Courses in English
Course Description

Department	05 Technical Systems, Processes and Communication
Course title	**Scientific Key Skills**
Course number	
Hours per week (SWS)	2
Number of ECTS credits	3
Course objective	Development of essential scientific skills which can benefit the further career in or beyond academia
Prerequisites	none
Recommended reading	TBD
Teaching methods	Peer instruction, presentations, engagement of the group, seminars, projects, digital media
Assessment methods	Portfolio and presentations
Language of instruction	English
Name of lecturer	Prof. Dr. Christine Maria Greif
Email	greif@hm.edu
Link	
Course content	We will define the elements of a programming language. We use Python - the fastest growing programming language - as it is relatively easy to learn but powerful enough to fullfil the required task needed in science or engineering. We will get to know typical parts of algorighms such as declination, reading, writing, loops, logical comands, functions, modules and classes. We put a special focus on devoloping individual algorithms by your own in teams. We will discuss advantages and disadvantages of automization and the treatment of big data. · Code compilation · Jupyter notebook · Numbers, strings and lists · Booleans, tuples and dictionaries · Control flow · Functions · Reading and writing from/to files · Modules and variable scope · Introduction to NumPy · Introduction to Matplotlib · Files and paths · String formatting · Python variables · Fitting · Interpolation, integration, symbolic calculation · Python errors · Remote data · Object orientated programming · Solving differential equations · Pandas, scikit learn and beyond
Remarks	For admission, please contact me at the email above. If the course is full, possibly a second course will be set up.