

WFY MODULE DESCRIPTION

Subject	
Informatics	
Semester	Semester hours per week
2	3
Module description	
<p>Technical course:</p> <p>The module is divided into a theoretical and a practical part. In the theoretical part, basic topics of computer science are covered. Alongside this, programming skills in the Python programming language is taught in the practical part. The knowledge acquired is practised and implemented in projects. Meaningful references to other subject areas, such as mathematics, are established.</p> <p>Business course:</p> <p>The module is divided into a theoretical and a practical part. In the theoretical part, basic topics of computer science are covered. Along with that, the practical part teaches programming skills in Python as well as basic knowledge of problem-oriented work with spreadsheets and databases. The knowledge acquired is practised and implemented in projects. Meaningful references to other subject areas, such as mathematics, are established.</p>	

Participation requirement: German/English language level

German B2

Module objectives

The independent processing of problem tasks is planned for each focus. The focus is on the application of standard methods (algorithms) and tools. In addition, numerous exercises with self-monitoring options are provided to deepen and consolidate the subject matter.

Through the practical exercises, key competences such as independent work, teamwork and cooperation skills, self-learning competence, transfer between theory and practice, argumentation about given content are to be developed.

Descriptions of the subjects by courses

Course	Learning outcomes and summary of module content
Technical course:	<p>Theory:</p> <ul style="list-style-type: none"> • Computer science: history, basic concepts (data, bit, byte), fields of application • Basics of Mathematics: analogue/digital, coding (ASCII, Unicode), number systems with conversion, binary arithmetic, propositional logic • Hardware: structure of a computer, computer architectures, system components (storage media, peripherals) • Software: typification (standard, industry, individual software), open source, UEFI, operating systems (Windows, Linux) • Networks: client/server, technologies (e.g. LAN, WLAN), protocols and services, addressing (IPv4, URI), WWW basics (HTTP, HTML) • Administration: system administration tasks, tools, backup & recovery, data protection and data security, encryption <p>Programming:</p> <ul style="list-style-type: none"> • Software life cycle, algorithm, programme design, programming languages (compiler, interpreter), tools (editor, IDE) • Variables and data types (esp. list, dictionary) • Input and output • Control structures (if, for, while) • Functions and modules (selected modules of the Standard Library) • Testing, exception and error handling • Working with files
Business course:	<p>Theory:</p> <ul style="list-style-type: none"> • - Computer science: history, basic concepts (data, bit, byte), fields of application • -Basics of Mathematics: analogue/digital, coding (ASCII, Unicode), number systems with conversion, binary arithmetic, propositional logic • Basics: analogue/digital, coding (ASCII, Unicode), number systems with conversion, binary arithmetic, logic of statements. • - Hardware: structure of a computer, computer architectures, system components (storage media, peripherals) • - Software: Typification (standard, industry, individual software), open source, UEFI, operating systems (Windows, Linux) <p>Programming:</p> <ul style="list-style-type: none"> • Software life cycle, algorithm, programme design, programming languages (compiler, interpreter), tools (editor, IDE) • Variables and data types (esp. list, dictionary) • Input and output

- Control structures (if, for, while)
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Problem-oriented applications:

- Spreadsheet: cell references, math. Functions, formatting, diagrams, control structures (if, reference)
- Database: data model, queries, forms, reports

