**FACULTY:** Civil Engineering and Architecture  
**CLASS TYPE:** Laboratory  
**NUMBER OF HOURS:** 30  
**ECTS:** 3  
**SEMESTER:** Summer  
**CLASS LEVEL:** beginner

**LANGUAGE OF INSTRUCTION:** English

**PRELIMINARY REQUIREMENTS:** Technical Drawing – basic level

**CONTENTS:** the most commonly used features of AutoCAD:
- The User Interface
- Tool Locations
- Start, Organize and Save a Drawing
- Control the Drawing Views
- Create and Modify Objects
- Work with 3D Models
- Plot and Publish Drawings

**EFFECTS OF EDUCATION PROCESS:** students are able to produce AutoCAD drawings used in civil engineering

**LITERATURE (OPTIONAL):**

**TEACHING METHODS:** multimedia presentation, personal communication with teacher

**ASSESSMENT METHODS:** drawing exercises

**TEACHER (NAME, EMAIL CONTACT):** dr inż. Ewa Zarzeka-Raczkowska, e.zarzeka-raczkowska@pollub.pl
FACULTY: Civil Engineering and Architecture

CLASS TYPE: Lecture and Project

NUMBER OF HOURS: 45

ECTS: 4

SEMESTER: Summer

CLASS LEVEL: III

LANGUAGE OF INSTRUCTION: English

PRELIMINARY REQUIREMENTS: Concrete and steel structures

CONTENTS:
LECTURES: Bridge classification, Bridge load standards, J. Courbon method, Composite steel-concrete bridge girder,
PRACTICE: Design of composite carrying-deck concerning Eurocode LM1 load

EFFECTS OF EDUCATION PROCESS: Ability to estimate simple bridge carrying-deck load-capacity

LITERATURE: Bridge Engineering Handbook, W.F. Chen, Lian Duan, Wai-Fah Chen

TEACHING METHODS: Lecture from the lectern, Multimedia show, Field exercises

ASSESSMENT METHODS: Students’ activity, Design results, Presentation of the paper, Test results, Presence

TEACHER (NAME, EMAIL CONTACT): dr inż. S. Karaś, s.karas@pollub.pl or equivalent teacher
**FACULTY:** Civil Engineering and Architecture  
**CLASS TYPE:** Lecture and Project  
**NUMBER OF HOURS:** 60  
**ECTS:** 3  
**SEMESTER:** Summer  
**CLASS LEVEL:**  

**LANGUAGE OF INSTRUCTION:** English  
**PRELIMINARY REQUIREMENTS:** matrix analysis, mechanics of materials, intermediate computer skills  
**CONTENTS:** Finite Element Method (FEM) applied to engineering problems, computer modeling of engineering structures  
**EFFECTS OF EDUCATION PROCESS:**  
1) understanding the basics of Finite Element Method for building engineering applications  
2) ability to solve engineering structures (truss, beam, plates) using Autodesk Algor software  
**TEACHING METHODS:**  
1) brief lectures of Finite Element Method  
2) programming FEM algorithms using Mathsoft Mathcad  
3) computer modelling of building structures using Autodesk Algor  
**ASSESSMENT METHODS:** design exercise, presentation of the job including discussion  

**TEACHER (NAME, EMAIL CONTACT):** dr inż. T. Nowicki, t.nowicki@pollub.pl or equivalent teacher
**FACULTY**: Civil Engineering and Architecture  
**CLASS TYPE**: Lecture and Project  
**NUMBER OF HOURS**: 60  
**ECTS**: 6  
**SEMESTER**: Winter

**LANGUAGE OF INSTRUCTION**: English

**PRELIMINARY REQUIREMENTS**: building mechanics

**CONTENTS:**
- Definition and classification of concrete structures
- Physical and mechanical properties of concrete
- Mechanical characteristic of reinforcing steel
- Safety and reliability of concrete structures
- Dimensioning rules for reinforced concrete sections in beams
- Shear design in support zones in beams
- Serviceability limit states

**EFFECTS OF EDUCATION PROCESS:**
- Knowledge of design rules of reinforced concrete structure,
- Knowledge of testing methods of compression strength of concrete, tension strength of concrete and modulus of elasticity


**TEACHING METHODS**: power point presentations, tables and constructional drawings, visit in the laboratory

**ASSESSMENT METHODS**: test and design exercise

**TEACHER (NAME, EMAIL CONTACT)**: dr inż. M. Słowiś, m.slowik@pollub.pl or equivalent teacher
**FACULTY:** Civil Engineering and Architecture  
**CLASS TYPE:** Lecture and Project  
**NUMBER OF HOURS:** 60  
**ECTS:** 3  
**SEMESTER:** Summer  
**CLASS LEVEL:**

<table>
<thead>
<tr>
<th><strong>LANGUAGE OF INSTRUCTION:</strong> English</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PRELIMINARY REQUIREMENTS:</strong> Concrete structures I</td>
</tr>
</tbody>
</table>
| **CONTENTS:**  
Lectures: presentations of same types concrete structures: floors, foundations, retaining walls, tanks, prestressed elements  
Project exercise: design of reinforced concrete column |
| **EFFECTS OF EDUCATION PROCESS:**  
Lectures: student distinguishes different types of concrete structures and can describe their characteristics  
Project exercise: student is able to calculate and design reinforce concrete column |
| **LITERATURE (OPTIONAL):** |
| **TEACHING METHODS:**  
Lectures: multimedia presentation  
Project exercise: own work of student - each student solves individual exercise |
| **ASSESSMENT METHODS:**  
Consultations by teacher |
| **TEACHER (NAME, EMAIL CONTACT):** dr hab inż. A.Halicka, a.halicka@pollub.pl or equivalent teacher |
**Construction Economics and Estimating – IIST3**

<table>
<thead>
<tr>
<th><strong>FACULTY:</strong></th>
<th>Civil Engineering and Architecture</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CLASS TYPE:</strong></td>
<td>Lecture and Project</td>
</tr>
<tr>
<td><strong>NUMBER OF HOURS:</strong></td>
<td>60</td>
</tr>
<tr>
<td><strong>ECTS:</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>SEMESTER:</strong></td>
<td>Spring</td>
</tr>
<tr>
<td><strong>CLASS LEVEL:</strong></td>
<td>beginner</td>
</tr>
</tbody>
</table>

| **LANGUAGE OF INSTRUCTION:** | English |
| **PRELIMINARY REQUIREMENTS:** | fundamentals of construction |
| **EFFECTS OF EDUCATION PROCESS:** | Students understand basic notions from the field of finance and refer them to a construction enterprise, know methods of estimating cost of construction projects and basic methods of using the estimates in the decision-making process., understand correlation between condition of construction sector and the economy, are introduced to practical aspects of contractor’s estimating and tendering. |

**LITERATURE (OPTIONAL):**
Department of Civil and Environmental Engineering, Carnegie Mellon University, Pittsburgh, 2008 http://pmbook.ce.cmu.edu/

**TEACHING METHODS:** lecture with multimedia presentations, problem solving, discussion, field trips.

**ASSESSMENT METHODS:**
1) financial assessment of a project – individual problem to solve (20%). 2) quantity takeoff for construction works (20%) 3) oral presentation or written essay (20%) 4) field trip report (20%) 5) final test (covers all subjects) (20%)

**TEACHER (NAME, EMAIL CONTACT):** dr inż. A. Czarnigowska, a.czarnigowska@pollub.pl or equivalent teacher
FACULTY OF CIVIL ENGINEERING AND ARCHITECTURE - LUBLIN UNIVERSITY OF TECHNOLOGY PL LUBLIN03

Masonry Construction – IISK3

FACULTY: Civil Engineering and Architecture
CLASS TYPE: Lecture and Project
NUMBER OF HOURS: 30
ECTS: 2
SEMESTER: Summer
CLASS LEVEL:

LANGUAGE OF INSTRUCTION: English

PRELIMINARY REQUIREMENTS: Building materials, Structural mechanics

CONTENTS: Masonry materials (mortars, grouts, clay bricks, glass blocks, concrete masonry units, calcium silicate bricks, natural stones), performance characteristics (strengths, thermal and fire resistance), construction procedures (unit bonding and coursing, grouting), single-wythe and multi-wythe walls, masonry anchors and lintels, design procedures

EFFECTS OF EDUCATION PROCESS: Knowledge of loadbearing brickwork design methods

LITERATURE (OPTIONAL): C. Beall, R. Jaffe – Concrete and Masonry Databook, McGraw-Hill 2003,

TEACHING METHODS: Lectures with multimedia presentations, calculations of masonry structure examples

ASSESSMENT METHODS: Written exam

TEACHER (NAME, EMAIL CONTACT): dr inż. M. Grabias, m.grabias@pollub.pl or equivalent teacher
<table>
<thead>
<tr>
<th><strong>FACULTY:</strong> Civil Engineering and Architecture</th>
<th><strong>CLASS TYPE:</strong> Lecture and Project</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NUMBER OF HOURS:</strong> 75</td>
<td><strong>ECTS:</strong> 5</td>
</tr>
<tr>
<td><strong>SEMESTER:</strong> Summer</td>
<td><strong>CLASS LEVEL:</strong> beginner</td>
</tr>
</tbody>
</table>

**LANGUAGE OF INSTRUCTION:** English

**PRELIMINARY REQUIREMENTS:** General mechanics. Knowledge and ability to solve statically determined structures (beams, frames, trusses).

**CONTENTS:**
Lectures – influence lines, calculations of general displacements based on Maxwell-Mohr equation, force method of solving statically indeterminate structures.
Projects – influence lines (beam and truss), calculations of general displacements (beam or frame and truss), force method (beam and frame).

**EFFECTS OF EDUCATION PROCESS:**
Lectures – students are able to recognize different selected problems in the field of structural mechanics and understand the methods of solving these problems.
Projects – students are able to calculate different structures with use of different methods and correctly interpret results.

**LITERATURE (OPTIONAL):**

**TEACHING METHODS:**
Lectures – multimedia presentations of the main issues and presentation of solving process on the table.
Projects – students solve their own exercises.

**ASSESSMENT METHODS:**
Final test and evaluation of the correctness and quality of individual exercises.

**TEACHER (NAME, EMAIL CONTACT):** dr inż. T. Lipecki, t.lipecki@pollub.pl or equivalent teacher
### Wooden Engineering Constructions – IISK4

<table>
<thead>
<tr>
<th>FACULTY: Civil Engineering and Architecture</th>
<th>CLASS TYPE: Lecture and Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUMBER OF HOURS: 30</td>
<td>ECTS: 2</td>
</tr>
<tr>
<td>SEMESTER: Summer</td>
<td>CLASS LEVEL: beginner</td>
</tr>
</tbody>
</table>

| LANGUAGE OF INSTRUCTION: English           |
| PRELIMINARY REQUIREMENTS: General mechanics|

| CONTENTS:                                  |
| Lectures – properties of wood, applications of timber, glulam in building structures |
| Projects – designing of the wooden floor beams |

| EFFECTS OF EDUCATION PROCESS:                        |
| Lectures – students are able to use timber in simple building structures |
| Projects – students are able to design and calculate timber beams in the range of ultimate and serviceability limit states |

| LITERATURE (OPTIONAL):                |
| TEACHING METHODS:                    |
| Lectures – multimedia presentations  |
| Projects – presentation of the solving process on the table, calculation exercises made by students |

| ASSESSMENT METHODS:                    |
| Final test and evaluation of the correctness of individual exercises |

| TEACHER (NAME, EMAIL CONTACT): dr inż. J. Szerafin, j.szerafin@pollub.pl or equivalent teacher |