

Study Program

Program

Methods and Tools

Regulations

Organization

Modules and Courses - Organization of the Program

The image below shows the modules of the program Renewable Energy and Data Engineering:

For more details to each module have a look at the [module descriptions](#).

Mathematical Methods and Software Tools

Tools and algorithms for data management and analysis are a core issue of Renewable Energy and Data Engineering. As part of the RED curriculum, therefore, students are taught to apply a variety of software tools.

The main objectives are:

- Students distinguish, identify and structure data-management tasks (data collection, storage and analysis)
- Students know and can apply statistical methods for data analysis (descriptive statistics and exploratory statistics) in a problem-oriented way (cf. Module PDE-03, Energy Data Management)
- Students know and can apply prognosis and optimization methods in a problem-oriented way (cf. Module PDE-02, Operations Research in der Energy Economics)
- Students know the range of concepts for the automation and operation of large distributed systems, from traditional central-hierarchical SCADA systems to multi-agent systems (cf. Module PDE-08, Grid Operation, Analysis, Planning and Communication)
- Students know the possibilities and limitations of data-driven modeling methods compared to physics-based modeling and can create problem-oriented models. Special attention is given to the dynamic behavior of energy systems.
- Students investigate methods for developing various mathematical models of energy systems, usually as sets of differential-algebraic equations. Following that, techniques for solving such problems with software tools are introduced. Students can each receive a copy of the powerful Dymola software and use it to solve various problems (cf. Required Elective, Dynamic Modeling of Energy Systems)

Study Regulations

Every study program at Offenburg University is defined and regulated as described in:

"Regulations concerning Study and Examinations (RSE) of Offenburg University".

Some of the topics covered are:

- Regular periods of study and structure of study
- Modular Structure of Studies
- Loss of Admission to the Degree Program, loss of the right to take
- Examinations, Deadlines
- General Rules of Admission
- Examination Requirements
- Oral Examinations
- Seminar Papers and other written Assignments
- Evaluation of Examination Results

<https://mv.hs-offenburg.de/en/nc/studium/master/power-an-data-engineering-pde/studienverlauf/>

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- Omission, Withdrawal, Deception, Irregularities
- Passing and Failing an Examination

These study regulations consist of a general part and a special part. The general part of the study regulations covers the topics common to all the masters programs. Each individual masters program has a special part that explains the regulations specific to its program. For legal purposes, only the German version is binding. The link to both the general and the ECM specific parts of the study regulations are provided below:

[RED study regulation: general and specific part](#)

Organization of Studies

Courses are conducted in English in the first semester and in German in the second semester.

The modules are structured according to following table. The choice of modules will provide students with an overview on various topics in power and data engineering. The names are specified in the table below.

The course (expected progression) of the RED study program is described in the "Studien- und Prüfungsordnungen" which you on the menu item "Regulations".