Module Name
Efficient Algorithms

Type of Module	**Module Code**
Advanced Module	AN-EA

Identification Number	**Workload**	**Credit Points**	**Term**	**Offered Every**	**Start**	**Duration**
MSc-I-EA	270 Hours	9 CP	1. – 3. Semester	SuSe	Summer term only	1 Semester

1	**Course Types**	**Contact Time**	**Private Study**	**Planned Group Size**
	a) Lecture b) Exercise	60 h 30 h	120 h 60 h	No limits

2	**Module Objectives and Skills to be Acquired** Students expand their abilities to develop algorithms and data structures systematically on their own using design paradigms and to evaluate them with regard to their runtime and correctness.
3	**Module Content** In this course, advanced algorithmic concepts such as approximation and randomization are introduced. Advanced algorithm design paradigms such as primal-dual algorithms, LP relaxation, or randomized incremental algorithms are introduced and well-known design principles such as greedy algorithms are deepened. Advanced data structures like perfect hashing, randomized search trees or splay trees are discussed.
4	**Teaching Methods** Lecture, Exercise
5	**Prerequisites (for the Module)** Formally: None
6	**Type of Examination** Written exam
7	**Credits Awarded** Passing the written exam
8	**Compatibility with other Curricula** Master of Science Informatik, M.Sc. Mathematik, M.Sc. Wirtschaftsmathematik, M.Sc. Information Systems
9	**Proportion of Final Grade** 9/114
10	**Module Coordinator** Prof. Dr. Christian Sohler
11	**Further Information**