Module Name
Data and Information Science

Type of Module	**Module Code**
Advanced Module	AM-DIS

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

1	**Course Types**	**Contact Time**	**Private Study**	**Planned Group Size**
	a) Lecture	60 h	120 h	25
	b) Exercise	30 h	60 h	

2 Module Objectives and Skills to be Acquired

Students will have an understanding of basic machine learning applications, concepts, and analysis techniques for Data Science. They understand the data situation, algorithms and models of machine learning. They are able to select appropriate machine learning algorithms for complex problems, they know the strengths and weaknesses of the methods. They know which results can be derived from the respective data and can appropriately perform and evaluate computer-aided methods in the field of application and in the respective scientific context.

3 Module Content

The course provides an overview of the main machine learning methods and algorithms used for different classes of problems, in particular supervised learning, unsupervised learning, and reinforcement learning. The first part of the course covers the common methods and algorithms used for each of the three classes of learning, including how to conduct experiments and evaluate the models. In the second part of the course, advanced aspects are considered, such as high-dimensional or non-stationary problems, insufficient labels, or unbalanced class distribution in the initial data.

4 Teaching Methods

Lecture, Exercise

5 Prerequisites (for the Module)

Formally: None

Regarding the contents: Visualization, Software Engineering, Statistics

6 Type of Examination

Exam, e-Exam

7 Credits Awarded

Passing the final exam

8 Compatibility with other Curricula

Wirtschaftsinformatik, Wirtschaftsmathematik, Mathematik

9 Proportion of Final Grade

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10 Module Coordinator

The tutors of the Institute for Computer Science

11	**Further Information**