### Naturnahe Gewässer (Nature-oriented River Works) RESE M T4a

<table>
<thead>
<tr>
<th>Relevance for ResEngin curriculum</th>
<th>compulsory elective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td>Contact</td>
</tr>
<tr>
<td>Inst. f. Wasser &amp; Gew. entw.</td>
<td><a href="mailto:b.lehmann@kit.edu">b.lehmann@kit.edu</a></td>
</tr>
<tr>
<td>Wasserwirtschaft &amp; Kulturtech.</td>
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<table>
<thead>
<tr>
<th>Term(s) offered</th>
<th>2nd (Apr–Sept)</th>
</tr>
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<tbody>
<tr>
<td>Duration</td>
<td>Cycle</td>
</tr>
<tr>
<td>1 term; every year</td>
<td></td>
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<tr>
<td>Language of instruction</td>
<td>German</td>
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Prerequisites

Bachelor, German language proficiency at DSH level

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Module coordinator

LEHMANN, Dr.-Ing. Boris; IWG-WK [Modulverantwortlicher]

Learning outcomes

Description see p. 2.

Literature / Course materials

Reference list see p. 3.

Basis for module(s)

not applicable

Intersection with module(s)

not applicable

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### Lecture courses

<table>
<thead>
<tr>
<th>Training mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>19212 Naturnahe Gewässer (lecture, exercise)</td>
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</table>

<table>
<thead>
<tr>
<th>SUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0 CP 4 WCH</td>
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</tbody>
</table>

Workload specification

(30 work hours → 1 CP acc. to ECTS) 5 x 30 h 150 h

Lecture Phase:

- Contact hours 21 h
- Self instruction hours 42 h
- Exercise 21 h
- Exam preparation 21 h

Exam Phase:

- Self instruction hours 45 h

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Module examination(s)

<table>
<thead>
<tr>
<th>(mode</th>
<th>scope</th>
<th>weighting)</th>
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<tbody>
<tr>
<td>“Naturnahe Gewässer” oral</td>
<td>30 min</td>
<td>5.0/5.0 CP</td>
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Lecturers

- LEHMANN, Dr.-Ing. Boris; IWG-WK

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Individual lecture courses

Descriptions + Recommended background knowledge see p. 4.
Module T4a: “Nature-oriented River Works” (cont.)

Module topic

This module aims at exemplifying how engineering practices contribute to the planning and implementation of river restoration projects.

Learning outcomes

Disciplinary knowledge

- concepts, theories & definitions
  requirements of the EU-WFD and its implementation in the federal states; river development and maintenance: strategies, concepts and planning of measures.

- subject matter (factual data, examples)
  rivers as natural open space: interrelation of biotic and abiotic elements; hyporheic zone as biotope: biotic and abiotic properties and their importance for river engineering; field excursions: to the river „Alb“ (tributary of the river “Rhine”) between Ettlingen and its mouth, and to mountainous streams in the Northern Black Forest (“Nordschwarzwald”).

- methods & procedures
  near-natural construction for river bed protection measures; construction measures to restore ecological longitudinal connectivity of rivers.

Professional skills

- planning of nature-orientated river development measures.

Personal competence

- n.a.
Module T4a: “Nature-oriented River Works” (cont.)

Literature/ Course material

Lecture notes
### Course

**Naturnahe Gewässer: Grundlagen, Planung, Maßnahmen**  
(Nature-oriented River Works)

<table>
<thead>
<tr>
<th>KIT lecture ID</th>
<th>19212</th>
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<tbody>
<tr>
<td>Relevance</td>
<td>compulsory elective</td>
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<tr>
<td>Prerequisites</td>
<td>Bachelor, German proficiency (DSH level)</td>
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<tr>
<td>Term(s)</td>
<td>2nd term (summer)</td>
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<tr>
<td>Language</td>
<td>German</td>
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<tr>
<td>Training mode</td>
<td>Lecture, 2 WCH, Exercise, 2 WCH</td>
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<tr>
<td>Workload</td>
<td>5.0 CP ⇒ 150.0 h</td>
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</table>

### Workload specification

**LECTURE PHASE**
- Contact (based on 2 WCH) 21.0 h  
- Self instruction 42.0 h  
- Exercise 21.0 h  
- Exam preparation 21.0 h

**EXAM PHASE**
- Self-instruction 45.0 h

**Contact**
b.lehmann@kit.edu

### Lecturer(s)

LEHMANN, Dr.-Ing. Boris; IWG-WK

### Course topic

Contribution of engineering practice to planning and implementation of river restoration projects.

### Recommended background knowledge

Fundamentals of open channel flow (hydraulics) and river morphodynamics

### Learning outcomes

**Disciplinary knowledge**

- **concepts, theories & definitions**
  - requirements of the EU-WFD and its implementation in the federal states; river development and maintenance: strategies, concepts and planning of measures.
  - **subject matter (factual data, examples)**
    - rivers as natural open space: interrelation of biotic and abiotic elements;
    - hyporheic zone as biotope: biotic and abiotic properties and their importance for river engineering; field excursions: to the river „Alb“ (tributary of the river “Rhine”) between Ettlingen and its mouth, and to mountainous streams in the Northern Black Forest (“Nordschwarzwald”).
  - **methods & procedures**
    - near-natural construction for river bed protection measures;
    - construction measures to restore ecological longitudinal connectivity of rivers.

**Professional skills**

Planning of nature-orientated river development measures

### Personal competence

n.a.

**Assessment specification**

- written ---
- oral 30 min = module exam “Naturnahe Gewässer”
- other ---