



**Cracow University  
of Technology**

## **Offer of studies and courses in English for Academic Year 2015/2016**

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## Cracow University of Technology - general description:

**OFFICIAL NAME IN POLISH:** POLITECHNIKA KRAKOWSKA

**Official name in English:** Cracow University of Technology (CUT)

**Address:** 24 Warszawska Street, 31-155 Cracow, Poland

**Webpage:** [www.pk.edu.pl](http://www.pk.edu.pl) and [International Relations Offices](#)

**Faculties:** Faculty of Architecture

Faculty of Physics, Mathematics and Computer Science

Faculty of Electrical and Computer Engineering

Faculty of Civil Engineering

Faculty of Environmental Engineering

Faculty of Chemical Engineering and Technology

Faculty of Mechanical Engineering

Cracow University of Technology has been successfully educating engineers for over 60 years. Total number of alumni that graduated from our University exceeds 62000. In May 2008 Cracow University of Technology was rated by the magazine Newsweek Poland as the best university in Poland according to employers who eagerly hire our alumni due to their high qualifications. In October 2010 our prestige was confirmed by honorary title „the University friendly for employers”. Such a recognition proves that Cracow University of Technology offers attractive, high quality and tailor-made programmes of study responding to market needs. Our alumni find jobs at public and private companies, national and international enterprises, national and regional government administration, in design offices and also at universities and research institutes. Our Faculty of Architecture earned accreditation of the Royal Institute of British Architects, as well as it was claimed to be the best Faculty of Architecture in Poland . The Faculty of Civil Engineering educates future engineers at the top level and The Faculty of Mechanical Engineering is the second largest faculty of its kind in Poland. Different faculty members cooperate with the European Commission serving as experts and also with various companies and research institutes around the world. Cracow University of Technology signed 87 bilateral agreements and 265 Erasmus agreements that allow its students to experience studies abroad not only in countries of the European Union but also in the USA, Canada, Mexico and places as distant as Australia, Japan, Taiwan, Singapore or South Korea. International students are very welcome to our university.

## Academic calendar:

**Fall Semester:** October 1 - end of January; **Spring Semester:** mid-February – end of June;

**Exam Sessions:** first two weeks of February and last two weeks of June

## Registration procedure:

The ***Pole's Card (Karta Polaka)*** holders and **EU citizens** can apply for studies:

- according to the rules other than applicable to Polish citizens (studies on a tuition fee basis) - recruitment is conducted by International Relations office, please refer to our website and send all necessary documents to [adebska@pk.edu.pl](mailto:adebska@pk.edu.pl); [www.en.bwm.pk.edu.pl](http://www.en.bwm.pk.edu.pl)
- ***according to the rules applicable to Polish citizens (tuition fee is waived)*** - recruitment is conducted by DSS at CUT, please refer to website: [rekrutacja.pk.edu.pl](http://rekrutacja.pk.edu.pl) and contact: [rekrutacja@pk.edu.pl](mailto:rekrutacja@pk.edu.pl); phone number: +48 12 632 86 44

## Health insurance:

Basic medical care is available at a reduced charge at the CUT Medical Centre in Warszawska Street. Responsibility, full insurance lies with the student.

## Accommodation:

The Cracow University of Technology has at its disposal about 2200 places in 4 student dormitories in Cracow.

## Sport facilities:

The Physical Education and Recreational Centre at the Cracow University of Technology has its own sports facilities: two gyms, three body building clubs, an aerobics room, sport fields and tennis courts. Besides, the Centre has access to a skating rink and a swimming pool.

## Leisure activities:

Students of CUT have a number of possibilities of spending their leisure time actively. The facilities within the university are: Students' Sport Association - University Club, Student Cultural Centre "Kwadrat", "Cantata" Academic Choir of the Cracow University of Technology, "Bawinek" Student Dancing Club, "Gil" Gallery, and "1 Kanonicza Street" Art Gallery and Dependent Theatre.

## City description:

Cracow is situated about 190 miles south of Warsaw, the capital of Poland, and about 70 miles north of the major skiing resort of Poland - Zakopane. Cracow is the city of culture and tradition, with numerous historic monuments. Its historic City Centre has been included in the UNESCO World

Heritage List. The wealth of architectural monuments such as Wawel Castle, St. Mary's Basilica and Wit Stwosz Altar, the biggest Market Place (Rynek Główny) in Europe, the Cloth Hall (Sukiennice), works of art, charm of medieval streets, nooks and corners create the unforgettable, unique atmosphere of the Old Town. Cracow is one of the most important cultural cities in Europe with its famous theatres: the Słowacki Theatre and the Stary Theatre and museums such as the National Museum with great collection of Polish paintings, the Czartoryski Museum with The Lady with the Ermine by Leonardo da Vinci, and many others. Cracow is also one of the oldest academic centres in Europe with over 190,000 students studying at twenty six universities and colleges.

## TUITION & FEES FOR NON EU STUDENTS - AY 2015/2016

Studies in English language		Studies in Polish language	
Type	Fee/semester	Type	Fee/semester
BSc (7 semesters)	2000 EUR	BSc (7 semesters)	1500 EUR
MSc (3-4 semesters)	2000 EUR	MSc (3-4 semesters)	1500 EUR

## Diploma studies (BCs, MSc, PhD) - AY 2015/2016

The Cracow University of Technology offers many variants of study. Current educational offer of CUT covers 25 graduate studies of I and II degree among 7 faculties. At 4 faculties studies are available in English language.

**We kindly inform candidates from abroad, who apply for the studies to the rules other than applicable to Polish national\*, that application process (Bachelor programme - AY 2015/2016) has already begun.**

**We would like to remain you that it is obligatory to send required documents (Application Form, Passport and other required documents) on the e-mail: [adebska@pk.edu.pl](mailto:adebska@pk.edu.pl)**

\* Please note that we do not conduct recruitment for candidates who apply for studies to the rules applicable to Polish and EU citizens. Please contact DSS at CUT [rekutacja@pk.edu.pl](mailto:rekutacja@pk.edu.pl) phone number: +48 12 632 86 44 and refer to website: [rekutacja.pk.edu.pl](http://rekutacja.pk.edu.pl)

### **OFFER OF DIPLOMA STUDIES IN English AY 2015/2016**

#### **Faculty of Architecture**

Architecture (MSc) - programme starts in February 2016

#### **Faculty of Physics, Mathematics and Computer Science**

Computer Science (MSc) - programme starts in October 2015

#### **Faculty of Civil Engineering**

Civil Engineering (BSc) - programme starts in October 2015

Civil Engineering (MSc) - programme starts in February 2016

#### **Faculty of Chemical Engineering and Technology**

Chemical Engineering (MSc) - programme starts in February 2016

#### **Faculty of Mechanical Engineering - Mechanics and machine design**

Advanced computational Mechanics (BSc) - regular - programme starts in October 2015

Advanced Computational Mechanics (MSc) - regular - starts in February 2016

Advanced Computational Mechanics (MSc) - for foreign students - starts in February 2016

**More information about study programmes and schedules can be found on our website:**

**[www.en.bwm.pk.edu.pl](http://www.en.bwm.pk.edu.pl)**

## International Exchange students – courses taught in English

Detailed information can be found on our website: [www.en.bwm.pk.edu.pl](http://www.en.bwm.pk.edu.pl)

### FALL SEMESTER

#### Faculty of Architecture - fall

##### **LECTURES**

Contemporary Urban Design Theories

History of Polish Architecture

Urban Revitalization

##### **RESEARCH**

Building Construction Systems (individual research)

Building Surveying (individual research)

Building Structures (individual research)

Cad Techniques I – CAD Modeling

Cad Techniques II – CAD BIM

Ecology And Environmental Protection (seminars)

Preservation of Monuments And Revalorization I (seminars)

Places - non Places (seminars)

Regional Planning

##### **ARTISTIC SUBJECTS**

Photography

Freehand Drawing and Painting

Freehand Drawing - Architectural Perspective Drawings

Sculpture

##### **PROJECTS/ DESIGNING - ARCHITECTURAL & URBAN DESIGN**

[www.en.bwm.pk.edu.pl](http://www.en.bwm.pk.edu.pl)

Architectural Design of Service Buildings – Naturally Shaped Architecture – NSA 1

Architecture Design of Public Buildings - Naturally Shaped Architecture (NSA 4) – Master Degree  
Advanced Design

Architecture and Planning in the Countryside

Design for Conservation

Industrial Architectural Design

Public Use Building Design I (advanced design)

Public Use Building Design II (Master Degree - advanced design)

Residential Buildings I – single family housing\*\*

Residential Buildings II – multifamily housing\*\*

Regional Planning

Spatial Planning\*\*

Special Topics Design\*\*

Urban Design of City Centers

### **LANDSCAPE ARCHITECTURE DESIGN – INTEGRATED DESIGN STUDIOS**

IDS 3 - Urban Public Space (street & square)

IDS 5 - Public Park

IDS 7 - Composition in Open Landscape

\*\* - multiplied classed – different tutors, different problems

### **Faculty of Physics Mathematics and Computer Science - fall**

Parallel and Distributed Programming

Computer Systems Administration

Elements of Artificial Intelligence

Cryptography

Software Engineering



Information Systems in Management  
Object Oriented Programming  
Computer Graphics  
Abstract Algebra  
Applied Statistics for Engineers  
Calculus of Variations  
Combinatorics  
Graph theory  
Introduction to Number Theory  
Logic for Mathematics and Computer Science  
Mathematical Finance  
Operations and production process management for engineers  
Probability and statistics  
Probability theory  
Signal Processing with Applications in Mechanical Engineering  
Stochastic Modeling  
Theoretical Foundations of Computer Science

## **Faculty of Electrical and Computer Engineering - fall**

### **COURSES IN ENGLISH LANGUAGE**

MICROPROCESSORS AND MICROCONTROLLERS

MATLAB PROGRAMMING

Software Engineering

Object Oriented Programming and UML

JAVA PROGRAMMING

POWER ELECTRONICS FOR POWER QUALITY IMPROVEMEN

Object Oriented Programming and UML

Computer Graphics

Data acquisition and methods of signal analysis with LabVIEW

Introduction to database systems, (SQL, Oracle)

Distributed monitoring and control systems (SCADA) Electric Drives Systems and Control

Electrical machines and drives.

Graphical programming in LabVIEW

Methods for monitoring and diagnostics of electrical machines

Microprocessors and Microcontrollers

Modern Web Application Programming with Dynamic Language

Numerical Methods

Power distribution Systems

Power Electronics

Programmable Logic Controllers

Software engineering (UML)

The dynamic of power distribution system

### **COURSES IN GERMAN LANGUAGE**

Grundlagen der Elektrotechnik

Leistungselektronik

Grundlagen der elektrischen Antriebe

Moderne Traktionsantriebe

### **Faculty of Civil Engineering - fall**

Information Technology

Introduction to Civil Engineering

Ecology

Applied Mathematics and Numerical Methods

Descriptive Geometry

Computer Graphics for Engineers

Geodesy

Building Materials

Technology of Concrete

Strength of Materials

Timber Structures

Industrial Structures

Foundations

Concrete Structures

Metal Structures

Energy- efficient Building Systems

Economics and Project Management

Cost Estimation

Company Management and Basics of Law

Introduction to Transportation Planning

Road Design

Rail Road

## **Faculty of Chemical Engineering and Technology - fall**

### **1. Core courses for students specializing in Chemical Engineering**

Process Simulation and Optimization

Process Design

Calculation Methods in Chemical Engineering II

Kinetics of Heterogeneous Processes

Adsorption Process

## **2. Specialty courses: Engineering of Technological Processes**

Modeling of Dispersed Systems

## **3. New or Selectable Optional Courses:\***

Modern Polymeric Materials

Industrial pollution prevention

Environmental impacts of selected renewable energy technologies

\* courses were selected in 2014/2015, but the students' choice may change

## **SUPPLEMENTARY COURSES: ALL SPECIALTIES (FALL AND SPRING SEMESTER):**

English Technical Terminology II - Selected Topics in Advanced Organic Chemistry (fall only)

English Technical Terminology II - Selected Topics in Inorganic Technology (spring and fall)

English Technical Terminology II - Selected Topics in Polymer Chemistry (spring and fall)

English Technical Terminology II - Selected Topics in Cosmetics Chemistry (spring and fall)

English Technical Terminology II - Selected Topics in Oil and Gas Chemistry (spring and fall)

## **OPTIONAL COURSES (selectable)\*:**

Applications of Neural Networks

Basics of Bioengineering (fall semester only)

Basics of Biotechnology

Engineering Graphics

Fluid Flow Processes

Liquids - Molecular Structure and Physicochemical Properties

Novel Media for Chemical Processing

Photovoltaic

Process Control and Industrial Measurements

## **SPRING/ Summer SEMESTER**

Exchange coordinator at FA - Ms. Justyna Tarajko, PhD, [erasmus\\_wa@hotmail.com](mailto:erasmus_wa@hotmail.com)

### **Faculty of Architecture - spring**

#### **LECTURES**

Urban Design Of City Centers – Theory

History of Polish Architecture

Urban Transport - Theory

#### **RESEARCH**

Preservation of Monuments And Revalorization II - Archeotecture

Building Construction Systems (individual research)

Building Surveying (individual research)

Building Structures (individual research)

Cad Techniques I – CAD Modeling

Cad Techniques II – CAD BIM

Eco City Concept (seminars)

#### **ARTISTIC SUBJECTS**

Photography

Freehand Drawing – Painting and Composition

Sculpture

#### **PROJECTS/ DESIGNING ARCHITECTURAL & URBAN DESIGN**

Residential Buildings I – single family housing\*\*

Multi – family housing Design\*\* (advanced design)

Urban Design\*\*

Architectural and Urban Design of Service Complexes II

Architectural Design of Service Buildings – Naturally Shaped Architecture - NSA 2

Design for Conservation

Architecture & Planning in the Countryside

Regional Planning

Special Topics Design\*\* - 6 ECTD

Diploma Design – Final Project\*\* - 20 ECTS

### **LANDSCAPE ARCHITECTURE DESIGN – INTEGRATED DESIGN STUDIOS**

Revalorization of Historic Gardens

Post – industrial areas

Composition in Open Landscape

\*\* - multiplied classed – different tutors, different problems

### **Faculty of Physics Mathematics and Computer Science - spring**

High Performance Computing

C++ Programming

Neural Networks

Discrete Mathematics

Approximation Theory with Applications

Numerical Analysis

Computer Image Processing

Mathlab Programming

Mobile Technologies and Programming

Abstract Algebra

Applied Statistics for Engineers

Calculus of Variations

Combinatorics

Graph theory

Introduction to Number Theory

Logic for Mathematics and Computer Science

Mathematical Finance

Operations and production process management for engineers

Probability and statistics

Probability theory

Signal Processing with Applications in Mechanical Engineering

Stochastic Modelling

Theoretical Foundations of Computer Science

Engineering Ethics

Principles of Macroeconomics (the Current European context)

Macroeconomic Foundations of Economic Policy (Modern Challenges)

### **Faculty of Civil Engineering –s pring**

Geology

Theoretical Mathematics

Computational Methods

Technical Drawing

Structural Mechanics

Fundamentals of Civil Engineering

Masonry Structures

Architecture and Urban Design

Soil Mechanics

Prestressed and Precast Concrete Structures

Bridge Structures

Building Installations and Municipal Systems

Physics of Building Structures

Hydraulics and Hydrology

Hydraulic Engineering

Construction Supervision, Occupational Safety and Health

Technology of Construction Works

Road Surfaces and Technology of Road

Construction

Fire Safety Measures in Civil Engineering

### **Faculty of Environmental Engineering - spring**

Alternative water treatment

Computer methods in river engineering

Computer methods in water and geotechnical engineering

Environmental management

Environmental decision-making

Sewerage real-time Modeling

Introduction to energy analysis

Municipal solid waste management

On-site Wastewater Treatment

Sustainable wastewater treatment

Urban surface runoff control

Water and Wastewater Process Tech

### **Faculty of Chemical Engineering and Technology**



### **Core courses for students specializing in Chemical Engineering**

Process Dynamics  
Modeling of Energy, Mass and Momentum Transport  
Multiphase Flows  
Calculation Methods in Chemical Engineering I  
Non-conventional Methods of Liquid Mixture Separation  
Chemical Technology II

### **Specialty Courses: Engineering of Technological Processes:**

Biochemical Reactors Engineering  
Mixture in Technological Processes  
Pumps and Fans  
High-efficiency Heat and Mass Exchangers

### **SUPPLEMENTARY COURSES: ALL SPECIALTIES**

English Technical Terminology II - Selected Topics in Applied Organic and Plastic Chemistry (spring)  
English Technical Terminology II - Selected Topics in Inorganic Technology (spring and fall)  
English Technical Terminology II - Selected Topics in Polymer Chemistry (spring and fall)  
English Technical Terminology II - Selected Topics in Cosmetics Chemistry (spring and fall)  
English Technical Terminology II - Selected Topics in Oil and Gas Chemistry (spring and fall)

### **OPTIONAL COURSES (selectable)\*:**

Applications of Neural Networks  
Basics of Biotechnology (spring semester only)  
Basics of Biotechnology  
Bioprocess modeling (spring semester only)  
Designing of Functional Molecular Systems (spring semester only)  
Engineering Graphics  
Fluid Flow Processes  
Liquids - Molecular Structure and Physicochemical Properties

Novel Media for Chemical Processing

Photovoltaic

Process Control and Industrial Measurements

\* These courses will be run only if selected by an entire group of students. The optional courses that have been selected, can be added to the Learning Agreement within the first two weeks of each semester.

## **Faculty of Mechanical Engineering**

### **Institute of Applied Mechanics (<http://riad.usk.pk.edu.pl/~m-1/>)**

Biomechanics

Theory of Elasticity

Theory of Plasticity

Constitutive Modeling of Materials

Solid State Mechanics

Linear and Nonlinear Mechanics of Materials

Vector Matrix and Tensor Calculus in Computational Mechanics

Strength of Materials

General Mechanics

Analytical Mechanics

Engineering vibration

Rheology

Introduction to engineering application of the Finite Element Method

Experimental methods in mechanics

High dynamic measurement and data analyzing

Damage mechanics

Mechanics of constitutive modeling

**Institute of Materials Engineering (<http://iim.mech.pk.edu.pl/>)**

Manufacturing of structural components by powder metallurgy technology.

Fundamentals of Materials Science.

Microstructure and mechanical properties of alloys.

Structural aspects of fracture.

Application of Scanning Electron Microscopy in Materials Science.

Small Punch Test (SPT) – unconventional method of testing mechanical properties.

**Institute of Machine Design (<http://graf.mech.pk.edu.pl/>)**

Theory and engineering application of FEM

Mechanics of composite materials

Hydraulic and pneumatic drive and control system

Nanostructures and nanocomposites

Plastics and composites

Technical drawing and AutoCad

Machine design

**Institute of Automobiles and Internal Combustion Engines (<http://riad.usk.pk.edu.pl/~m-4/>)**

Optimization of car chassis

Combustion engines

Automotive Structures

**Institute of Production Engineering (<http://m6.mech.pk.edu.pl/>)**

Additive Manufacturing

Application of Internet Technologies in Manufacturing Control

CNC machine tool programming with CAD/CAM system

Fundamentals of machining

Industrial robots

Interpersonal communication

Manufacturing process planning and organization with PLM

Modern trends in machining

New developments in manufacturing technology

Production and Operation Management

Project management

Simulation and CNC technology

Surface geometric structure - measurement and analysis

Unconventional and Hybrid Manufacturing Processes

Virtual manufacturing with DELMIA

Work safety and ergonomics

**Institute of Computing Science (<http://m7.mech.pk.edu.pl/>)**

Computer Graphics

Computation Method Rusing Maple

Fundamentals C++ and Java

Computer networks

CAD Desing

Image Processing

**Institute of Rail Vehicles (<http://m8.mech.pk.edu.pl/>)**

Inventories and Warehousing

Regional and International Transport Systems

Reverse Logistics

Sustainable Urban Mobility Management

Virtual Prototyping of Rail Vehicles

Active Systems of Vehicle Ride Comfort

**Institute of Industrial Apparatus and Power Engineering (<http://kmiue.mech.pk.edu.pl/>)**

Heat Transfer

Thermal Power Engineering

Steam Boilers

Steam and Gas Turbines

Hydraulic and Wind Turbines

Renewable Energy Sources

Solar Systems

Central Heating Systems

Fuel Combustion

Ansys Workbench (CFD) for Heat Transfer and Fluid Flow

Computer Methods for Engineers

Matlab for Engineers

Energy Problems

Energy Management

Environmental Protection

**Laboratory for Coordinate Metrology (<http://lmw.mech.pk.edu.pl/web/>)**

Coordinate metrology

Metrology