Integrated Projects RESE M 7

Relevance for ResEngin curriculum: compulsory

Term(s) offered: 3rd term (Winter term Oct-Mar)

Duration: 1 term; every other year

Language of instruction: English / German

Prerequisites: Bachelor

Module coordinator: FUCHS, Dr.-Ing. Stephan; IWG-SWW

Learning outcomes: Description see p. 2.

Literature / Course materials: Reference list see p. 3.

Basis for module(s): M MSc Masterarbeit

Intersection with module(s): M 5 Protection & Use of Riverine Systems

Lecture courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Workload</th>
</tr>
</thead>
<tbody>
<tr>
<td>19610</td>
<td>Socio-Economic Aspects of Dev. Planning (lecture, excursion)</td>
<td>3.0 CP</td>
<td>2 WCH</td>
</tr>
<tr>
<td>19621</td>
<td>Assessment of Development Planning (lecture)</td>
<td>3.0 CP</td>
<td>2 WCH</td>
</tr>
<tr>
<td>196xx</td>
<td>Project Planning (seminar, excursion, limited seats)</td>
<td>3.0 CP</td>
<td>2 WCH</td>
</tr>
</tbody>
</table>

Workload specification

(30 work hours → 1 CP acc. to ECTS) 9 x 30 h 270 h

Lecture Phase: Contact hours 63 h
Self instruction hours 84 h
Team work 49 h

Exam Phase: Self instruction hours 54 h
Group report 20 h

Module examination(s)

“Socio-Economic Aspects of Dev. Planning”
written | 60 min | 3.0/9.0 CP

“Planning of Development Projects”
report | 2.500 words | 6.0/9.0 CP

Lecturers

- BREITSCHOPF, Dr.sc.agr. Barbara; FhG ISI
- FUCHS, Dr.-Ing. Stephan; IWG-SWW
- KÄMPF, Dr.rer.nat. Charlotte; IWG-WK
- OSTERTAG, Dr.rer.pol. Katrin; FhG ISI
- WALZ, PD Dr.rer.pol. Rainer; FhG ISI

Individual lecture courses

Descriptions + Recommended background knowledge see pp. 4.
Module 7: “Integrated Projects” (cont.)

Module topic

Strategic tools that help structuring the process of development planning and help assessing the socio-economic impact of development planning. Differences in project assessment depend on the respective policy framework (EU vs. U.S.A, developing countries vs. transition countries). The complexity of planning processes intersecting societal domains of policy makers, engineers, planners, and local stakeholders.

Learning outcomes

Disciplinary knowledge

- concepts, theories & definitions
  Economic concepts and assessment: utility and costs, determination of values and opportunity costs of action, coordination principles of (economic) actions.
  Environmental management in general (introductory historical overview);
  from nature preservation to strategic environmental assessment and social impact assessment, decision theory (cultural/ bounded rationality, dilemma situations).
  Planning processes for sustainable development (context: local, regional frame conditions), interdisciplinary approach, transdisciplinary approach.

- subject matter (factual data, examples)
  Path dependency and structural change for economic development, technology development and diffusion, absorptive capacity of technologies in developing countries; economic aspects of natural resources use: natural resources as an economic good; depletion, carrying capacity and external effects as economic characteristics of natural resources.
  Governmental framework: laws, policies and institutional arrangements; public participation.
  Guidelines, laws and policies of site development and environment protection.

- methods & procedures
  Strategic planning tools: procedure and stages of development planning, indicator systems, valuation of external costs, cost-benefit analysis, scenario analysis of natural resource use.
  Impact assessment techniques: matrices, GIS-supported approaches, multi-criteria-decision methods; EIA project management: compensation, mitigation, monitoring, auditing.
  Real and specific planning assignment; to identify the given problems and conflicts and to develop an approach to an integrated solution; Gantt charts.

Professional skills

- To apply economic concepts relevant for development planning and natural resource use: economic principles of development planning, investment criteria, cost-benefit analysis.
- To handle legal regulations for the anticipated impact of development concepts and the environment (ecosystems, socio-economic domain, and public sphere) on the national and supranational level.
- To identify resulting problems, point out appropriate solutions. To evaluate co-operatively planning alternatives and to define an integrated solution to the given task. To handle the interrelation between a project's objective and potential solutions whose impact may extend far beyond the delineation of the (original) planning area.

Personal competence

- To contribute to decision making steps with excellent communication skills among involved parties.
  To contribute as professionals to the realization of national and supranational development goals through EIA processes.
- To organize an interdisciplinary team, time management for teams, evaluation of various solution approaches. Documentation of planning variants in maps and reports, presentation at different stages of the work process.
Module 7: “Integrated Projects” (cont.)

Literature/ Course material


Lecture notes

- (1) “Assessment of Development Planning” updated script on relevant illustrations, web information, online glossaries.
- (2) “Project Planning”: The students will design a plan for a new development area (residential or commercial area). They take into account all disciplinary knowledge acquired during the 1st and 2nd semester. The students will be handed primary field data, which they will need for the engineering design, but not any specific secondary information.
Course

Module 7

Integrated Projects

Socio-Economic Aspects of Development Planning

<table>
<thead>
<tr>
<th>KIT Lecture ID</th>
<th>Workload specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>19610</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Relevance</th>
<th>compulsion</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Prerequisites</th>
<th>Bachelor</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Term(s)</th>
<th>3rd term (winter)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Language</th>
<th>English</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Training mode</th>
<th>Lecture, 2 WCH *</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Workload</th>
<th>3.0 CP ⇒ 90.0 h</th>
</tr>
</thead>
</table>

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

**EXAM PHASE**
- Self-instruction 27.0 h

**Contact**
rainer.walz@isi.fraunhofer.de

**Lecturer(s)**
Breitschopf, Dr.sc.agr. Barbara; FhG ISI, Ostertag, Dr.rer.pol. Katrin; FhG ISI
Walz, PD Dr.rer.pol. Rainer; FhG ISI

**Course topic**
Strategic tools that help structuring the process of development planning and help assessing the socio-economic impact of development planning. Understanding of social, financial, institutional, organisational and economic aspects of development and the interferences, analysing impacts on other sectors and fields as well as costs and benefits of projects, elaborating country/project specific guidelines for development planning.

**Recommended background knowledge**
n.a.

**Learning outcomes**

**Disciplinary knowledge**
- concepts, theories & definitions
  - economic concepts and assessment: utility and costs, determination of values and opportunity costs of action, coordination principles of (economic) actions.
- subject matter (factual data, examples)
  - path dependency and structural change for economic development, technology development and diffusion, absorptive capacity of technologies in developing countries; economic aspects of natural resources use: natural resources as an economic good; depletion, carrying capacity and external effects as economic characteristics of natural resources.
- methods & procedures
  - strategic planning tools: procedure and stages of development planning, indicator systems, valuation of external costs, cost-benefit analysis, scenario analysis of natural resource use.

**Professional skills**
To learn about. To apply economic concepts relevant for development planning and natural resource use: economic principles of development planning, investment criteria, cost-benefit analysis.

**Personal competence**
n.a.

**Assessment specification**
written 60 min = partial module exam “Socio-Econ. Aspects of Dev. Planning”
oral ---
other ---

* WCH = Weekly Contact Hours
**Module 7**

**Integrated Projects**

**Course**

**Assessment of Development Planning (EIA, SEA, TA)**

<table>
<thead>
<tr>
<th>KIT lecture ID</th>
<th>19621</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Relevance</strong></td>
<td>compulsory</td>
</tr>
<tr>
<td><strong>Prerequisites</strong></td>
<td>Bachelor</td>
</tr>
<tr>
<td><strong>Term(s)</strong></td>
<td>3rd term (winter)</td>
</tr>
<tr>
<td><strong>Language</strong></td>
<td>English</td>
</tr>
<tr>
<td><strong>Training mode</strong></td>
<td>Lecture, 2 WCH *</td>
</tr>
<tr>
<td><strong>Workload</strong></td>
<td>3.0 CP $\Rightarrow$ 90.0 h</td>
</tr>
</tbody>
</table>

**Workload specification**

<table>
<thead>
<tr>
<th><strong>LECTURE PHASE</strong></th>
<th>Contact (based on 2 WCH) 21.0 h</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self instruction</strong></td>
<td>42.0 h</td>
</tr>
<tr>
<td><strong>EXAM PHASE</strong></td>
<td>Self instruction 27.0 h</td>
</tr>
</tbody>
</table>

**Contact**

charlotte.kaempf@kit.edu

**Lecturer(s)**

KÄMPF, Dr.rer.nat. Charlotte; IWG-WK

**Course topic**

Differences in project assessment depending on policy frame work (EU vs. U.S.A, developing countries vs. transition countries).

Recommended background knowledge planning procedures.

**Learning outcomes**

**Disciplinary knowledge**

- concepts, theories & definitions
  - environmental management in general (introductory historical overview); from nature preservation to strategic environmental assessment and social impact assessment, decision theory (cultural/ bounded rationality, dilemma situations).
- subject matter (factual data, examples)
  - governmental framework: laws, policies and institutional arrangements; public participation.
- methods & procedures
  - impact assessment: matrices, GIS-supported approaches, multi-criteria-decision methods; EIA project management: compensation, mitigation, monitoring, auditing.

**Professional skills**

To handle legal regulations for the anticipated impact of development concepts and the environment (ecosystems, socio-economic domain, and public sphere) on the national and supranational level.

**Personal competence**

To contribute to decision making steps with excellent communication skills among involved parties. To contribute as professionals to the realization of national and supranational development goals through EIA processes.

**Assessment specification**

written ---
oral ---
other report + pres. = partial module exam “Planning of Dev. Cooperation” (2,500 words) together with LV Project Planning

*WCH = Weekly Contact Hours*
Module 7
Integrated Projects

Course

Module 7
Integrated Projects

Project Planning

<table>
<thead>
<tr>
<th>KIT lecture ID</th>
<th>Relevance</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>196XX</td>
<td>compulsory</td>
<td>Bachelor, German proficiency (B1 level acc. CEFR)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Term(s)</th>
<th>Language</th>
<th>Training mode</th>
<th>Workload specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd term (winter)</td>
<td>English / German</td>
<td>Seminar, 2 WCH *</td>
<td>LECTURE PHASE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Contact (based on 2 WCH)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Team work</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXAM PHASE</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group report</td>
<td><a href="mailto:stephan.fuchs@kit.edu">stephan.fuchs@kit.edu</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lecturer(s)</th>
<th>Course topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUCHS, Dr.-Ing. Stephan</td>
<td>The complexity of planning processes interweaving policy makers, engineers, planners, and local stakeholders.</td>
</tr>
</tbody>
</table>

Recommended background knowledge
Fundamentals of applied mathematics, mechanics, economics.

Learning outcomes
- **Disciplinary knowledge**
  - concepts, theories & definitions
    planning processes for sustainable development (context: local, regional frame conditions), interdisciplinary approach, transdisciplinary approach.
  - subject matter (factual data, examples)
    guidelines, laws and policies of site development and environment protection.
  - methods & procedures
    real and specific planning assignment; to identify the given problems and conflicts and to develop an approach to an integrated solution; Gantt charts.
  - critical awareness of

- **Professional skills**
  To identify resulting problems, point out appropriate solutions. To evaluate co-operatively planning alternatives and to define an integrated solution to the given task. To handle the interrelation between a project’s objective and potential solutions whose impact may extend far beyond the delineation of the (original) planning area.

- **Personal competence**
  To organize an interdisciplinary team, time management for teams, evaluation of various solution approaches. Documentation of planning variants in maps and reports, presentation at different stages of the work process.

Assessment specification
- written ---
- oral ---
- other report+ pres. = partial module exam "Planning of Dev. Cooperation" (2.500 words) together with LV Assessment of Dev. Planning

* WCH = Weekly Contact Hours