



Tadeusz Kościuszko
Cracow University of Technology



**Chair of Construction
Management**

INTRODUCTION TO DIPLOMA PROFILES

December 7, 2021

CHAIR OF CONSTRUCTION MANAGEMENT L7

Renata Kozik, Ph.D. Eng, Prof. of CUT

Agenda

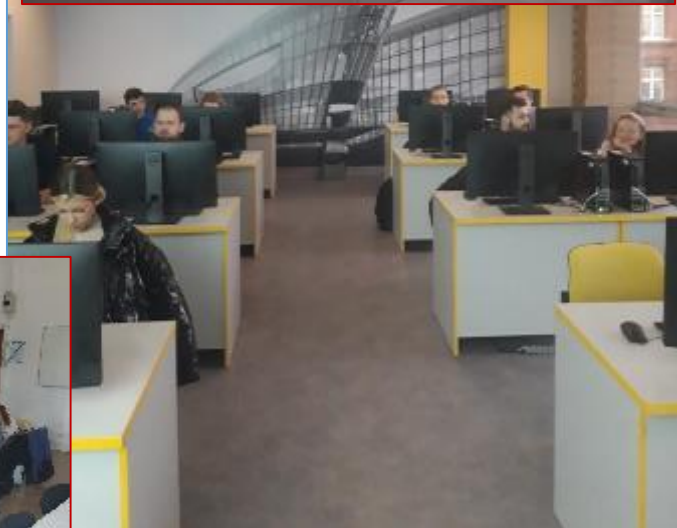
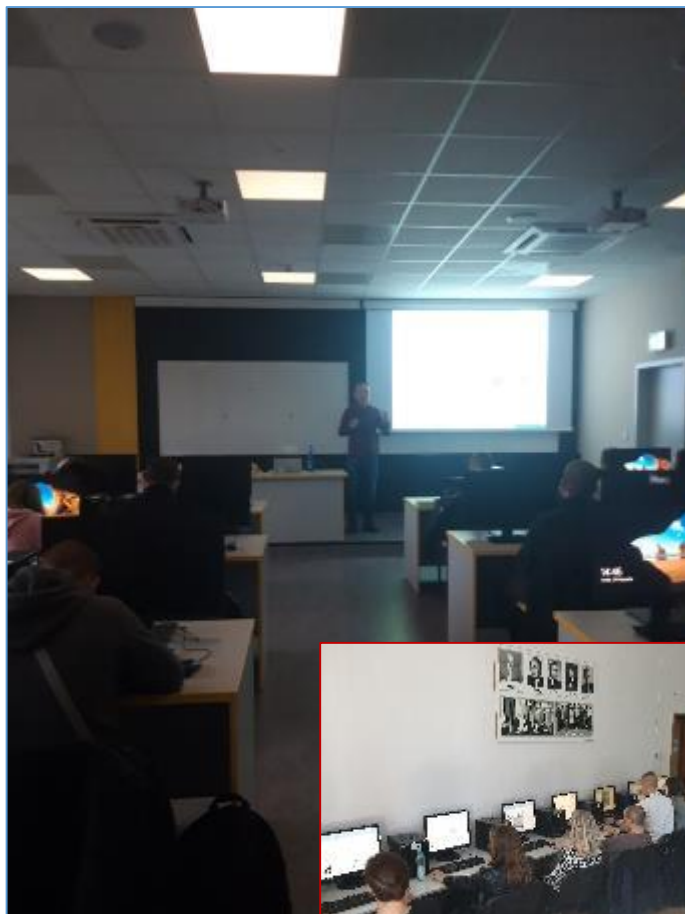
1. About us
2. Diploma profile → Planning and cost analysis
3. Topics of theses
4. Supervisors

CHAIR OF CONSTRUCTION MANAGEMENT

Research and teaching activities

- technology of construction works
- construction management and organization
- construction project management
- management of construction companies
- cost estimation and cost analyses for construction
- construction law

COMPUTER LABORATORIES (modern rooms, modernized rooms and software)



Room **204** GIL

Room **212** WIL

Room **401** WIL

 **BIMestimate**

 **metriCAD**



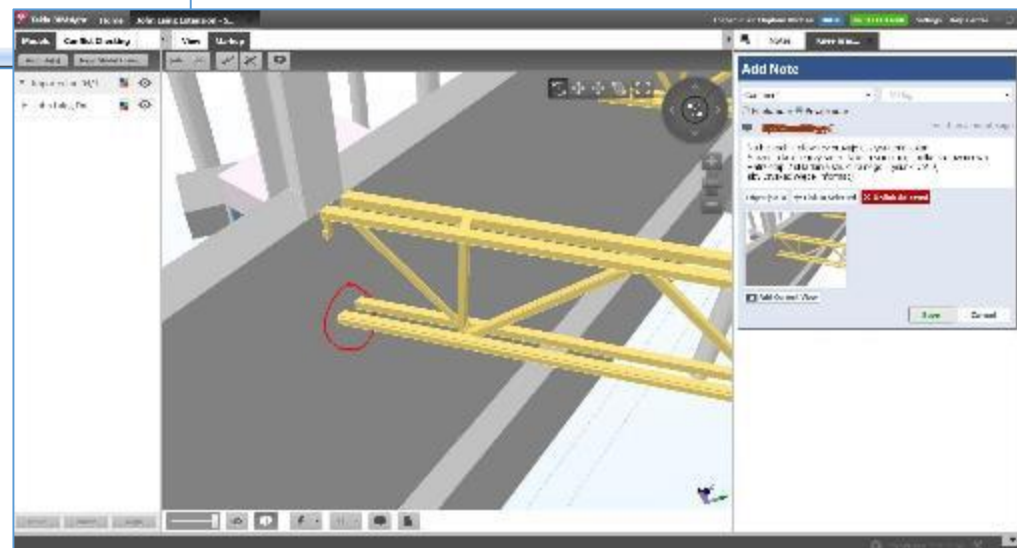
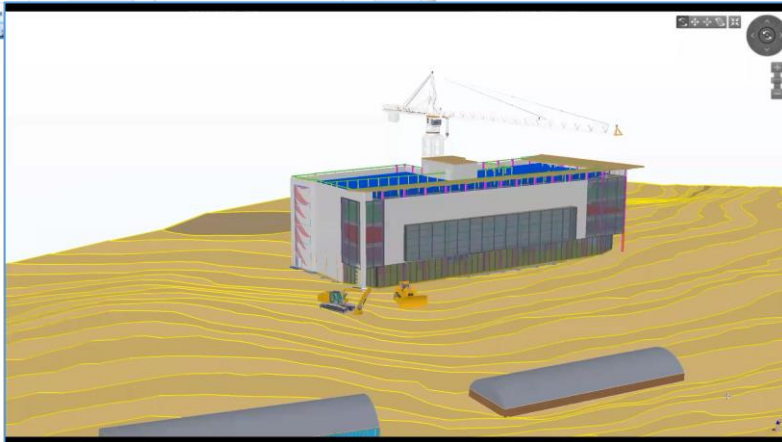
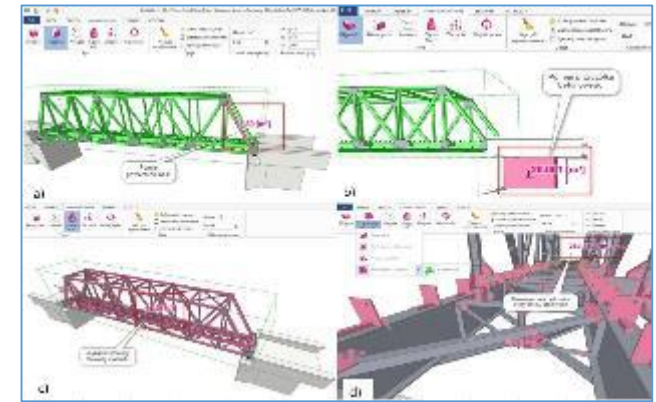
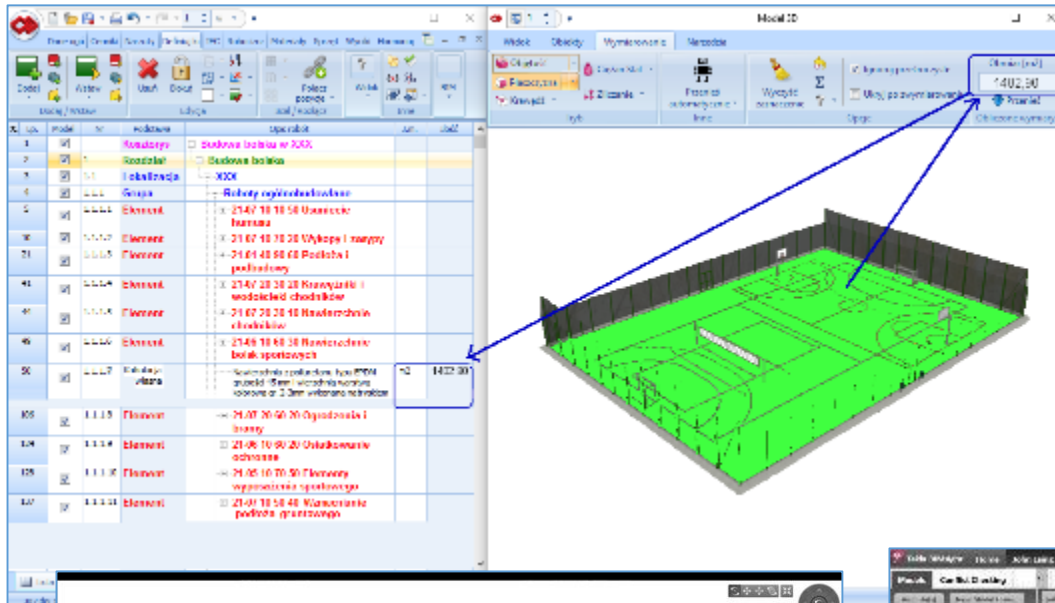
 **BIMvision**

 **Trimble**

 **Tekla**



MODERN TECHNOLOGIES - *cost estimation, organization and construction management*




COOPERATION WITH CONSTRUCTION COMPANIES

- Datacomp
- Athenasoft
- Erbud
- KNAUF
- FAKRO
- PREFABET
- DAKO
- MAPEI
- SIPUR
- PERI POLSKA
- Strabag
- Pekabex
- Budimex



OUR COURSES (FIRST-CYCLE STUDIES)

 **A** – General subjects

 **B** – Basic subjects

 **C** – **Major subjects**

Technology, mechanisation and automatisisation of construction works

Cost Estimation

Introduction to BIM

Construction Supervision, Occupational Safety and Health

 **D** – **Subject related to Diploma Projects**

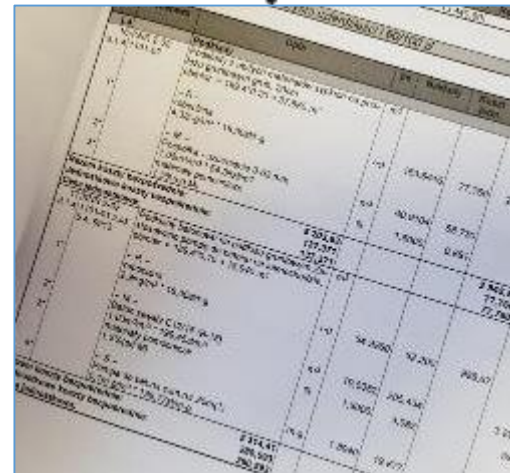
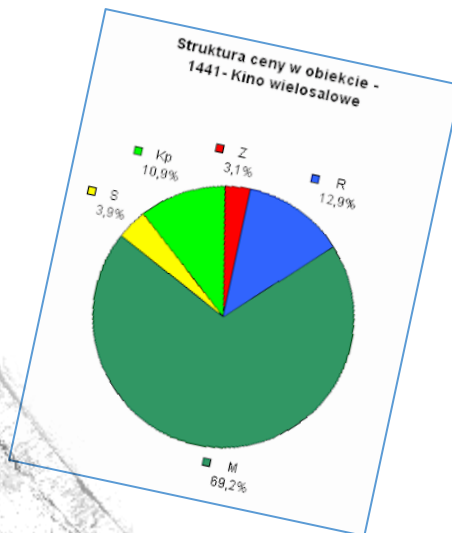
Economics in Civil Engineering

Elements of Management in Civil Engineering

Subjects related to Diploma Projects

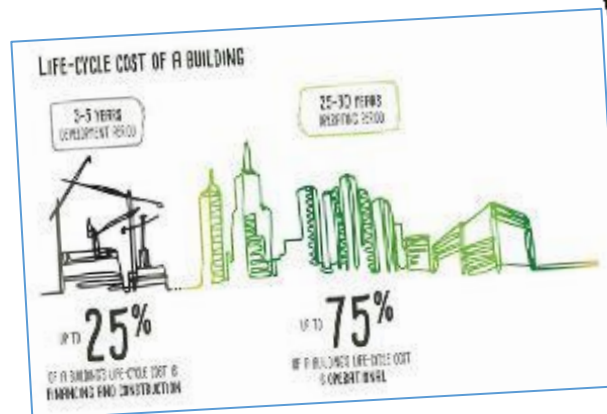
Diploma seminar - Planning and Cost Analysis

DIPLOMA PROFILE - PLANNING AND COST ANALYSIS



COURSES (Semester - 6 and 7)

Courses name	Semester	Hours	ECTS	L	D	S
Tender and cost documentation for construction project	6	45	3	15	30	0
Life cycle cost of building	7	45	6	15	30	0
Diploma seminar	7	15	0	0	0	15



TENDER AND COST DOCUMENTATION FOR CONSTRUCTION PROJECT

LECTURES

	Lectures	
L1	Project delivery methods of construction projects	2
L2	Tender specification	2
L3	Design documentation in the design and build system	2
L4	Design documentation in a traditional system	2
L5	The budget of the construction. Preliminary cost studies	2
L6	Cost estimations in design and build system	2
L7	Cost estimations in the traditional system	3

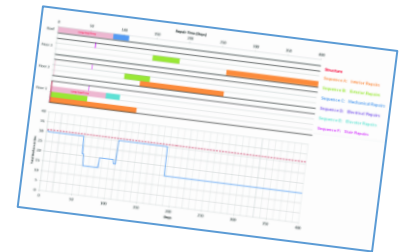
TENDER AND COST DOCUMENTATION FOR CONSTRUCTION PROJECT

DESIGN EXERCISES

	Design exercises	
D1	Tender specification - project	6
D2	Functional-utility program - project	8
D3	Performing a cost estimate in the form of PKPP + PKRB based on a functional and utility program	8
D4	Preparation of the cost estimate for selected construction works based on the design documentation	8

LIFE CYCLE COST OF BUILDING

LECTURES



	Lectures	
L1	The stages and phases of the building's life cycle and their costs	4
L2	Methods of the life cycle cost of a building calculation	3
L3	Costs of preparing building design documentation	2
L4	Costs incurred during the building operation phase	2
L5	Renovation costs	2
L6	Life cycle costing problems	3

LIFE CYCLE COST OF BUILDING

DESIGN EXERCISES

	Design exercises	
D1	Determining the life cycle costs of a building using various methods calculation	10
D2	Calculation of building design documentation costs	5
D3	Calculation of building renovation costs	10
D4	Calculation of building demolition works costs	5

DIPLOMA SEMINAR - PLANNING AND COST ANALYSIS

	SEMINAR	
S1	Discussion on the purpose of the seminar. Overview of selected or proposed theses topics. Initial remarks on the topics of theses	2
S2	Presentation of the general requirements for the theses (volume, division of theses, contents, selection and use of sources). Presentation of the formal requirements for theses (writing technique, language, drawings and tables descriptions, citations and references, bibliography)	4
S3	Presentation of the rules and criteria of reviewing theses. Discussion about graduation exam and requirements for theses presentations. Information about the demanded scope and form of theses presentations	2
S4	Presentations of the theses conceptions prepared by the students (presentations, discussions, comments, opinions, remarks).	7



BACHELOR OF SCIENCE – THESIS TOPICS



Tadeusz Kościuszko
Cracow University of Technology



**Department
of Construction Management**

master / bachelor of science thesis

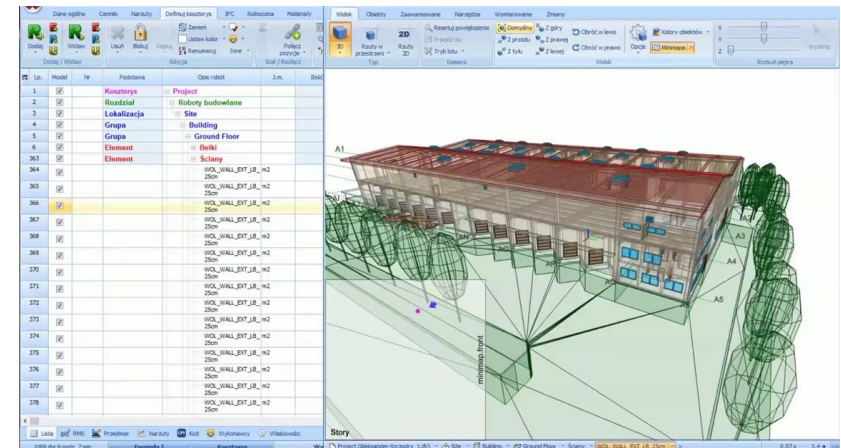
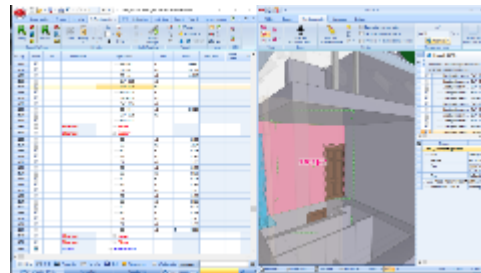
Topic

Author
(first and last name)

Supervisor: supervisor first and last name, degree

Cost estimation

- "Planned and real costs of renovation works - a case study,,
- "Methods of indirect costs estimating in the cost calculation of a construction contractor - theory and practice ,,
- "Costs of demolition works and costs of utilization of construction waste - analysis of selected examples,,
- "Methods of estimating the costs of construction works on a selected example,,
- "Construction budgeting - case study ,,
- "Formal and substantive assessment of the bill of quantities as a component of the design documentation, constituting an element of the description of the subject of the public procurement for construction works – case study.



Time-cost analysis of construction works

- "Time and cost of the selected building object in terms of its technological and material solutions,,
- "Planned and real date of implementation of the construction investment,,
- "Time-cost analysis of selected construction works,,
- "Time-cost analysis of construction works on a selected example"

Life cycle costs of a building object

- "Costs of the life cycle of the selected building object,,
- "Costs of maintaining the selected building object,,
- „Operating costs for the selected building object"

Efficiency of construction works

- "Effectiveness of performing selected construction works,,
- "Time efficiency analysis in construction works on a selected example"

Modern materials and technologies – technical, technological and cost analyses

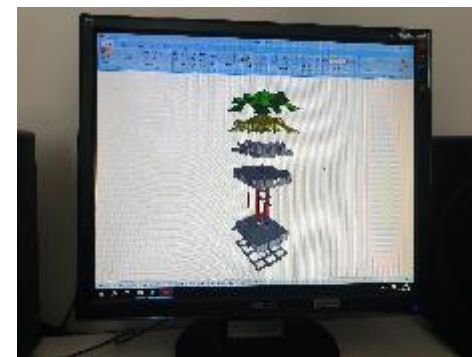
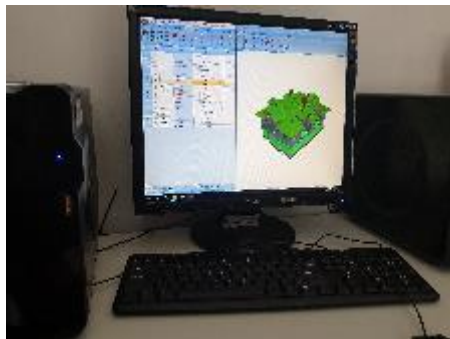
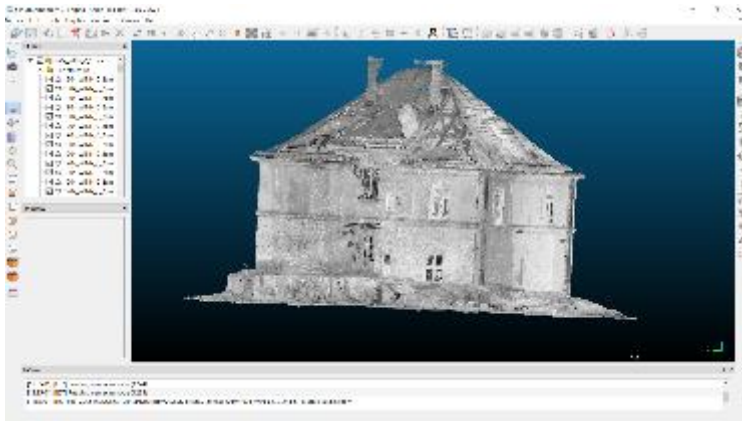
- "Technical and cost analysis of materials and technologies related to the implementation of individual building elements,,
- "Technical and economic analysis of selected single-family housing systems,,
- "Technical and economic analysis of selected construction solutions in the revalorization of buildings,,
- "Technical and economic analysis of selected material and construction solutions for sports floors,,
- "Technical and cost analysis of selected construction works,,
- "Technical and cost analysis of technological transport at the construction site on a selected example,,
- "Technical and cost analysis of deep excavation protection on a selected example ,,
- "Materials and methods of wall insulation with transparent insulation used in Poland and around the world

Multi-criteria analysis

- "Multi-criteria analysis of the implementation of selected building elements,,
- "Multi-criteria analysis of selected modern technological solutions,,
- "Multi-criteria analysis of formwork and scaffolding systems ,,

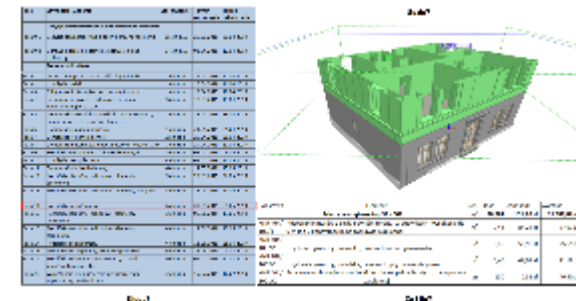
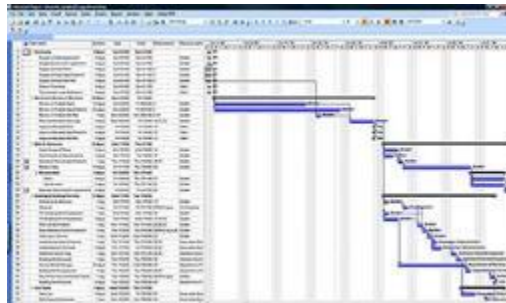
BIM technology in the management of construction projects

- "Simulation of the construction process based on the 4D model,,
- "Planning of construction costs (including based on the BIM model}},
- "Collision detection in BIM models using computer tools on the example of BIM Vision and Navisworks,,
- "Cost analysis on basis of BIM model on the example of logistic hall ,,



Technology and organization of construction works

- "Renovation and modernization of a selected building object - a case study,,
- "Renovation or construction of a building object - technology and organization of construction on a selected example,,
- "Thermal modernization project of a building on the example of ...,,
- "Identification of design, technological and organizational problems on selected examples of construction investments,,
- "Construction planning with a deterministic approach to the completion time of construction works on the example of selected construction investments,,
- „Project of technology and organization of construction works on a selected example”



Development of the construction site

- "Principles of construction site development (optimization of the layout of temporary roads at the construction site, simulation models of building materials storages)"
- "Optimization of the development of the construction site on a specific example,"
- "Dynamic approach to construction - characteristics of changes in the development of the construction site based on selected examples of construction investments,"
- " Organization of construction site with limited land access. Case study „



Health and safety of construction works. Occupational risk assessment in construction

- "Modern solutions in the field of health and safety at the construction site,,
- " Cost analysis of various health and safety measures at the construction site,,
- " Safety and health protection plan (BIOZ) - legal regulations and the development and application in practice - a case study,,
- " Occupational risk assessment in construction. Case study ,,
- " Design of the assembly of the structure with the development of the instructions for safe performance of works (IBWR) on the example of the implementation of a selected construction investment ,,
- " Possibilities of preventing hazards on the construction site in terms of the applicable health and safety ,, regulations and standards adopted in selected construction companies ,,

Construction delays

- "The effects of delays in the implementation of the construction project,,
- Analysis of the causes of delays on the example of a selected construction project,,

Analysis of design / execution errors

- "The impact of design errors on the implementation of construction works"
- "Analysis of the causes of execution errors,,

Productivity of construction workers

- "Study of the productivity of construction workers,,

Revalorization of historic buildings

- Technological and organizational problems in the revalorization of a building object - a case study „
- Technical and economic analysis of selected construction solutions in the revalorization of buildings „.

Assessment of the technical condition of a building object

- "Assessment of the technical condition of a building on the example of ...„
- The degree of technical wear of the selected building - a case study „
- Methods of assessing the degree of technical wear of buildings and their practical use „

Bio-building. Buildings made of natural materials

- "Technology and organization of the implementation of a green roof,,
- " Buildings made of biobased building materials_- technical and cost analysis ,,

Recycling of building materials

- "Logistics of the recovery of construction materials as part of the renovation of a building object - a case study,,
- " Costs of demolition works and costs of utilization of construction waste - analysis of selected examples ,,

Construction contracts, including FIDIC conditions

- "Disputes and claims of the parties in a construction contract implemented under FIDIC conditions,,
- "The monthly payment procedure in the construction contract in terms of FIDIC - General and Special Conditions ,,



Public procurement for construction works, Tender procedures

- "Awarding public contracts for construction works - theory and practice,,
- "Sustainable public procurement for construction works - a case study,,
- "Principles of efficiency in public procurement for construction works - a case study,,
- " Preparation of a tender bid for construction works - a case study ,,
- " Analysis of tender procedures in the construction industry in Poland and the selected country,,
- " Tender procedure in construction - theory and practice,,
- "Organization of the tender for construction works on the example of a selected commune ,,

Building law

- "Analysis of administrative and legal procedures in construction in Poland and the selected country,,
- " Administrative procedures preceding the commencement of construction works on a selected example (historic buildings, investments with a significant impact on the environment) ,,

Network analysis

- "Network analysis of a construction project on a selected example"
- "Planning employment in construction projects using the network model"

Partnering in construction projects

- "Partnering / alliances between participants of construction projects"

Construction company

- " SWOT analysis of an innovative construction company „
- "Development of the sector of small and medium-sized enterprises in the construction industry„
- "The operating costs of construction companies on a selected example„
- "Development of developers companies on a selected example „

We are also open to student's suggestions !!!

Supervisors

1. Michał Juszczak, Ph.D., Eng.
2. Renata Kozik, Ph.D. Eng, Prof. of CUT
3. Agnieszka Leśniak, Ph.D., D.Sc., Eng., Prof. of CUT
4. Jarosław Malara, Ph.D., Eng.
5. Edyta Plebankiewicz, Ph.D., D.Sc., Eng., Professor
6. Bartłomiej Szewczyk, Ph.D., Eng.
7. Damian Wieczorek, Ph.D., Eng.
8. Krzysztof Zima, Ph.D., D.Sc., Eng., Prof. of CUT

Supervisors

Edyta Plebankiewicz
Ph.D., D.Sc., Eng., Professor

Technical, technological and cost analysis
of materials and technologies

Cost estimation of construction works

Life cycle costs of a building

Time-cost analysis of construction works

Public procurement law

Multi-criteria analysis

Supervisors

Renata Kozik
Ph.D. Eng, Prof. of CUT

Technical, technological and cost analysis
of materials and technologies

Construction law

Public procurement law

Health and safety at the building site and
occupational risk assessment

Planning and organization of construction
projects

Multi-criteria analysis

Supervisors

Agnieszka Leśniak
Ph.D., D.Sc., Eng., Prof. of CUT

Technical, technological and cost analysis
of materials and technologies

Cost estimation of construction works

FIDIC contracts

Partnering in construction projects

Multi-criteria analysis

Efficiency of construction works

Supervisors

Krzysztof Zima
Ph.D., D.Sc., Eng., Prof. of CUT

Technical, technological and cost analysis
of materials and technologies

Cost estimation of construction works

BIM technology

Planning and organization of construction
projects

Multi-criteria analysis

Risk in construction

Supervisors

Michał Juszczyk
Ph.D., Eng.

Technical, technological and cost analysis
of materials and technologies

Cost estimation of construction works

BIM technology

Planning and organization of construction
projects

Multi-criteria analysis

Effectiveness of construction works

Supervisors

Jarosław Malara
Ph.D., Eng.

Technical, technological and cost analysis
of materials and technologies

Disruptions in the implementation
of a construction

Analysis of design / execution errors

Technology and organization
of construction works

Productivity of construction workers

Planning and organization of construction
projects

Supervisors

Bartłomiej Szewczyk
Ph.D., Eng.

Technical, technological and cost analysis
of materials and technologies

Partnering in construction projects

Multi-criteria analysis

Planning and organization of construction
projects

Construction market research

Network analysis

Supervisors

Damian Wieczorek
Ph.D., Eng.

Technical, technological and cost analysis of materials and technologies

Planning and organization of construction projects

Cost estimation of construction works

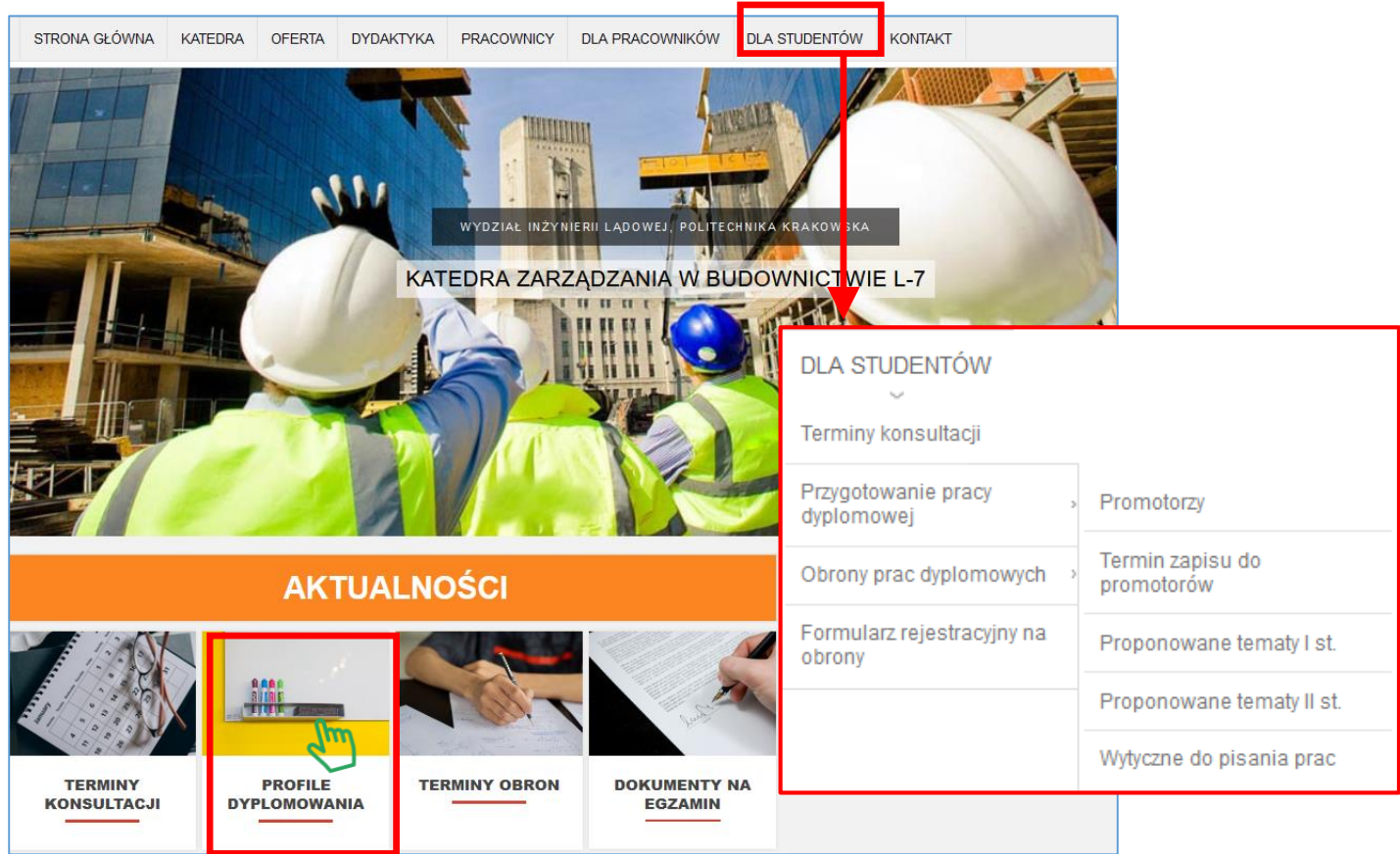
Life cycle costs of a building object

BIM technology

Risk in construction

All information about the profiles and the diploma process can be found on the website:

www.L7.pk.edu.pl - tab "FOR STUDENTS"



The screenshot shows the website interface for the Faculty of Civil Engineering, Krakow University of Technology. The navigation menu at the top includes: STRONA GŁÓWNA, KATEDRA, OFERTA, DYDAKTYKA, PRACOWNICY, DLA PRACOWNIKÓW, **DLA STUDENTÓW** (highlighted with a red box and a green hand icon), and KONTAKT. Below the menu is a large banner image of construction workers in hard hats and safety vests, with the text "WYDZIAŁ INŻYNIERII LĄDOWEJ, POLITECHNIKA KRAKOWSKA" and "KATEDRA ZARZĄDZANIA W BUDOWNICTWIE L-7". Below the banner is an orange bar with the text "AKTUALNOŚCI". At the bottom, there are four tiles: "TERMINY KONSULTACJI", "PROFILE DYPLOMOWANIA" (highlighted with a red box and a green hand icon), "TERMINY OBRON", and "DOKUMENTY NA EGZAMIN". On the right side, a red box highlights the "DLA STUDENTÓW" section, which contains a dropdown menu with the following items: "Terminy konsultacji", "Przygotowanie pracy dyplomowej", "Obrony prac dyplomowych", "Formularz rejestracyjny na obrony", "Promotorzy", "Termin zapisu do promotorów", "Proponowane tematy I st.", "Proponowane tematy II st.", and "Wytyczne do pisania prac".



THANK YOU FOR YOUR ATTENTION

YOU ARE WELCOME TO CHOOSE

DIPLOMA PROFILE

IN THE L-7 CHAIR

questions



questions

If you have any
questions,
I will be happy to
answer them