1 Export

1.1 Module: Ergodic Theory [M-MATH-106473]

**Responsible:** Dr. Gabriele Link

**Organisation:** KIT Department of Mathematics

<table>
<thead>
<tr>
<th>Credits</th>
<th>Grading scale</th>
<th>Recurrence</th>
<th>Duration</th>
<th>Language</th>
<th>Level</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Grade to a tenth</td>
<td>Irregular</td>
<td>1 term</td>
<td>German</td>
<td></td>
<td>1</td>
</tr>
</tbody>
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**Mandatory**

<table>
<thead>
<tr>
<th>T-MATH-113086</th>
<th>Ergodic Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 LP</td>
<td>Link</td>
</tr>
</tbody>
</table>

**Competence Certificate**

Oral examination of ca. 20-30 minutes.

**Competence Goal**

Students

- know important examples of dynamical systems,
- can state and discuss substantial concepts of ergodic theory,
- can state important results on qualitative properties of dynamical systems and relate them,
- are prepared to read recent research articles and write a bachelor or master thesis in the field of ergodic theory.

**Module grade calculation**

The grade of the module is the grade of the oral exam.

**Prerequisites**

None

**Content**

- Elementary examples of dynamical systems such as Bernoulli systems and billiards
- Poincare rekurrence and ergodic theorems
- mixing, weak mixing, equidistribution
- entropy
- advanced topic(s) (as for example hyperbolic dynamics, symbolic dynamics and coding, Furstenberg correspondence principle or unitary representations of SL(2,R))

**Recommendation**

Some basic knowledge of measure theory, topology, geometry, group theory and functional analysis is recommended.

**Workload**

Total workload: 240 hours

Attendance: 90 h

- lectures, problem classes and examination

Self studies: 150 h

- follow-up and deepening of the course content,
- work on problem sheets,
- literature study and internet research on the course content,
- preparation for the module examination

1.2 Course: Ergodic Theory [T-MATH-113086]

**Responsible:** Dr. Gabriele Link

**Organisation:** KIT Department of Mathematics
Competence Certificate
Oral examination of ca. 20-30 minutes.

Prerequisites
none

Recommendation
Some basic knowledge of measure theory, topology, geometry, group theory and functional analysis is recommended.