

DEPARTMENT OF CIVIL ENGINEERING
40

Course Details				
Code	Academic Year			Semester
BAU462	4			Fall-Spring
Title	T	A	L	ECTS
Introduction to Flood Protection and Management	3	2	-	6
Language	German			
Level	Undergraduate	✓	Graduate	Postgraduate
Department / Program	Civil Engineering			
Forms of Teaching and Learning	Formal			
Course Type	Compulsory		Elective	✓
Objectives	The course aims to provide theoretical and applied knowledge about estimation, analysis and protection methods for floods and the principles and planning of flood management.			
Content	Basics of disasters and disaster management. River hydraulics river morphology. Floods, types and effects. Global and national flood disasters. Principles of flood management. Flood hydrology. Flood discharge prediction. Hydrological models. Numerical models. Structural and non-structural flood control elements. Flood vulnerability maps and flood management plans. Response and recovery operations in floods.			
Prerequisites	Fluid Mechanics			
Coordinator				
Lecturer(s)				
Assistant(s)				
Work Placement				
Recommended or Required Reading				
Books / Lecture Notes				
Other Sources				
Additional Course Material				
Documents				
Assignments				
Exams				
Course Composition				
Mathematics und Basic Sciences				%
Engineering	40			%
Engineering Design	40			%

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Social Sciences		%
Educational Sciences		%
Natural Sciences	20	%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	2	40
Quiz		
Assignments	4	30
Attendance		
Recitations		
Projects		
Final Exam	1	40
Total		100

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	3	42
Self-Study	14	3	42
Assignments	4	13	52
Presentation / Seminar Preparation			
Midterm Exam	1	2	2
Recitations	14	2	28
Laboratory			
Projects			
Final Exam	1	2	2
Total Work Load			168
ECTS Points (Total Work Load / Hour)			6

Learning Outcomes

1	Ability to define disasters, their types and disaster management cycle
2	Ability to define the physical properties of a river and make related calculations
3	Ability to describe fluid bed development and related processes
4	Awareness of flood disasters and their effects in global and national scale
5	Ability to use hydrological tools in flood routing and related calculations
6	Ability to estimate design flood discharges by using statistical analysis

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7	Ability to select between various types of structural or non-structural flood control structures for a given river section
8	Ability to read and understand flood vulnerability maps and flood management plans
9	
10	
11	
12	

Weekly Content

1	Definitions: Disasters, meteorological disasters and principles of disaster management
2	Rivers hydraulics
3	River morphology
4	Floods: Definitions, classification, causes and effects; global and national large flood disasters.
5	Principles of flood management
6	Flood hydrology
7	Flood discharges and prediction methods
8	Interm exam
9	Tools in hydraulic modeling: Hydrograph models
10	Tools in hydraulic modeling: One-dimensional models
11	Tools in hydraulic modeling: Two-dimensional models
12	Flood control structures
13	Non-structural countermeasures in flood control
14	Flood management: Flood vulnerability maps and flood management plans
15	Response and recovery operations in flood management

Contribution of Learning Outcomes to Program Objectives (1-5)

	P1	P2	P3	P4	P5	P6	P7
1	1	4	3	5	4	2	1
2	5	5	1	4	1	4	1
3	1	1	1	5	1	5	1
4	1	4	1	5	1	1	1
5	5	5	1	1	1	3	1
6	5	3	1	1	1	5	1
7	5	5	1	5	1	1	1
8	1	1	3	5	4	1	1
9							
10							
11							

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Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High						
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