-study.

The course takes a communicative and pragmatic approach that particularly promotes communicative competence in job-relevant situations through the use of role playing and situational dialogues. This also includes intercultural aspects that raise the students' awareness of cultural differences and enable them to assert themselves in specific situations.

[*updated 26.02.2018*]

Module content:

Talking on the telephone

- Common verbal expressions
- Giving information
- Asking for information
- Arranging and postponing appointments

Job market and job search

- Job advertisements
- Applicant's profile
- Hiring personnel

Application process

- Resume
- Application cover letter
- Job interview
- Working conditions

In addition, we will concentrate on basic grammatical structures. Students are expected to work on and expand their basic vocabulary independently in self-learning phases in the multimedia computer language laboratory.

[updated 24.02.2018]

Teaching methods/Media:

Teaching and learning materials (print media, slides, audio-visual teaching materials), multimedia learning software compiled specifically for the learning group.

[updated 19.02.2018]

Recommended or required reading:

- PONS Kompaktwörterbuch für alle Fälle - Französisch-Deutsch/Deutsch-Französisch. Vollständige Neubearbeitung 2002, Klett-Verlag, Stuttgart, 3-12-517209-8
- M. Grégoire, O. Thiévenaz: Grammaire Progressive du Français - Niveau intermédiaire. (Deutsche Ausgabe); Klett-Verlag, Stuttgart, ISBN 3-12-529873-3

Students will receive a list of recommended teaching and learning materials.

We recommend the following multimedia learning program for independent learning:

Oberstufe Französisch. 6000 Vokabeln zu allen Themen. Vokabellernprogramm auf CD-ROM mit Sprachausgabe. Klett-Verlag, Stuttgart

[updated 19.02.2018]

French for Beginners I

Module name (EN): French for Beginners I
Degree programme: Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012
Module code: MST.FA1
Hours per semester week / Teaching method: 2V (2 hours per week)
ECTS credits: 2
Semester: 5
Mandatory course: no
Language of instruction: French
Assessment: Written examination (final exam)
Curricular relevance: KI659 Computer Science and Communication Systems, Bachelor, ASPO 01.10.2014, semester 5, optional course, non-technical KIB-FFA1 Computer Science and Communication Systems, Bachelor, ASPO 01.10.2017, semester 5, optional course, non-technical MAB.4.2.1.6 Mechanical and Process Engineering, Bachelor, ASPO 01.10.2013, semester 5, optional course MST.FA1 Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012, semester 5, optional course, non-technical MST.FA1 Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2019, semester 5, optional course, non-technical PIBWN40 Applied Informatics, Bachelor, ASPO 01.10.2011, semester 5, optional course, not informatics specific PIB-FFA1 Applied Informatics, Bachelor, ASPO 01.10.2017, semester 5, optional course, not informatics specific MST.FA1 Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2011, semester 5, optional course, non-technical

Workload:

30 class hours (= 22.5 clock hours) over a 15-week period.

The total student study time is 60 hours (equivalent to 2 ECTS credits).

There are therefore 37.5 hours available for class preparation and follow-up work and exam preparation.

Recommended prerequisites (modules):

None.

Recommended as prerequisite for:**Module coordinator:**

Prof. Dr. Christine Sick

Lecturer: Prof. Dr. Christine Sick

[*updated 01.10.2012*]

Learning outcomes:

The course French for Beginners I is aimed towards learners with little or no previous knowledge of the French language. The courses French for Beginners I and II are based on each other. In the course of the two modules, students will first reach proficiency level A1 and then advance to level A2 of the European Framework of Reference for Languages.

The goal of the course is to provide students with basic knowledge of the French language, which will enable them to communicate in general and professional situations as quickly as possible, both orally and in writing. To do so, all four skills (speaking, listening comprehension, reading and writing) will be trained equally. Content development will be supported by the repetition of the relevant grammatical structures.

The course takes a communicative and pragmatic approach that particularly promotes communicative competence in job-relevant situations through the use of role playing and situational dialogues. This also includes intercultural aspects that raise the students' awareness of cultural differences and enable them to assert themselves in specific situations.

[*updated 26.02.2018*]

Module content:

Establishing contact

- Greetings
- Introducing oneself and others
- Asking how someone is feeling
- Giving information about yourself and requesting information about others
- Saying thank you, apologizing and saying goodbye

Job profiles and the workplace

- Company structure and workflow
- Describing jobs and activities
- Showing and describing products

Telephone communication

- Common verbal expressions
- Asking for and giving information

In addition, we will concentrate on basic grammatical structures. Students should work on and expand their basic vocabulary independently.

[updated 26.02.2018]

Recommended or required reading:

The course is based on the following textbook and will be supplemented by suitable material from other textbooks:

Jambon, Krystelle: Voyages 1 - Französisch für Erwachsene, Klett, Stuttgart: 2006.

We also recommend purchasing the following grammar exercise book: Eurocentres Paris (group of authors): Exercices de grammaire en contexte - niveau débutant, Hachette Livre, Paris: 2000, 144 p.

Students will receive a list of recommended teaching and learning materials. We recommend the following multimedia learning program for independent learning: Oberstufe Französisch. 6000 Vokabeln zu allen Themen. Vokabellernprogramm auf CD-ROM mit Sprachausgabe.

Klett-Verlag, Stuttgart

[updated 26.02.2018]

French for Beginners II

Module name (EN): French for Beginners II
Degree programme: Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012
Module code: MST.FA2
Hours per semester week / Teaching method: 2V (2 hours per week)
ECTS credits: 2
Semester: 6
Mandatory course: no
Language of instruction: French
Assessment: Written examination (final exam)
Curricular relevance: KI660 Computer Science and Communication Systems, Bachelor, ASPO 01.10.2014, semester 6, optional course, non-technical KIB-FFA2 Computer Science and Communication Systems, Bachelor, ASPO 01.10.2017, semester 6, optional course, non-technical MAB.4.2.1.7 Mechanical and Process Engineering, Bachelor, ASPO 01.10.2013, semester 6, optional course MST.FA2 Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012, semester 6, optional course, non-technical MST.FA2 Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2019, semester 6, optional course, non-technical PIBWN41 Applied Informatics, Bachelor, ASPO 01.10.2011, semester 6, optional course, not informatics specific PIB-FFA2 Applied Informatics, Bachelor, ASPO 01.10.2017, semester 6, optional course, not informatics specific MST.FA2 Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2011, semester 6, optional course, non-technical

Workload:

30 class hours (= 22.5 clock hours) over a 15-week period.

The total student study time is 60 hours (equivalent to 2 ECTS credits).

There are therefore 37.5 hours available for class preparation and follow-up work and exam preparation.

Recommended prerequisites (modules):

None.

Recommended as prerequisite for:**Module coordinator:**

Prof. Dr. Christine Sick

Lecturer: Prof. Dr. Christine Sick

[*updated 01.10.2012*]

Learning outcomes:

The courses French for Beginners I and II are based on each other. In the course of the two modules, students will first reach proficiency level A1 and then advance to level A2 of the European Framework of Reference for Languages. The goal of the course is to provide students with basic knowledge of the French language, which will enable them to communicate in general and professional situations as quickly as possible, both orally and in writing.

To do so, all four skills (speaking, listening comprehension, reading and writing) will be trained equally. Content development will be supported by the repetition of the relevant grammatical structures. The course takes a communicative and pragmatic approach that particularly promotes communicative competence in job-relevant situations through the use of role playing and situational dialogues.

This also includes intercultural aspects that raise the students' awareness of cultural differences and enable them to assert themselves in specific situations.

[*updated 26.02.2018*]

Module content:

Job profiles and the workplace

- Addresses and telephone numbers
- Work routine: working hours, breaks
- Internal communication: giving information
- Accepting and rejecting suggestions
- Invitations and business lunches
- Business trips

Telephone communication

- Asking for and giving information
- Spelling things
- Making reservations
- Making appointments with date and time

Directions

- Asking for directions
- Giving directions
- Location details

In addition, we will concentrate on basic grammatical structures. Students should work on and expand their basic vocabulary independently.

[updated 26.02.2018]

Recommended or required reading:

The course is based on the following textbook and will be supplemented by suitable material from other textbooks:

Jambon, Krystelle: Voyages 1 - Französisch für Erwachsene, Klett, Stuttgart: 2006.

We also recommend purchasing the following grammar exercise book: Eurocentres Paris (group of authors): Exercices de grammaire en contexte - niveau débutant, Hachette Livre, Paris: 2000, 144 p.

Students will receive a list of recommended teaching and learning materials.

We recommend the following multimedia learning program for independent learning: Oberstufe Französisch. 6000 Vokabeln zu allen Themen. Vokabellernprogramm auf CD-ROM mit Sprachausgabe. Klett-Verlag, Stuttgart

[updated 26.02.2018]

Introduction to Astronomy

Module name (EN): Introduction to Astronomy
Degree programme: Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012
Module code: MST.EAS
Hours per semester week / Teaching method: 2V (2 hours per week)
ECTS credits: 2
Semester: 5
Mandatory course: no
Language of instruction: German
Assessment:
<p>Curricular relevance: KI674 Computer Science and Communication Systems, Bachelor, ASPO 01.10.2014, semester 5, optional course, non-technical KIB-ASTR Computer Science and Communication Systems, Bachelor, ASPO 01.10.2017, semester 5, optional course, non-technical MAB.4.2.1.3 Mechanical and Process Engineering, Bachelor, ASPO 01.10.2013, semester 5, optional course MST.EAS Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012, semester 5, optional course, non-technical MST.EAS Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2019, semester 5, optional course, non-technical PIBWN25 Applied Informatics, Bachelor, ASPO 01.10.2011, semester 5, optional course, not informatics specific PIB-ASTR Applied Informatics, Bachelor, ASPO 01.10.2017, semester 5, optional course, not informatics specific MST.EAS Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2011, semester 5, optional course, non-technical</p>

Workload:

30 class hours (= 22.5 clock hours) over a 15-week period.

The total student study time is 60 hours (equivalent to 2 ECTS credits).

There are therefore 37.5 hours available for class preparation and follow-up work and exam preparation.

Recommended prerequisites (modules):

None.

Recommended as prerequisite for:**Module coordinator:**

Prof. Dr. Martin Löffler-Mang

Lecturer: Prof. Dr. Martin Löffler-Mang

[*updated 01.10.2012*]

Learning outcomes:

After successfully completing this module, students will be able to orient themselves on the night sky, recognize structures and find the most important constellations in the northern sky. In addition, they will be capable of using the most important basic tools for astronomical observations. Students will also be familiar with elementary celestial mechanics and will be able to make simple predictions for the rising and setting of selected celestial bodies. Finally, students will know about the various astronomical objects in the sky and will be familiar with the standard models for both the formation of the universe (Big Bang theory) and its further development (accelerated expansion of the universe).

[*updated 19.02.2018*]

Module content:

Part I: Introduction

1. Where Are We?
2. The Night Sky
3. Observation Tools

Part II: The Solar System

1. The Sun
2. The Moon
3. The Planets
4. Celestial Mechanics

Part III: Astronomical Instruments

1. Large Telescopes
2. Space Telescopes

Part IV: Astrophysics

1. Cosmology
2. The Principles and Terms of Nuclear Physics (Folkerts)
3. Stars, Star Formation, The Origin of Elements (Folkerts)
4. Are We Alone?

[updated 19.02.2018]

Teaching methods/Media:

Lecture, observations

[updated 26.02.2018]

Recommended or required reading:

Kosmos-Himmelsjahr (almanac)

Sterne und Weltraum (monthly journal)

[updated 19.02.2018]

Numerical Software

Module name (EN): Numerical Software
Degree programme: Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012
Module code: MST.NSW
Hours per semester week / Teaching method: 2V+2PA (4 hours per week)
ECTS credits: 5
Semester: according to optional course list
Mandatory course: no
Language of instruction: German
Assessment: Case studies and micro-projects with the applications discussed
Curricular relevance: KI672 Computer Science and Communication Systems, Bachelor, ASPO 01.10.2014, semester 6, optional course, technical KIB-NUMS Computer Science and Communication Systems, Bachelor, ASPO 01.10.2017, semester 6, optional course, technical MST.NSW Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012, optional course, technical MST.NSW Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2019, optional course, technical PIBWI92 Applied Informatics, Bachelor, ASPO 01.10.2011, semester 6, optional course, informatics specific PIB-NUMS Applied Informatics, Bachelor, ASPO 01.10.2017, semester 6, optional course, informatics specific MST.NSW Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2011, optional course, technical
Workload: 60 class hours (= 45 clock hours) over a 15-week period. The total student study time is 150 hours (equivalent to 5 ECTS credits). There are therefore 105 hours available for class preparation and follow-up work and exam preparation.

<p>Recommended prerequisites (modules): MST.MA1 MST.MA2 <i>[updated 01.10.2012]</i></p>
<p>Recommended as prerequisite for: MST.MA3 <i>[updated 01.10.2012]</i></p>
<p>Module coordinator: N.N.</p>
<p>Lecturer: N.N. <i>[updated 01.10.2012]</i></p>
<p>Learning outcomes: After successfully completing this module, students will be able to independently implement algorithms using Matlab to solve mathematical problems, process experimental data and display this data graphically. <i>[updated 19.02.2018]</i></p>
<p>Module content:</p> <ul style="list-style-type: none"> - Programming in Matlab - Types of Matlab programs - Graphical output in 2D and 3D - Diagrams of statistical data and measurement data - Symbolic calculations <p>Applications:</p> <ul style="list-style-type: none"> - Numerical integration - Regression, interpolation and approximation - Zero and fixed-point search - Gradient method <p><i>[updated 19.02.2018]</i></p>
<p>Teaching methods/Media: 100% of the lecture will take place in the PC lab "Angewandte Mathematik, Statistik und eLearning". All of the practical exercises for the lecture, as well as solving exercises, homework and case studies will be done with the e-learning system MathCoach and with mathematical numerical software (AMSEL lab: PC lab: "Angewandte Mathematik, Statistik und eLearning"). <i>[updated 24.02.2018]</i></p>

Recommended or required reading:

F. und F. Grupp: MATLAB 7 für Ingenieure: Grundlagen und Programmierbeispiele

O. Beucher: MATLAB und Simulink: Grundlegende Einführung für Studenten und Ingenieure in der Praxis (z.B. Pearson Studium, 2008)

W. Schweizer: MATLAB kompakt (z.B. Oldenbourg, 2009)

Lecture notes

[*updated 19.02.2018*]

Oral Presentation Skills

Module name (EN): Oral Presentation Skills
Degree programme: Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012
Module code: MST.RPR
Hours per semester week / Teaching method: 2V (2 hours per week)
ECTS credits: 2
Semester: according to optional course list
Mandatory course: no
Language of instruction: German
Assessment: Final student presentation (approx. 20 min.)
Curricular relevance: KI520 Computer Science and Communication Systems, Bachelor, ASPO 01.10.2014, semester 5, mandatory course MST.RPR Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012, optional course, non-technical MST.RPR Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2019, optional course, non-technical MST.RPR Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2011, optional course, non-technical
Workload: 30 class hours (= 22.5 clock hours) over a 15-week period. The total student study time is 60 hours (equivalent to 2 ECTS credits). There are therefore 37.5 hours available for class preparation and follow-up work and exam preparation.
Recommended prerequisites (modules): None.
Recommended as prerequisite for:

Module coordinator:

Dr. Peter Ludwig

Lecturer: Dr. Peter Ludwig

[updated 01.10.2012]

Learning outcomes:

The aim of this course is broaden, deepen and consolidate the students skills in the following areas:

- Finding and strengthening your personal style of communication
- Developing and strengthening your own rhetorical skills
- Structuring and coordinating information
- Assessing communication partners and communicative situations
- Giving and receiving feedback
- Deploying presentation techniques effectively

[updated 13.03.2007]

Module content:

1. Communication concepts
2. Elocution and oratory
3. Reading aloud, breathing and pitch exercises, speaking freely
4. Organizational preparation, gathering materials, written preparation
5. Intonation
6. Verbal thought
7. The beginning and end, phraseology and style (part 1)
8. Phraseology and style (part 2)
9. Visualization
10. Argumentation, figures of speech, agreement, slip-ups, communication
11. Telephoning, asking questions, negotiating and selling
12. Discussions, group moderation, meetings
13. Handling and resolving conflicts

[updated 13.03.2007]

Recommended or required reading:

SCHULZ VON THUN F., Miteinander reden Bd. 1 ... 3, Rowohlt, 1981

SCHULZ VON THUN F., RUPPEL J., STRATMANN R., Miteinander reden.

Kommunikationspsychologie für Führungskräfte, Rowohlt, 1981

WATZLAWICK P., BEAVIN J.H., JACKSON D.D., Menschliche Kommunikation. Formen, Störungen, Paradoxien, Huber, 2000

[updated 13.03.2007]

Running RoboNight Workshops

Module name (EN): Running RoboNight Workshops
Degree programme: Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012
Module code: MST.RNW
Hours per semester week / Teaching method: 1PA+1S (2 hours per week)
ECTS credits: 3
Semester: according to optional course list
Mandatory course: no
Language of instruction: German
Assessment: Participation in 5 classes, 3 workshops, the competition + a written composition
Curricular relevance: KI628 Computer Science and Communication Systems, Bachelor, ASPO 01.10.2014, semester 6, optional course, non-technical KIB-ROBO Computer Science and Communication Systems, Bachelor, ASPO 01.10.2017, semester 6, optional course, non-technical MST.RNW Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012, optional course, non-technical MST.RNW Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2019, optional course, non-technical PIBWN58 Applied Informatics, Bachelor, ASPO 01.10.2011, semester 6, optional course, not informatics specific PIB-ROBO Applied Informatics, Bachelor, ASPO 01.10.2017, semester 6, optional course, not informatics specific MST.RNW Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2011, optional course, non-technical Suitable for exchange students (learning agreement)

Workload:

30 class hours (= 22.5 clock hours) over a 15-week period.

The total student study time is 90 hours (equivalent to 3 ECTS credits).

There are therefore 67.5 hours available for class preparation and follow-up work and exam preparation.

Recommended prerequisites (modules):

None.

Recommended as prerequisite for:**Module coordinator:**

Prof. Dr. Martina Lehser

Lecturer: Prof. Dr. Martina Lehser

[updated 01.10.2012]

Learning outcomes:

After successfully completing this module, the students will be able to assess the special challenges involved in conducting technical workshops and take them into regard during the preparatory phase of the workshop. They will be able to adapt the contents of the training courses to the participants' previous knowledge and provide appropriate support in dealing with technical questions. Students will also be able to collect and prepare the knowledge necessary for the course and impart it to the workshop participants in such a manner as to fit their age groups.

[updated 26.02.2018]

Module content:

- Create and design the tasks for workshops and the competition
- Design and implement possible solutions
- Supervise 3 workshops
- Supervise the competition
- Conduct follow-up work and document the experiences made

[updated 26.02.2018]

Teaching methods/Media:

Introductory workshop for robot programming with Mindstorm robots on computers and tablets, supervised practical course, largely independent development of the contents in groups, project discussions and workshop coaching.

[updated 26.02.2018]

Recommended or required reading:

- EV3-Programmierung Kurse, htw saar, EmRoLab 2017
 - Programming LEGO NXT Robots using NXC, Daniele Benedettelli
 - Workbook Bluetooth, htw saar, EmRoLab 2011
 - NXT-Programmierung I und II: Einführung und Fortgeschrittene, htw saar, EmRoLab 2011
- [*updated 26.02.2018*]

Software development for collaborative industrial robotics

Module name (EN): Software development for collaborative industrial robotics
Degree programme: Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012
Module code: MST.SKI
Hours per semester week / Teaching method: 4PA (4 hours per week)
ECTS credits: 5
Semester: 5
Mandatory course: no
Language of instruction: German
Assessment:
<p>Curricular relevance: KI566 Computer Science and Communication Systems, Bachelor, ASPO 01.10.2014, semester 5, optional course, technical KIB-IROB Computer Science and Communication Systems, Bachelor, ASPO 01.10.2017, semester 5, optional course, technical MST.SKI Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012, semester 5, optional course, technical MST.SKI Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2019, semester 5, optional course, technical PIBWI08 Applied Informatics, Bachelor, ASPO 01.10.2011, semester 5, optional course, informatics specific PIB-IROB Applied Informatics, Bachelor, ASPO 01.10.2017, semester 5, optional course, informatics specific</p>
<p>Workload: 60 class hours (= 45 clock hours) over a 15-week period. The total student study time is 150 hours (equivalent to 5 ECTS credits). There are therefore 105 hours available for class preparation and follow-up work and exam preparation.</p>

Recommended prerequisites (modules): None.
Recommended as prerequisite for:
Module coordinator: Prof. Dr. Martina Lehser
Lecturer: Prof. Dr. Martina Lehser [updated 29.06.2018]
Learning outcomes: [still undocumented]
Module content: [still undocumented]
Recommended or required reading: [still undocumented]

Spanish for Beginners I

Module name (EN): Spanish for Beginners I
Degree programme: Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012
Module code: MST.SA1
Hours per semester week / Teaching method: 2V (2 hours per week)
ECTS credits: 2
Semester: 5
Mandatory course: no
Language of instruction: Spanish
Assessment: Written examination (final exam)
Curricular relevance: KI663 Computer Science and Communication Systems, Bachelor, ASPO 01.10.2014, semester 5, optional course, non-technical KIB-SFA1 Computer Science and Communication Systems, Bachelor, ASPO 01.10.2017, semester 5, optional course, non-technical MAB.4.2.1.4 Mechanical and Process Engineering, Bachelor, ASPO 01.10.2013, semester 5, optional course MST.SA1 Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012, semester 5, optional course, non-technical MST.SA1 Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2019, semester 5, optional course, non-technical PIBWN50 Applied Informatics, Bachelor, ASPO 01.10.2011, semester 5, optional course, not informatics specific PIB-SFA1 Applied Informatics, Bachelor, ASPO 01.10.2017, semester 5, optional course, not informatics specific MST.SA1 Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2011, semester 5, optional course, non-technical

Workload:

30 class hours (= 22.5 clock hours) over a 15-week period.

The total student study time is 60 hours (equivalent to 2 ECTS credits).

There are therefore 37.5 hours available for class preparation and follow-up work and exam preparation.

Recommended prerequisites (modules):

None.

Recommended as prerequisite for:**Module coordinator:**

Prof. Dr. Christine Sick

Lecturer:

Dr. Victoriana Herrador Morillo

[*updated 16.10.2017*]

Learning outcomes:

The course "Spanish for Beginners I" is aimed towards learners with little or no previous knowledge of the Spanish language. The courses "Spanish for Beginners I and II" are based on each other. In the course of the two modules, students will first reach proficiency level A1 and then advance to level A2 of the European Framework of Reference for Languages.

The goal of the course is to provide students with basic knowledge of the Spanish language, which will enable them to communicate in general and professional situations as quickly as possible, both orally and in writing. To do so, all four skills (speaking, listening comprehension, reading and writing) will be trained equally. Content development will be supported by the repetition of the relevant grammatical structures.

The course takes a communicative and pragmatic approach that particularly promotes communicative competence in job-relevant situations through the use of role playing and situational dialogues. This also includes intercultural aspects that raise the students' awareness of cultural differences and enable them to assert themselves in specific situations.

[*updated 24.02.2018*]

Module content:

Content:

In the course *_Spanish for Beginners I_* students will learn the lessons 1 to 5 from *_Meta Profesional A1-A2_* (Spanisch für den Beruf. Klett Verlag).

Establishing contact

- Formal greetings
- Introductions
- Asking how someone is feeling
- Giving information about yourself and requesting information about others
- Saying thank you, apologizing and saying goodbye
- Describing a person
- Giving directions
- Getting to know business partners

- Job profiles and the workplace
- Describing jobs and activities
- Types of companies
- Showing and describing products
- Describing departments and responsibilities
- Planning activities
- Interaction with colleagues
- Participating in international trade fairs

Oral and written communication

- Common verbal expressions (asking for names, telephone numbers and e-mail addresses)
- Business lunches
- Making appointments with colleagues
- Requesting and giving information
- Writing e-mails
- Time
- Daily schedule, making appointments

In addition, basic grammar structures will be learned (e. g. indicative present of regular and irregular verbs, form of progression, prepositions, personal and possessive pronouns, asking questions, syntax).

Students should work on and expand their basic vocabulary independently.

[*updated 19.02.2018*]

Teaching methods/Media:

Teaching and learning materials (print media, slides, audio-visual teaching materials), multimedia learning software compiled specifically for the learning group.

[*updated 19.02.2018*]

Recommended or required reading:

The course is based on the following textbook and will be supplemented by additional learning material:

Meta Profesional _ Spanisch für den Beruf, Lehrbuch ISBN: 978-3-12-515460-5

We also recommend these books for grammar:

Uso de la Gramática Española. Nivel Elemental. ISBN 3-12-5358116-6

Spanische Grammatik für Selbstlerner 01 Bd.1 ISBN-10: 3896577093

Tiempo para conjugar. Buch mit CD-Rom, PC, Mac. ISBN 3-12-535809-4

Students will receive a list of recommended teaching and learning materials.

[*updated 19.02.2018*]

Spanish for Beginners II

Module name (EN): Spanish for Beginners II
Degree programme: Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012
Module code: MST.SA2
Hours per semester week / Teaching method: 2V (2 hours per week)
ECTS credits: 2
Semester: 6
Mandatory course: no
Language of instruction: Spanish
Assessment: Written examination (final exam)
Curricular relevance: KI664 Computer Science and Communication Systems, Bachelor, ASPO 01.10.2014, semester 6, optional course, non-technical KIB-SFA2 Computer Science and Communication Systems, Bachelor, ASPO 01.10.2017, semester 6, optional course, non-technical MAB.4.2.1.5 Mechanical and Process Engineering, Bachelor, ASPO 01.10.2013, semester 6, optional course MST.SA2 Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012, semester 6, optional course, non-technical MST.SA2 Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2019, semester 6, optional course, non-technical PIBWN51 Applied Informatics, Bachelor, ASPO 01.10.2011, semester 6, optional course, not informatics specific PIB-SFA2 Applied Informatics, Bachelor, ASPO 01.10.2017, semester 6, optional course, not informatics specific MST.SA2 Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2011, semester 6, optional course, non-technical

Workload:

30 class hours (= 22.5 clock hours) over a 15-week period.

The total student study time is 60 hours (equivalent to 2 ECTS credits).

There are therefore 37.5 hours available for class preparation and follow-up work and exam preparation.

Recommended prerequisites (modules):

None.

Recommended as prerequisite for:**Module coordinator:**

Prof. Dr. Christine Sick

Lecturer:

Dr. Victoriana Herrador Morillo

[*updated 16.10.2017*]

Learning outcomes:

The courses "Spanish for Beginners I and II" are based on each other. In the course of the two modules, students will first reach proficiency level A1 and then advance to level A2 of the European Framework of Reference for Languages.

The course Spanish for Beginners II_ is aimed at learners with basic knowledge of the Spanish language at level A1 of the European Reference Framework or the module _Spanish for Beginners I_.

The goal of the course is to provide students with basic knowledge of the Spanish language, which will enable them to communicate in general and professional situations as quickly as possible, both orally and in writing. To do so, all four skills (speaking, listening comprehension, reading and writing) will be trained equally. Content development will be supported by the repetition of the relevant grammatical structures.

The course takes a communicative and pragmatic approach that particularly promotes communicative competence in job-relevant situations through the use of role playing and situational dialogues. This also includes intercultural aspects that raise the students' awareness of cultural differences and enable them to assert themselves in specific situations.

[*updated 24.02.2018*]

Module content:

Content:

In the course *_Spanish for Beginners II_* students will learn the lessons 6 to 10 from *_Meta Profesional A1-A2_* (Spanisch für den Beruf, Klett Verlag).

Work

- Describing your private and professional daily routine
- A day at work: habits and time
- Talking about preferences
- Agreeing and objecting to things
- Talking about experiences
- Opening hours
- Organizing a weekly schedule
- Talking about plans

Talking on the telephone

- Making business calls

Business appointments

- Making, accepting and rejecting invitations and suggestions
- Arranging appointments
- Talking about the weather
- Making a hotel reservation
- Planning business meals
- Deciding what is most important at the first meeting with a customer

Products and projects

- Describing buildings and offices
- Assessing and describing products and prices
- Talking about quantities
- Preparing a company presentation

Professional training and experience

- Reading job advertisements
- Composing an application cover letter
- Skills, strengths and weaknesses
- Creating a resume
- Participating in a job interview

In addition, we will concentrate on basic grammatical structures (such as for example, the imperative, future and past of regular and irregular verbs). Students should work on and expand their basic vocabulary independently.

[updated 19.02.2018]

Teaching methods/Media:

Teaching and learning materials (print media, slides, audio-visual teaching materials), multimedia learning software compiled specifically for the learning group.

[updated 19.02.2018]

Recommended or required reading:

The course is based on the following textbook and will be supplemented by additional learning material:

Meta profesional A1-A2 Spanisch für den Beruf. Klett Verlag; ISBN: 978-3-12-515460-5

We also recommend these books for grammar:

Uso de la Gramática Española. Nivel Elemental. ISBN 3-12-5358116-6

Spanische Grammatik für Selbstlerner 01 Bd.1 ISBN-10: 3896577093

Tiempo para conjugar. Buch mit CD-Rom, PC, Mac. ISBN 3-12-535809-4

Students will receive a list of recommended teaching and learning materials.

[*updated 19.02.2018*]

Technical Documentation

Module name (EN): Technical Documentation
Degree programme: Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012
Module code: MST.TDO
Hours per semester week / Teaching method: 2V (2 hours per week)
ECTS credits: 2
Semester: 6
Mandatory course: no
Language of instruction: German
Assessment:
<p>Curricular relevance: BMT1580 Biomedical Engineering, Bachelor, ASPO 01.10.2013, optional course, non-medical/technical E1580 Electrical Engineering, Bachelor, ASPO 01.10.2012, optional course, non-technical KI655 Computer Science and Communication Systems, Bachelor, ASPO 01.10.2014, semester 6, optional course, non-technical KIB-TDOK Computer Science and Communication Systems, Bachelor, ASPO 01.10.2017, semester 6, optional course, non-technical MAB.4.2.1.2 Mechanical and Process Engineering, Bachelor, ASPO 01.10.2013, semester 5, optional course, not informatics specific MST.TDO Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2012, semester 6, optional course, non-technical MST.TDO Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2019, semester 6, optional course, non-technical PIBWN65 Applied Informatics, Bachelor, ASPO 01.10.2011, semester 5, optional course, not informatics specific PIB-TDOK Applied Informatics, Bachelor, ASPO 01.10.2017, semester 6, optional course, not informatics specific MST.TDO Mechatronics and Sensor Technology, Bachelor, ASPO 01.10.2011, semester 6, optional course, non-technical</p>

Workload:

30 class hours (= 22.5 clock hours) over a 15-week period.

The total student study time is 60 hours (equivalent to 2 ECTS credits).

There are therefore 37.5 hours available for class preparation and follow-up work and exam preparation.

Recommended prerequisites (modules):

None.

Recommended as prerequisite for:**Module coordinator:**

Prof. Dr. Walter Calles

Lecturer: Prof. Dr. Walter Calles

[*updated 01.10.2012*]

Learning outcomes:

After successfully completing this module, students will be capable of examining and checking technical texts. They will be able to analyze different kinds of texts based on their target group intentions. The influences of text design will be illustrated and structures for easier text creation will be learned. The documentation of research and work findings, including how to handle quotations and Internet sources, their identification in texts and the creation of a bibliography will enable students to create technical/scientific texts more efficiently.

[*updated 26.02.2018*]

Module content:

- 1 Text design in standards, guidelines and laws
- 2 Rules for technical texts
- 3 Operating instructions
- 4 Abstracts/text summaries
- 5 Comprehensibility of texts
- 6 Business correspondence
- 7 Notes, transcripts, minutes, reports
- 8 Structure and numbering of texts
- 9 Citation rules
- 10 Bibliography
- 11 Time management for the creation of longer texts

[*updated 26.02.2018*]

Recommended or required reading:

Lecture notes

[*updated 13.03.2007*]