INFORMATION package

TECHNICAL
UNIVERSITY
OF
ZIELONA GÓRA

ECTS
2000

INFORMAT package

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ZIELONA GÓRA

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Contents

POLAND

The Republic of Poland is situated in Central Europe and its area (312,700 *sq km*) makes it one of the larger countries on the continent. Its territory is compact and resembles a square, reaching a maximum of about 680 km from west to east and 650 km from north to south. The country is bordered by the Baltic Sea to the north-west, by Germany to the west, the Czech and Slovak Republics to the south and Ukraine, Belarus, Lithuania and Russia to the east.

The northern part of Poland is varied and gently undulating, relatively well forested and covered by several thousand post-glacial lakes. The flat central belt is the main agricultural area, watered by Poland's longest rivers, the Vistula and Oder. Moving south, the terrain rises, culminating in the Carpathian Mountains which run along the southern frontier. The climate has a transitional character between the maritime and continental climates. As a result, winters are sometimes mild and sometimes cold with frequent precipitation. Similarly, summers are cool and rainy or hot and dry.

Poland, having nearly 40 million inhabitants, is also one of the more populated countries of Europe. The capital is Warsaw and other big cities are Cracow, Wrocław, Poznań, Łódź, Szczecin, Gdańsk and Katowice. The country is divided into 16 provinces (voivodeships). The official language is Polish belonging to the large group of Slavonic languages. In turn, the best known foreign languages are English and German.

In 1989, Poland took the lead among Central and Eastern European countries in transition toward free market economics. Poland today stands out as one of the most successful and open transition economies. Major industries are machinery, iron and steel, chemicals and agriculture. An essential factor affecting all the aspects of the government's economic policies is determination to enter the European Union as soon as possible.
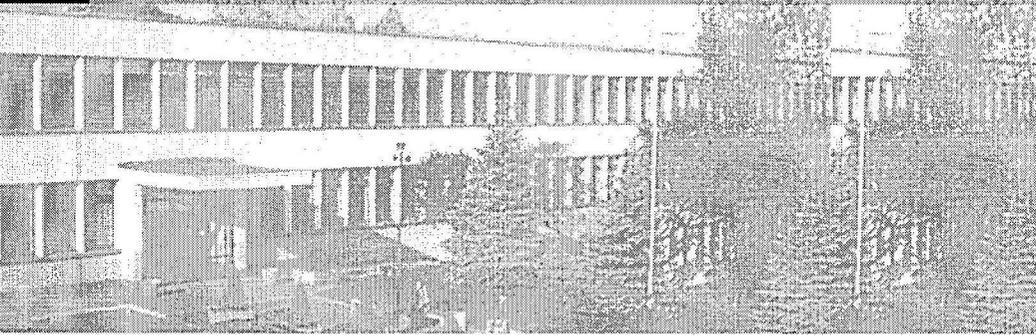
LUBUSKIE VOIVODESHIP

The Lubuskie voivodeship is located in western Poland and roughly tallies with the historical and geographical region called the Lubusz Country (Ziemia Lubuska). Although it lies on the plain, in places it abounds in post-glacial hills, clusters of lakes and dense forests. Some of the morainic hills reach the altitude of 50-100 metres above sea level, and the Bukowiec Hill (227 m) near Łagów is the highest of them. The region has plenty of valuable monuments of both ecclesiastic and secular architecture. Numerous palaces, castles and manors, some of them turned into museums, contain rich collections of furniture, pictures, handicrafts, china, arms, old medals and coins. In the countryside one can often come across fine examples of timber structures, such as old-style windmills, churches and belfries.

The region lies at the crossing of important trading routes leading from the North to the South and from the West to the East. Therefore, trade and crafts played an important role in the region's economic development. From the west,

the voivodeship borders the Brandenburg state (Land Brandenburg) in Germany, which makes this development much easier. Border crossings to Germany constitute an essential factor which stimulates the region. Farmers of the region are reputed for their skills in land cultivation. Industry does not lag behind and develops fast, especially around towns such as Gorzów Wielkopolski and Zielona Góra.

The promising future for the region is also conditioned by a continuously increasing number of young people who want to improve their chances of promotion and get a university degree. For them, the technical and pedagogical universities of Zielona Góra are the main institutions of higher education in the province. Apart from that, there are higher professional schools in Gorzów Wielkopolski and Sulechów, as well as the Collegium Polonicum established in Słubice as an out-of-town unit of the Viadrina European University in Frankfurt (Oder).

History

For hundreds of years the Piast princes of the Głogów-Żagań line ruled over that territory, succeeded in 1506 for a short time by the Czech Piasts. From 1526 the land together with the Głogów Duchy was incorporated into the Habsburg Monarchy, and after 1740 became a part of Prussia. In 1816 an Englishman O'Brien ran the first mechanical wool factory, and in 1876 a German Beuchelt opened the Steel Construction Factory in Zielona Góra. After World War II the

region came back to Poland and was populated by the local people and the settlers from other areas of the country and the former Polish territories in the East annexed by the Soviets.

The history of this cross-border area with constantly shifting borders and the multicultural heritage of the region prompts the people of the area to seek cultural unity and close ties with other European countries.
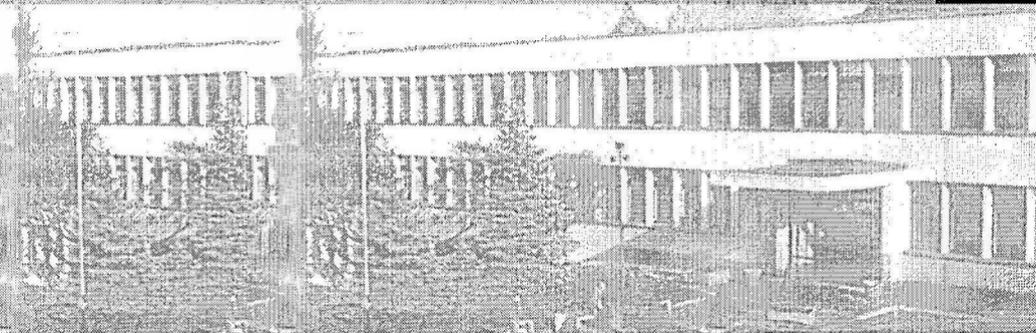
ZIELONA GÓRA AND ITS VICINITY

The city of Zielona Góra is distinguished by its interesting geographical location. Although the town and its vicinity are localised in the centre of the Central European Plain, they are characterised by diverse landscapes typical of the post-glacial moraine together with the nearby Wolsztyn and Łagów lake districts, and the highest afforestation in Poland. The town is conveniently located between Berlin, Wrocław, Prague, Poznań, Szczecin and Dresden. Very important communication routes, both rail and road, cross Zielona Góra and connect Scandinavia with the South of Europe (A3), and the nearby A2 between Warsaw and Berlin. Soon, three new lines of trans-European motorways of the total length of 220 km will also go through the region. Zielona Góra has well-established train connections with Berlin (3 hours of travel), Warsaw (5 hours), Poznań and Wrocław (2 hours).

Much of Zielona Góra's charm stems from the way in which past and present live easily side by side. Diverted by the town's physical beauty, it is easy for the visitor to overlook the fact that Zielona Góra is also a busy, thriving, modern community, providing a working and living environment for 117,000 people. Only a minor part of the working population are employed in manufacturing industry (e.g. a furniture factory, a plant producing electric and electronic measuring instruments, a factory producing fitted floor carpets and fibre, or the famous vodka and liqueur factory). The rest are in a variety of service industries, so plainly the service sector is fundamental to the economic well-being of Zielona Góra.

The absence of heavy industry explains to a certain extent why the town has practically no problems with air pollution. But this distinctive characteristic is also related to a plethora of parks and patches of lawns and trees which offer an additional opportunity of recharging and refreshment for citizens. What is more, the city is surrounded by large areas of mixed forests which form a pleasant environment and opportunity to enjoy active recreation and leisure.

The majority of buildings in the centre of the town were put up at the beginning of the 20-th century, so their style is rather eclectic. The historical monuments include the Gothic church (13-th century), half-timbered church and remnants of old fortifications. Near Zielona Góra, in the village of Ochla, there is an open-air ethnographic museum of traditional country architecture.
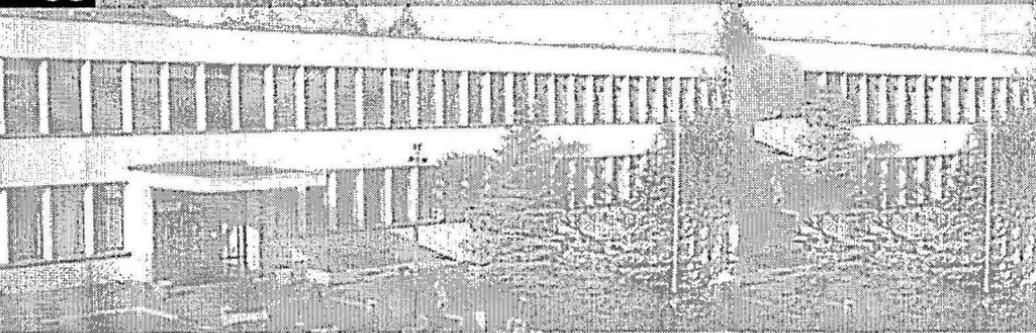
History

All what Zielona Góra is celebrated for has been derived from the European culture. Since the time of Duke Mieszko I who united pagan West Slavonic tribes and was baptised in the year 966 which is considered to be the founding year of Poland, the town has been erected by Slavs, then by generations of Germans, and since 1945 by Poles anew.

For several centuries, the town has been distinguished by its vineyards (solely in this part of Poland) and recognised as an important wine-producing centre and a manufacturer of woollen clothes. The location at an intersection of trade routes was conducive to international contacts. In the 19-th century, a time of great mechanical inventions and of new technologies, heavy industry began to develop in the region. But the great changes brought about in both industry and transport ended the period of the prosperity enjoyed by wine production. In the next century, both the terrifying world wars had no tragic consequences for the town. Fortunately, it avoided war damages during the march of German and Soviet troops at the end of World War II.

Today's Zielona Góra is becoming a very important centre of culture and science.

An Academic and Cultural Centre

Zielona Góra is a town of two universities: the Technical University of Zielona Góra and Tadeusz Kotarbiński Pedagogical University. In addition to that, a few years ago the Higher College of Public Administration was founded in Sulechów which is approximately 20 *km* north of Zielona Góra. More than 23,000 students study at both the universities. As the town has about 120 thousand residents, this means that one-fifth of the population are students, i.e. every fifth inhabitant attends a university.

The cultural life of Zielona Góra centres around the theatre, the philharmonic hall, museums, art galleries, cinemas, radio stations and cultural and scientific societies. Every year, a number of festivals, symposia and concerts are held in the town. The most important international cultural events organised here include the International Music Presentations *East - West* and the Festival of United Europe. In September the town celebrates *Zielona Góra Days* which are connected with the International Folklore Festival and traditional *Grape Harvest Days*. The strong position of Zielona Góra on the cultural map of Poland is also due to excellent cabaret teams and emerging music groups such as "Raz, Dwa, Trzy ..." ("One, Two, Three ...").
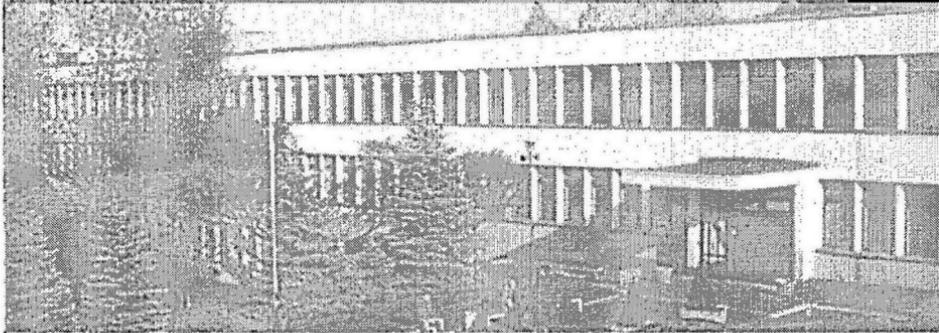
UNIVERSITY AUTHORITIES

Prof. Michał Kisielewicz   Rector

Prof. Józef Korbicz   Vice-Rector for Scientific Research and International Relations

Prof. Ferdynand Romankiewicz   Vice-Rector for Student Affairs

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Technical University of Zielona Góra
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65-246 Zielona Góra, Poland

UNIVERSITY SOCRATES/ERASMUS COORDINATOR

Mrs Kinga Włoch

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TECHNICAL UNIVERSITY OF ZIELONA GÓRA
INFORMATION

A-0 Main building
A-1 Gym Hall
A-2 Teaching Hall
A-3 Hall
A-4 Administration
A-5 Building of the Institute of Organisation and Management
A-6 Library
A-7 Warehouse
A-8 College of Foreign Languages
B-1 Centre of German Language and Culture
B-2 Building of the Faculty of Civil and Sanitary Engineering
B-3 Building of the Faculty of Fundamental Technological Research
B-4 Hall of the Faculty of Mechanical Engineering
B-5 Hall of the Faculty of Electrical Engineering
B-6 Sports Hall
B-7 Laboratory of the Institute of Environmental Engineering
C-0 Block of flats
C-1 Students' Hostel No. 1
C-2 Students' Hostel No. 2
C-3 Students' Hostel No. 3
C-4 Canteen

Podgórna Street
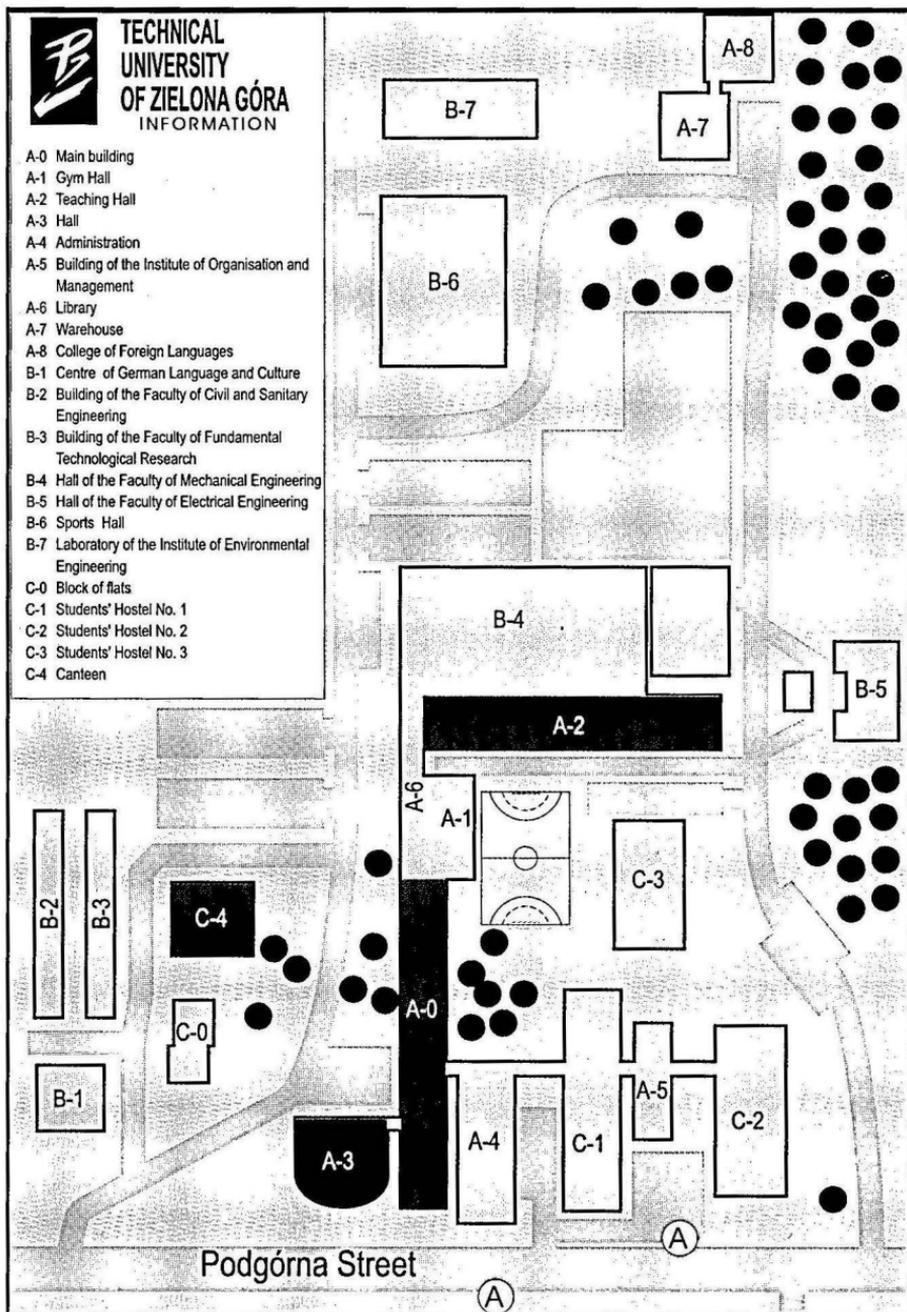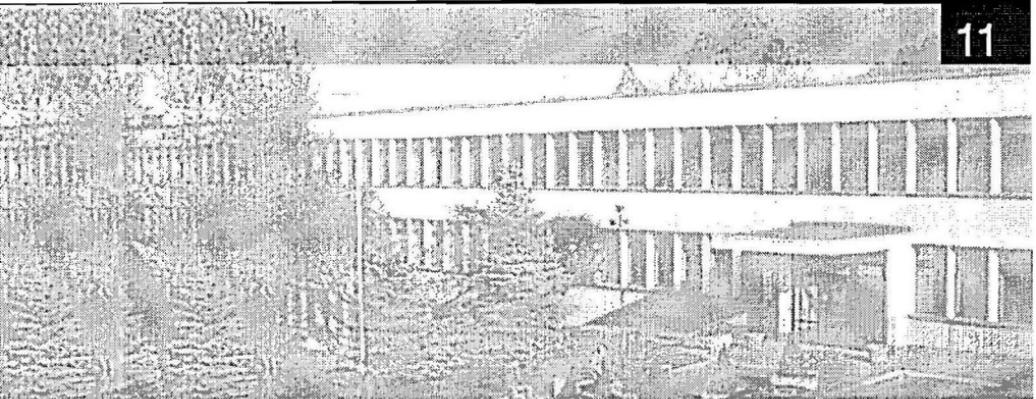
GENERAL INFORMATION

History

The University's origins date from 1965 when the Higher College of Engineering was founded in Zielona Góra. It responded to the needs of the citizens of the Lubusky region who wanted their own technical university to train and educate the people who would create and manage the industry of the area. At the beginning, the college had only one faculty which was soon divided into two separate ones: Electrical Engineering and Mechanical Engineering. After three years, the Faculty of Civil Engineering was added. In 1974 the Institute of Social and Economic Sciences initiated a new engineering discipline: Industrial Organisation and Management. The academic year 1974/75 brought more changes: students on each faculty followed a new syllabus based on uniform five-year M.Sc. degree programmes. In 1987 the Faculty of Fundamental Technological Research was established. The German Language and Culture Centre was organised in 1994.

The continuous development of the scientific community and the resulting high-quality research, along with the rapid development of faculties, the introduction of modern specialities, the building of new facilities, lecture rooms and modern laboratories, as well as computer-based learning and teaching, enabled the college to obtain a full academic status and to become the Technical University of Zielona Góra on September 1, 1996.

Today

The University offers undergraduate (B.Sc.) and graduate (M.Sc.) curricula for both full-time and part-time students. At present, the University has more than 9,000 students (4,500 of which full-time) in 8 subject areas and 25 options for specialisation.

The University is composed of four faculties which comprise institutes and departments. All the faculties have the right to confer Ph.D. degrees. The University employs more than 440 members of academic staff, including 84 full professors and associate professors. The research fields correspond, in general, to the areas of study.

The University Campus situated on a compact area is one of the Zielona Góra most important centres. The sports hall provides excellent facilities for games and competitions of league teams, including the basketball extra league, as well as for organisation of international sports events. Many cultural events and shows are organised at the University Assembly and Concert Hall which in this way serves not only its own milieu.
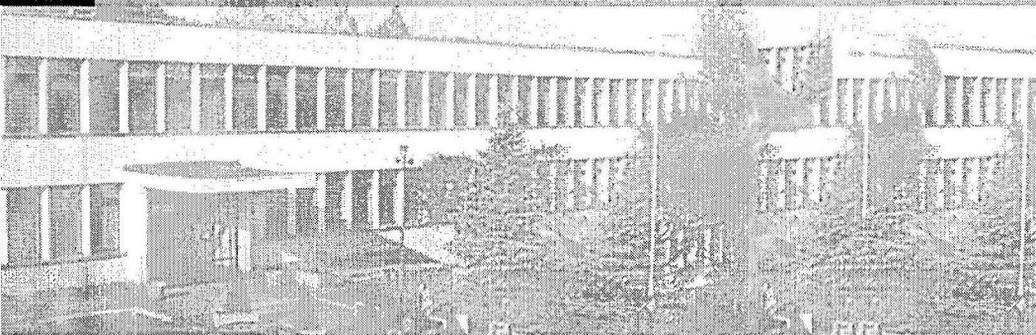
FACULTIES OF THE UNIVERSITY

The University offers a wide variety of degree programmes co-ordinated by the following faculties:

- *Faculty of Civil and Sanitary Engineering,*
- *Faculty of Electrical Engineering,*
- *Faculty of Mechanical Engineering,*
- *Faculty of Fundamental Technological Research.*

The faculties are organised into Institutes whose basic duties are research and teaching.

SYSTEMS OF STUDIES AND DEGREE PROGRAMMES

Generally, there are no entrance examinations. The recruitment of new Polish students is based on a competitive evaluation of secondary school certificates. Only on the Faculty of Fundamental Technological Research an additional examination is required.

On the average, students find that they are in classrooms or laboratories 26 hours a week, depending on both the year and the area of study. More important courses end with examinations. Laboratory works and projects must be completed. The local grading system ranges from 2.0 to 5.0:

5.0   very good
4.5   more than good
4.0   good
3.5   satisfactory
3.0   sufficient
2.0   fail
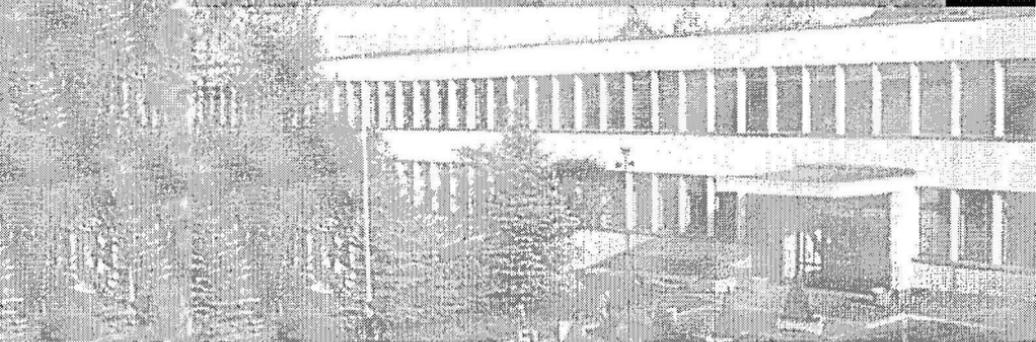
At present, the Technical University of Zielona Góra offers:
- 10-semester Master of Science (M.Sc.) degree courses
- 7-semester Bachelor of Science (B.Sc.) degree courses
- 7 or 8-semester part-time engineering courses leading to the degree of a qualified engineer (B.Sc.)
- Continuing education:
  - 4 - semester full-time and 5-semester part-time courses for graduate engineers wishing to complete their education and to obtain an M.Sc. degree
  - 2 - semester (about 300 hours of lectures, laboratory classes and practical laboratory projects) part-time post-graduate studies

The Ph.D. degree can be obtained in all the subjects represented at the University. Post-graduate courses (two semesters) are offered for qualified engineers and Master's degree holders.

ECTS AT THE TECHNICAL UNIVERSITY OF ZIELONA GÓRA

ECTS, or the European Credit Transfer System, is a system developed by European universities in order to facilitate the transfer of credits. The system strives to develop descriptive methods and mechanisms which make the mutual recognition of credits, grades, and examinations, or their transfer from one university to another, easier. This will help students to make better use of the periods of study in partner institutions. Consequently, the ECTS is a descriptive instrument only and influences neither the organisation nor the contents of the degree programmes and curricula.

The most important elements of the ECTS are:
- Information packages (like this one) which give detailed descriptions of degree programmes and courses as a support for foreign students and their home universities during the phase of planning a study abroad period, and
- distribution of credit points (ECTS-Credits) for individual courses, based on the uniform European scale with 60 credits for the workload of a full-time student during one Academic Year (or 30 credits per semester).
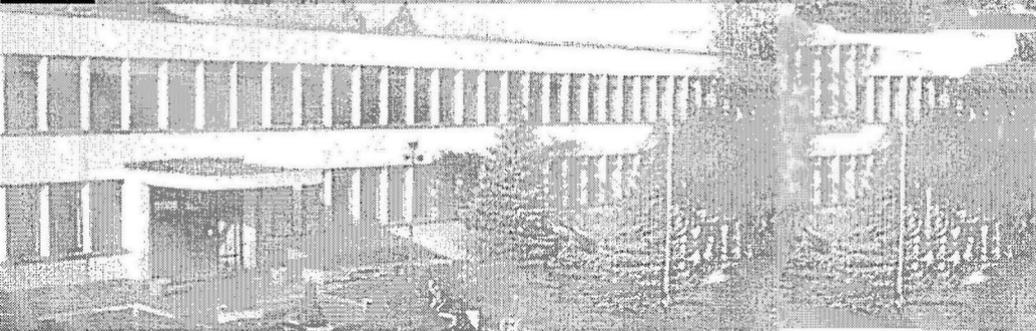
ACADEMIC CALENDAR

The academic year is divided into two semesters and starts on 1 October. The autumn semester ends at the end of January. The spring semester begins on 27 February and ends in late May. There are two weeks of examinations at the end of each semester. Summer holidays last three months.

REGISTRATION

International students are advised to get in touch with a contact person at their home university (in the relevant SOCRATES/Erasmus office) for any information and the Student Application Form, or the International Relations Office at the Technical University of Zielona Góra:

> Mrs. Kinga Włoch
> SOCRATES/ERASMUS Coordinator
> Technical University of Zielona Góra
> ul. Podgórna 50
> 65-246 Zielona Góra, Poland
> Phone: (+48 68) 3282 662
> Fax: (+48 68) 3270 382
> E-mail: K.Wloch@adm.pz.zgora.pl

VISA AND RESIDENCE PERMITS REGULATIONS

International students coming to Poland on non-visa (tourist) conditions may apply for a residence permit after arrival. The International Relations Office at the Technical University of Zielona Góra will help them to get a student visa. A student applying for a visa should submit the following documents:
- a valid passport, and
- a Visa Application Form filled in Polish (in duplicate).

The citizens of the countries which have signed an agreement with the Republic of Poland on non-visa short stays may stay in Poland without visas for the period specified in the agreement.
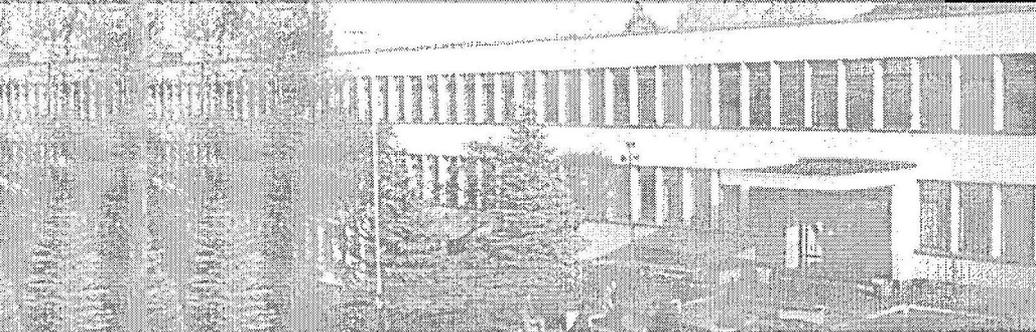
ACCOMMODATION

For non-residents of Zielona Góra, the University offers some 1300 places in six students' hostels. The range of facilities offered varies, but most hostels have areas for study and recreation, kitchen areas, showers, laundry facilities and parking space. Foreign students have guaranteed places in one- or two-bed rooms.

The students' hostels are located as follows:

- on the university campus:
  - students' hostel "Piast"
  - students' hostel "Rzepicha"
  - students' hostel "Ziemowit"
- two students' hostels in Przylep (5 km from the campus)
- a students' hostel in Raculka (3 km from the campus)

STUDENT LIFE

Special attention is paid to students' time spent out of classes.

Sport

The University offers excellent sports facilities: the spacious sports hall with sports fields which meet the Olympic Games requirements for team games as well as a sauna, a fitness room and a weights room. For those who love outdoor activities there are a tennis courts and a football pitch. Students can practise swimming in the municipal indoor swimming pool. The University has also got its own horse-riding centre in Raculka (half an hour-walk through the forest) with a students' hostel. The centre provides horse-riding courses for students and during the summer offers horse-riding holidays.

Students' Clubs

The wide range of leisure activities offered by students' clubs include, among other things, theatre performances, a student song competition and *Śmiechowisko,* a show promoting funny and entertaining students. The *Singing Group of the Zielona Góra Technical and Pedagogical Universities* was founded in 1968. Its members are young people who do not necessarily have musical education since having a good ear for music is enough to sign in the group (in the repertoire the group has songs of Gershwin, among others, as well as Polish Christmas carols). The Student Theatre *Forum Arka* of the Zielona Góra Technical and Pedagogical Universities was founded in 1977. In turn, the Student Touring Club of the Polish Tourist Association organises walking tours in the Bieszczady Mountains (a picturesque mountain range in the South-East of Poland), to Polish caves, etc. It offers courses for children's summer camp counsellors and for tourist guides. The club is the organiser of the annual Polish Student Tourist Song Competition *Włóczęga.* The clubs are also co-organizers of *Bachanalia.*
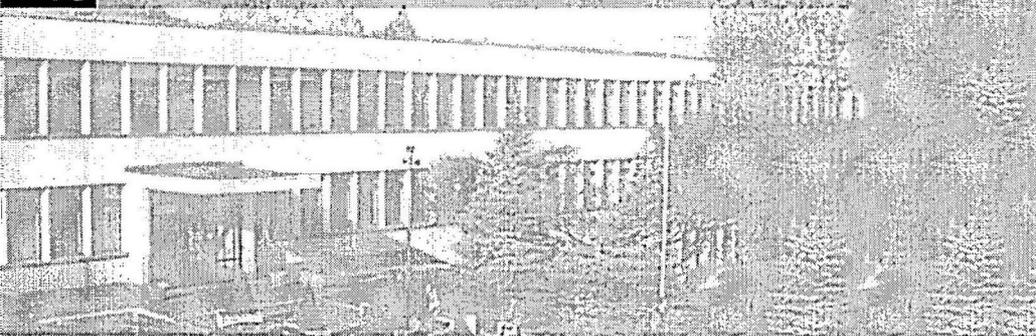
Students' Festival Bachanalia

The Festival Bachanalia is organised annually by the students of both Zielona Góra universities. The Festival begins with a colourful parade of students walking down the streets of the town to its centre where the Mayor of Zielona Góra hands the symbolic keys to the town gates over to the students' representatives. The meeting in the town centre is then followed by a series of performances and shows as well as meetings in students' clubs and elsewhere. The final event of the Festival is a concert in the outdoor concert hall honoured by famous pop music stars.
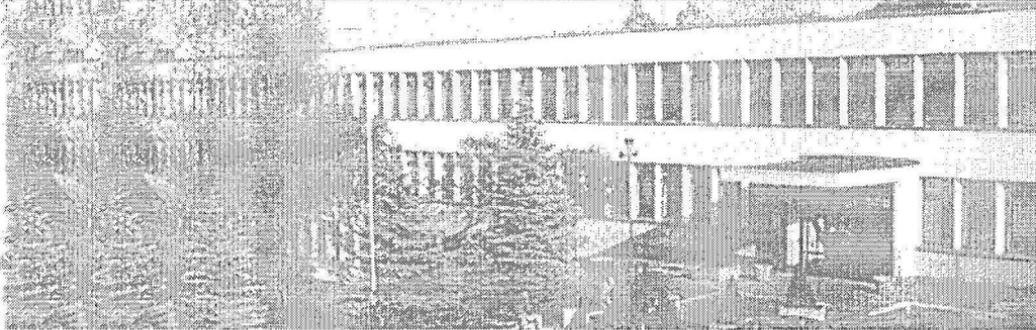
Faculty Management

Prof. Henryk Greinert — Dean
Prof. Romuald Świtka — Vice-Dean for Education
Dr. Marek Świderski — Vice-Dean for Student Affairs

Dean's Office

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SOCRATES / ERASMUS Coordinator

Prof. Henryk Greinert, Dean
If necessary, please contact directly Dean's Office.

The Faculty of Civil and Sanitary Engineering dates back to 1968 when the Faculty of Civil Engineering with courses in Urban and Industrial Civil Engineering was established. Currently, the Faculty offers undergraduate (B.Sc.) and graduate (M.Sc.) courses for both full-time and part-time students, in the following areas and the corresponding options for specialisation:

- Civil Engineering: building and engineering structures, technology and organisation of building engineering, municipal engineering, renovation of buildings and built-up areas,
- Environmental Engineering: environmental protection systems, water supply, waste water and sewage treatment.

There are 1,607 students studying in both the areas of study. This number comprises:

- 830 students of Civil Engineering, 522 of which full-time, and
- 777 students of Environmental Engineering, 412 of which full-time.

So far 2,683 students have graduated from the Faculty, and in particular, 2,114 in Civil Engineering and 569 in Environmental Engineering. The Faculty employs 4 full professors, 8 associate professors and 33 assistant professors.

In 1987 the Faculty was granted the right to confer Doctor's degree in Civil Engineering.

Organisational Structure

The Faculty is composed of two institutes:

- *Institute of Civil Engineering*, and
- *Institute of Environmental Engineering.*

The institutes are, for organisational purposes, divided into divisions handling different areas of teaching and research. Each institute is responsible for providing basic education to all students in subjects related to its research pursued.

INSTITUTE OF CIVIL ENGINEERING

Organisational Structure

Architecture and Civil Engineering Division, Geotechnics and Geodesy Division, Civil Engineering Technology and Management Division, Building Structures Division and Structural Mechanics Division

Research Activity

The main research areas at the Institute are:
- structural mechanics: mechanics of fibre composites and the analysis of interactions between complex structures,
- building structures: forming structures of a given ductility, neural networks in the design of connecting areas,
- civil engineering technology and management engineering and management in building processes related to both construction and renovation,
- geotechnics and geodesy: glaciotectonic faults in the Lubuskie region, variation of geotechnical parameters in glacially and tectonically faulted ground, evaluation and testing of building subsoil,
- architecture and general civil engineering: renovation of buildings and monumental complexes, town and country planning, building preservation, building physics.

Teaching and Research Laboratories

The Institute's *Civil Engineering Laboratory* is dedicated to both research activities and student laboratory work. It contains a range of standard teaching equipment typically used in the following applications:

- standard tests of building materials (a thermal and humidity test chamber, an X-ray diffractometer, an infrared spectrometer),
- static and dynamic tests of real processes and of their models,
- mechanical properties testing (a testing machine, strain gauges, vibrometers, dynamometers, electrovibrators, etc.),
- surveying (levelling instruments, theodolites),
- laboratory and field investigation of glacially and tectonically faulted ground properties (three-axial compression, shearing, exploratory drilling, a PSO probe).

INSTITUTE OF ENVIRONMENTAL ENGINEERING

Organisational Structure

Environment Restoration Division, Sanitary Systems and Installations Division, Division of Water, Wastewater and Wastes Technology.

Research Activity

The main research areas at the Institute are:

- water supply, sewerage systems and waste treatment: the efficiency of improving surface and underground waters for water supply; biological decay in wastewater treatment plants; sorting, composting and anaerobic digestion of solid wastes,
- design and operation of water supply and sewerage systems: analysis of perforated pipe roughness, design principles for pressure sewers,
- protection, renovation and decontamination of waters, reclamation of devastated lands, especially within the sanitary - protection zone of the Obrzyca river and in the main reservoirs of underground waters in the Lubuskie region,
- acidotrophic reservoirs, their origins and development: geochemistry of reservoirs in post-mining lignite excavations,
- modelling, protection and restoration of the environment degraded by industry: stock-taking of dumping grounds located in the area of the former Zielona Góra voivodeship.

Teaching and Research Laboratories

Each of the research groups has an associated laboratory. These include:

- *Water, Sewage and Waste Laboratory* equipped with facilities for water conditioning, sewage treatment, waste recovery and disposal,
- *Sanitary Appliances Laboratory* appropriated for hydraulic tests, and
- *Biology and Soil Protection Laboratory* equipped with facilities for testing the physical and chemical composition of soils and vegetation, as well as microbiological and toxic properties of water, sewage and wastes.

The Institute also houses its own *Analytical Laboratory of Physicochemical Analyses*.

CURRICULUM

Subject area: CIVIL ENGINEERING

M.Sc. Programmes:
- *Building and Engineering Structures,*
- *Renovation of Buildings and Built-up Areas,*
- *Engineering and Marketing of Building Processes.*

Subject area: ENVIRONMENTAL

M.Sc. Programmes:
- *Environmental Protection Systems,*
- *Water Supply, Waste Water and Sewage Treatment.*

Common courses for all M.Sc. programmes: Semesters I - IV
Notation: E - Examination,   Pr - Problem Classes,   Lab - Laboratory,   Sem - Seminar

Semester I

No	Courses	Teaching hours per year		Teaching hours per week		ECTS point	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	History of Art and Architecture	30		2		2	
2.	Mathematics I E	60	45	4	3	4	4
3.	Chemistry for Civil Engineering	30	30	2	2	2	2
4.	Descriptive Geometry E	15	30	1	2	2	2
5.	Engineering and Freehand Drawing E		45		3		4
6.	Theoretical Mechanics	30	30	2	2	4	4
	Total:	165	180	11	12	14	16
		345		23		30	

Semester II

No	Courses	Teaching hours per year		Teaching hours per week		ECTS point	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	History of Art and Architecture	30		2		2	
2.	Mathematics I E	60	45	4	3	4	4
3.	Chemistry for Civil Engineering	30	30	2	2	2	2
4.	Descriptive Geometry E	15	30	1	2	2	2
5.	Engineering and Freehand Drawing E		45		3		4
6.	Theoretical Mechanics	30	30	2	2	4	4
	Total:	165	180	11	12	14	16
		345		23		30	

Semester III

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Physical Education		30		2		2
3.	Computer Science Essentials	15	15	1	1	1	1
4.	Structural Mechanics I E	30	30	2	2	3	3
5.	Building Science	30	30	2	2	2	2
6.	Strength of Materials E	30	60	2	4	4	4
7.	Structural Mechanics E	30	30	2	2	3	3
	Total:	135	225	9	15	13	17
		360		24		30	

Semester IV

No	Courses		Teaching hours per year		Teaching hours per week		ECTS points	
			Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language			30		2		2
2.	Physical Education			30		2		2
3.	Geodesy	E	30	45	2	3	2	3
4.	Building Science	E	30	30	2	2	3	4
5.	Structural Mechanics	E	30	30	2	2	3	4
6.	Engineering Geology and Petrography	E	30	30	2	2	3	2
7.	Construction Technology		45	15	3	1	1	1
	Total:		165	210	11	14	12	18
				375		25		30

Semester V

No	Courses		Teaching hours per year		Teaching hours per week		ECTS points	
			Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language			30		2		2
2.	Physical Education			30		2		2
3.	Physics II	E	15	30	1	2	3	2
4.	Soil and Foundation Mechanics	E	30	30	2	2	2	2
5.	Applied Hydraulics and Hydrology		15	30	1	2	1	2
6.	Metal Structures		30	45	2	3	1	3
7.	Concrete Structures		30	45	2	3	1	3
8.	Construction Technology	E	15	15	1	1	3	3
	Total:		135	255	9	17	11	19
				390		26		30

Semester VI

No	Courses		Teaching hours per year		Teaching hours per week		ECTS points	
			Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language			30		2		2
2.	Industrial Building		30	30	2	2	2	2
3.	Town Planning		15	30	1	2	1	2
4.	Soil and Foundation Mechanics	E	15	30	1	2	2	2
5.	Metal Structures	E	30	15	2	1	3	2
6.	Concrete Structures	E	30	30	2	2	2	3
7.	Construction Administration and Management		30	15	2	1	2	1
8.	Construction Economics		15	15	1	1	1	1
9.	Building Installations		30		2		2	
	Total:		195	195	13	13	15	15
				390		26		30

M.Sc. programme: Building and Engineering Structures

Semester VII

No	Courses		Teaching hours per year		Teaching hours per week		ECTS points	
			Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language			30		2		2
2.	Building Law and Regulations		30		2		2	
3.	Mathematics II	E	30	30	2	2	3	3
4.	Soil and Foundation Mechanics II	E	15	15	1	1	3	2
5.	Industrial Building		30	15	2	1	2	2
6.	Wooden Structures	E	15	15	1	1	2	1
7.	Transportation Engineering		30	15	2	1	2	1
8.	CAD/Computing		30	30	2	2	3	2
	Total:		180	150	12	10	17	13
				330		22		30

Semester VIII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Structural Mechanics II *E*	30	45	2	3	3	3
3.	Continuous Media Mechanics *E*	30		2		5	
4.	Metal Structures II	30	45	2	3	2	3
5.	Concrete Structures II	30	45	2	3	2	3
6.	Industrial Building *E*	15	15	1	1	2	3
7.	Surveying and Levelling		15		1		1
	Total:	135	195	9	13	14	16
			330		22		30

Semester IX

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Building Physics *E*	15	15	1	1	2	1
2.	Plate Girders *E*	30	30	2	2	2	2
3.	Metal Structures II *E*	15	30	1	2	2	2
4.	Concrete Structures II *E*	15	30	1	2	2	2
5.	Computer-Aided Design Systems		30		2		3
6.	Elective Course A	30		2		4	
7.	Elective Course B	30		2		4	
8.	Elective Course C	30		2		4	
	Total:	165	135	11	9	20	10
			300		20		30

Semester X

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Graduate Seminar		30		2		30
	Total:		30		2		30
			30		2		30

List of Elective Courses

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
	Elective Course A						
1.	Sociology for Civil Engineering	30		2		4	
2.	Construction Economics	30		2		4	
3.	New Materials and Technologies	30		2		4	
4.	Thermal Insulation in Buildings	30		2		4	
5	Architectural Design: History and Contemporaneity	30		2		4	
	Elective Course B						
1.	CAD Laboratory	30		2		4	
2.	Special Foundation Engineering	30		2		4	
3.	High Buildings	30		2		4	
4.	Special Constructions	30		2		4	
5.	Strengthening Techniques	30		2		4	
	Elective Course C						
1.	Optimum Structural Design	30		2		4	
2.	Structural Load Capacity	30		2		4	
3.	Constructions on Disturbed Subsoil	30		2		4	
4.	Machine Foundation Dynamics	30		2		4	
5.	Mechanics of String Structures	30		2		4	

M.Sc. programme: Renovation of Buildings and Built-up Areas

Semester VII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Building Law and Regulations	30		2		2	
3.	Mathematics II *E*	30	30	2	2	4	4
4.	Soil and Foundation Mechanics II *E*	15	15	1	1	3	2
5.	Wooden Structures *E*	15	15	1	1	2	2
6.	Urban and Rural Planning Policy	30		2		5	
7.	Urban Technical Infrastructure *E*	45	15	3	1	3	1
	Total:	165	105	11	7	19	11
		270		18		30	

Semester VIII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Structural Mechanics II *E*	30	15	2	1	4	3
3.	Building Renovation *E*	45	45	3	3	4	4
4.	Modernisation Technology *E*	30	30	2	2	4	3
5.	Rational Energy Utilisation *E*	30	45	2	3	3	3
	Total:	135	165	9	11	15	15
		300		20		30	

Semester IX

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Building Physics E	15	15	1	1	2	1
2.	Metal Structures II E	30	30	2	2	3	2
3	Concrete Structures II E	30	30	2	2	3	2
4.	Computer-Aided Design In Architecture and Civil Engineering		30		2		3
5.	Modernisation of Built-Up Areas E	30	45	2	3	3	3
6.	Conservation Engineering	15	15	1	1	1	1
7.	Elective Course A	30		2		3	
8.	Elective Course B	30		2		3	
	Total:	180	165	12	11	18	12
		345		23		30	

Semester X

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Conservation Engineering E	15	30	1	2	5	5
2.	Graduate Seminar		30		2		20
	Total:	15	60	1	4	5	25
		75		5		30	

List of Elective Courses

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
	Elective Course A						
1.	Safety of Civil Structures	30		2		3	
2.	Structural Load Capacity	30		2		3	
3.	Masts, Viaducts, Bridges	30		2		3	
4.	Construction Economics	30		2		3	
5.	Negotiation, Auctions and Contracts for Construction Works	30		2		3	
	Elective Course B						
1.	History of Art and Architecture	30		2		3	
2.	History of Civil Engineering	30		2		3	
3.	Architectural Design: History and Contemporaneity	30		2		3	
4.	Conservation Engineering II	30		2		3	

M.Sc. programme: Engineering and Marketing of Building Processes

Semester VII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Building Law and Regulations	30		2		2	
3.	Mathematics II *E*	30	30	2	2	3	2
4.	Soil and Foundation Mechanics II	15	15	1	1	2	2
5.	Wooden Structures	15	15	1	1	1	2
6.	Investments, Auctions, Contracts *E*	30	15	2	1	2	2
7.	Utilisation of Construction Machines *E*	30	15	2	1	2	2
8.	Ergonomics and Industrial Safety	30		2		3	
9.	Transportation Engineering	30	15	2	1	2	1
		210	135	14	9	17	13
Total:		345		23		30	

Semester VIII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Building Physics	15	15	1	1	2	2
3.	Concrete Structures II *E*	30	30	2	2	2	2
4.	Construction and Renovation Works *E*	45	15	3	1	4	3
5.	Organisation and Management of Civil Engineering Firms *E*	30	30	2	2	3	4
6.	Decision-Making Methods	30		2		2	
7.	CAD/Computing	30	15	2	1	1	1
8.	Surveying and Levelling		15		1		2
	Total:	180	150	12	10	14	16
		330		22		30	

Semester IX

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Metal Structures II E	30	15	2	2	2	3
2.	Marketing in Civil Engineering Firms E	45	15	3	1	3	2
3.	Construction Economics E	30	30	2	2	2	3
4.	CAD/Computing		15		1		3
5.	Elective Course A	30		2		4	
6.	Elective Course B	30		2		4	
7.	Elective Course C	30		2		4	
	Total:	195	90	13	6	19	11
		285		19		30	

Semester X

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Graduate Seminar		30		2		30
	Total:		30		2		30
		30		2		30	

List of Elective Courses

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
	Elective Course A						
1.	New Materials and Technologies	30		2		4	
2.	Safety of Civil Structures	30		2		4	
3.	Metal Structures III	30		2		4	
4.	Reinforced Concrete Structures III	30		2		4	
	Elective Course B						
1.	Law Essentials	30		2		4	
2.	Finance and Accounting	30		2		4	
3.	Business Valuation Methods	30		2		4	
	Elective Course C						
1.	Buildings Maintenance	30		2		4	
2.	Special Topics in Construction Technology	30		2		4	
3.	Visualisation in Building Construction	30		2		4	

Common courses for all M.Sc. programmes: Semesters I-IV

Notation: E - Examination, Pr - Problem Classes, Lab - Laboratory, Sem - Seminar

Semester I

No	Courses		Teaching hours per year		Teaching hours per week		ECTS points	
			Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Mathematics	E	30	30	2	2	3	2
2.	Physics		15	15	1	1	1	2
3.	Chemistry	E	30	30	2	2	3	3
4.	Biology and Ecology		30	30	2	2	3	3
5.	Descriptive Geometry		15	15	1	1	1	2
6.	Computer Science		30	30	2	2	2	4
7.	Computer Graphics			30		2		2
	Total:		150	180	10	12	13	17
			330		22		30	

Semester II

No	Courses		Teaching hours per year		Teaching hours per week		ECTS points	
			Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Mathematics	E	30	30	2	2	3	2
2.	Physics		30	15	2	1	2	2
3.	Chemistry		30	30	2	2	3	4
4.	Biology and Ecology	E	30	30	2	2	3	3
5.	Geodesy and Photogrammetry		30	30	2	2	2	2
6a.	Materials Science		30	30	2	2	3	2
6b.	Mechanics and Strength of Materials		30	30	2	2	3	2
	Total:		180	165	12	11	15	15
			345		23		30	

Semester III

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Physical Education		30		2		1
3.	Chemistry for Sanitary Engineering *E*	30	30	2	2	4	4
4.	Fluid Mechanics *E*	45	45	3	3	3	5
5.	Introductory Civil Engineering *E*	30	30	2	2	3	3
6.	Hydrology and Hydrogeology	45	45	3	3	2	3
	Total:	150	210	10	14	12	18
		360		24		30	

Semester IV

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Physical Education		30		2		1
3a.	Sanitary Engineering Structures	30	15	2	1	2	2
3b.	Building Physics	30	15	2	1	2	2
4.	Town and Country Planning	15	15	1	1	1	2
5.	Electrical and Control Engineering *E*	30	15	2	1	2	2
6.	Mechanical Sanitary Facilities *E*	45	30	3	2	4	3
7.	Thermal Engineering *E*	30	30	2	2	3	3
8a.	Legal Foundations of Industrial Safety	30		2		3	
8b.	Economics Essentials	30		2		3	
	Total:	180	145	12	11	15	15
		345		23		30	

M.Sc. programme: Systems of Environmental Protection

Semester V

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2 ·		2
2.	Physical Education		30		2		1
3.	Soil Protection and Reclamation	45	45	3	3	3	4
4.	Town Cleaning *E*	30	15	2	1	4	2
5.	Water and Sewage Engineering *E*	30	45	2	3	3	4
6.	Water Supply and Sewage Systems *E*	30	45	2	3	3	4
	Total:	135	210	9	14	13	17
		345		23		30	

Semester VI

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Water and Sewage Engineering *E*	30	60	2	4	2	4
3.	Water Supply and Sewage Systems *E*	30	30	2	2	3	3
4.	Internal Sanitary Systems	30	30	2	2	2	2
5.	Water Pollution Control	15	15	1	1	2	1
6.	Economics of Public Utilities	30		2		3	
7.	Water Supply and Sewage Disposal in Industry *E*	30	15	2	1	3	1
8.	Geochemistry	15	15	1	1	1	1
	Total:	180	195	12	13	16	14
		375		25		30	

Semester VII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Wastewater Treatment	15	15	1	1	1	2
3.	Mineral Substances Management	30	15	2	1	2	2
4.	Basic Industrial Processes	30	15	2	1	2	2
5.	Ecology II	30	30	2	2	3	2
6a.	Nature Conservation	30	30	2	2	3	3
6b.	Hydrobiology	30	30	2	2	3	3
7a.	Water Resources Protection	30	30	2	2	3	3
7b.	River Catchment Management	30	30	2	2	3	3
	Total:	165	165	11	11	14	16
		330		22		30	

Semester VIII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Engineering Geology	30	45	2	3	3	4
2.	Environmental Management	30	15	2	1	2	2
3.	Toxicology *E.*	30	15	2	1	3	2
4a.	Fundamentals of Experimental Studies	30	30	2	2	3	3
4b.	Statistical Methods	30	30	2	2	3	3
5a.	Hydraulic Engineering *E*	30	15	2	1	3	2
5b.	Land Melioration and Water Supply Facilities *E*	30	15	2	1	3	2
6.	Systems Analysis Essentials	30	15	2	1	2	1
	Total:	180	135	12	9	16	14
		315		21		30	

Semester IX

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Town Planning _E_	30	15	2	1	2	2
2a.	Biotechnology	30	30	2	2	3	3
2b.	Soil Biology	30	30	2	2	3	3
3a.	Computer Methods in Sanitary Engineering _E_	30	15	2	1	2	2
3b.	CAD in Sanitary Engineering	30	15	2	1	2	2
4a.	Decision Support Systems	30	15	2	1	3	2
4b.	Influence of Pollutants on the Environment	30	15	2	1	3	2
5a.	Ecology of Transformed Lands _E_	30	15	2	1	3	2
5b.	Agroeology _E_	30	15	2	1	3	2
6.	Monitoring Systems	30	15	2	1	2	2
7.	Graduate Seminar		15		1		2
	Total:	180	120	12	8	15	15
		300		20		30	

Semester X

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Law In Environment Protection	30	15	2	1	2	2
2.	Graduate Seminar		30		2		2
3.	Dissertation						24
	Total:	30	45	2	3		30
		75		5		30	

M.Sc. programme: Water Supply, Waste Water and Sewage Treatment

Semester V

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Physical Education		30		2		1
3.	Waste Disposal	30	30	2	2	2	3
4.	Water and Sewage Engineering E	45	60	3	4	3	6
5.	Water Supply and Sewage Systems E	45	45	3	3	3	6
6.	Internal Sanitary Systems E	30	30	2	2	2	2
	Total:	150	225	10	15	10	20
		375		25		30	

Semester VI

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Water and Sewage Engineering E	45	60	3	4	3	4
3.	Water Supply and Sewage Systems E	30	45	2	3	3	4
4.	Internal Sanitary Systems	30	30	2	2	3	3
5.	External Sanitary Systems	15	15	1	1	2	2
6.	Wastewater Treatment	15	15	1	1	1	1
7.	Physical Chemistry	15	15	1	1	1	1
	Total:	150	260	10	14	13	17
		360		24		30	

Semester VII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Water Management in Industry E	30	15	2	1	3	2
3.	House Heating and Air Conditioning E	30	30	2	2	3	3
4a.	Computer Methods in Sanitary Engineering	15	30	1	2	1	2
4b.	CAD in Sanitary Engineering	15	30	1	2	1	2
5.	Organising and Performing Sanitary Works	30	30	2	2	2	3
6.	Topics in Process Engineering	30	15	2	1	2	2
7a.	Environmental Monitoring	15	15	1	1	2	1
7b.	Measurements in Sanitary Engineering	15	15	1	1	2	1
8.	Reclamation of Urban Areas	15	15	1	1	1	1
	Total:	165	180	11	12	14	16
		345		23		30	

Semester VIII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Biotechnology *E*	30	30	2	2	3	3
2.	Mathematical Statistics and Graph Theory	30	30	2	2	2	2
3a.	Management Systems in Environmental Protection	30	15	2	1	2	2
3b.	Market Economy in Environmental Protection	30	15	2	1	2	2
4.	Melioration of Urban and Industrial Areas *E*	30	30	2	2	3	3
5.	Liquid Industrial Wastes *E*	30	30	2	2	3	3
6.	Balanced Energy Management	15	15	1	1	2	1
	Total:	165	165	11	11	15	15
		330		22		30	

Semester IX

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Legal Foundations in Environmental Protection	30		2		3	
2.	Ecological Risk Analysis	30		2		3	
3.	Sewage Sludge Management	30	30	2	2	2	2
4a.	Systems Modelling and Optimisation	15	30	1	2	2	2
4b.	Topics in Sewage Treatment Technology	30	15	2	1	2	2
5.	Sewage Treatment Technology II	30	30	2	2	2	2
6a.	Industrial Waste Management *E*	30		2		5	
6b.	Reclamation of Contaminated Areas *E*	30		2		5	
7.	Supervised Research Project		45		3		4
8.	Graduate Seminar		30		2		3
	Total:	165/180	165/120	11/12	12/10	17	13
		330		22		30	

Semester X

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Graduate Seminar		30		2		3
3.	Dissertation						27
	Total:		30		2		30
			75		2		30
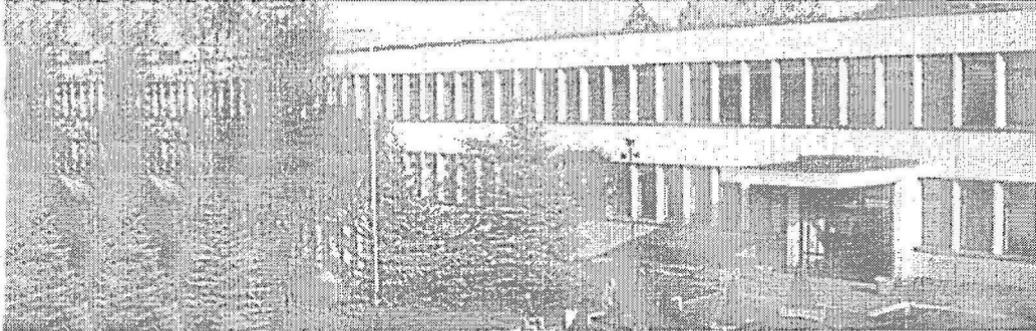
Faculty Management

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Prof. Tadeusz Kurowski   Vice-Dean for Intramural Studies
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The Faculty of Electrical Engineering was established in 1967. Nowadays, its scope also comprises Computer Science and Engineering (since 1992). The Faculty offers undergraduate (B.Sc.) and graduate (M.Sc.) curricula for both full-time and part-time students in the following subject areas and the corresponding options for specialisation:

- Computer Science: computer engineering, software engineering, industrial information systems and information systems in electrical power engineering;
- Electrical Engineering: digital measuring systems, power electronics, computerised information systems, computer systems engineering, information systems in electrical power engineering and industrial electronics.

Altogether there are 2,511 students:

- 1,694 students of Computer Science, 663 of which full-time, and
- 817 students of Electrical Engineering, 484 of which full-time.

Moreover, post-graduate courses in Computer Science have been offered since 1995. In all, 3,436 students have graduated from the Faculty: 2,290 in Electrical Engineering and 1,146 in Computer Science.

The Faculty employs 10 full professors, 9 associate professors and 25 assistant professors. In 1996 the Faculty was granted the right to confer Doctor's degrees in Electrical Engineering.

Teaching

As a rule, two types of courses are offered: a five-year Master's degree (M.Sc.) course for full-time students and a three and a half-year engineering degree course for part-time students. Moreover, complementary two-year M.Sc. courses and post-graduate courses are also available.

Organisational Structure

The Faculty is composed of four Institutes:

- *Institute of Computer Engineering and Electronics,*
- *Institute of Control and Computation Engineering,*
- *Institute of Electrical Engineering,* and
- *Institute of Electrical Metrology.*

The institutes are, for organisational purposes, divided into divisions handling different areas of teaching and research. Each institute is responsible for providing basic education to all students in subject areas related to its research pursued, for one or two specialisation options of the M.Sc. programme.

Organisational Structure

Information Technology Division, Computer Engineering Division, and Electronics and Microprocessor Systems Division

Research Activity

The main research areas of the Institute are:
- analysis and synthesis of digital systems to be implemented as specific integrated circuits (ASIC): application of Petri nets in the synthesis of concurrent digital systems,
- hardware-software co-design: Petri nets as an intermediate representation between VHDL and design models,
- computer networks: local-area networks, operating systems, Internet technology,
- high performance multimedia communication systems: optimisation of network technology and topology, acquisition and distribution of multimedia data (distributed databases, transmission control,

- electronic devices and microprocessor systems: testing equipment for measuring certain parameters in power systems, designing meters for power net parameters, optimisation of structures and algorithms for control systems.

Teaching and Research Laboratories

The Institute's computer network (UNIX, Novell, NT) integrates some 100 computers in all classrooms and offices. It is connected to other academic networks and the Internet. The Institute's laboratories are well-equipped and extensively used in education, especially by students taking courses such as: programming languages, computer networks, advanced programming techniques, electronics, microprocessor systems, electronic design automation, and CAD tools for simulation and synthesis.

INSTITUTE OF CONTROL AND COMPUTATION ENGINEERING

Organisational Structure

Information Systems Division and Division of Systems Analysis and Intelligent Computation

Research Activity

The main research areas at the Institute are:
- intelligent computation systems: artificial neural networks, fuzzy logic, expert system, evolutionary and genetic algorithms, optimisation of integrated computation systems, cellular automata,
- applications of artificial intelligence methods in diagnostics of industrial processes and automatic control: advisory diagnostic systems, integration of quantitative and qualitative methods in diagnostic and control systems,

- modelling and optimisation of continuous and discrete processes: multidimensional (2D/nD) systems, measurement optimisation for distributed-parameter systems, parameter estimation,
- information systems and thier applications: computer graphics and multimedia systems technologies, software engineering, local-area networks, Internet in research and teaching,
- applied cryptography and coding: data protection in databases and computer networks, steganography, detection and correction of manipulation on cryptograms.

Teaching and Research Laboratories

The Institute's laboratories are well-equipped with state-of-the-art equipment and software. The facilities offered are based on an internal computer network with the collection of more than 60 PC machines and five high-performance servers running the operating systems such as UNIX, Novell and Windows NT. All PCs are installed with Windows 2000/NT and Linux. The network is connected to other academic networks and the Internet via the Zielona Góra Metropolitan Area Network, which gives access to facilities and information locally or at remote sites.

The following laboratories serve as the Institute's support for teaching and research:
- Compute Networks Laboratory
- Multimedia Laboratory,
- Software Engineering and Artificial Intelligence Laboratory, and
- Control Systems and Optimisation Techniques Laboratory.

These labs are used for teaching and project development. The Multimedia Lab is equipped with about 10 high-end PCs and various multimedia accessories, such as DV camera, capture card, scanner, TV, VCR, etc.

INSTITUTE OF ELECTRICAL ENGINEERING

Organisational Structure

Division of Power Electronics, Control and Applications, Division of Electro-Mechanic and Energy Systems

Research Activity

The main research areas at the Institute are:
- optimal compensating and correcting AC circuits: power in non-linear circuits, flexible AC transmission systems, active circuits for power quality improvement,
- power electronics: high-power AC/DC and AC/AC control circuits, controllers and converters,
- optimisation of electric motor drives: digital signal processors, micro-controllers, multi-purpose controllers,
- electromagnetic compatibility: spectrum analysis and synthesis of non-sinusoidal waveforms, elimination of harmful effects in inverter-fed systems.

Teaching and Research Laboratories

The Institute has a suite of excellent modern instruments used in teaching, e.g. development tools for Intel MCS-51 micro-controllers and digital signal processing, as well as a number of laboratory facilities for testing electric machines and electromechanical low-power converters. The instrumentation also includes very specialised hardware and software tools such as a LeCroy four-channel digital oscilloscope, a portable unit *Siemens Oscillostore P513* for monitoring and analysing the quality of the mains supply, and professional simulation packages *Pspice* and *TCAD 6.2.*

Organisational Structure

Electrical Metrology Division and Circuit Theory Division

Research Activity

The main research areas at the Institute are:
- measuring devices and measurement systems for process monitoring: intelligent measuring instrumentation, industrial networks, process visualisation systems,
- precise comparison of certain electrical quantities: multi - bit digital binary voltage and current inductive dividers, impedance comparators, digital two - phase sinusoidal voltage generators,
- optimisation of energy dissipation in non-linear circuits and synthesis of complex compensation circuits: identification, analysis and synthesis of variable-parameter systems.

Teaching and Research Laboratories

The major facilities available for students are collected in the laboratory of intelligent measuring devices and five other laboratories:
- circuits and systems theory,
- electrical metrology,
- measuring instrumentation, and
- industrial information systems.

CURRICULUM

Subject area: *COMPUTER SCIENCE*

- M.Sc. Programmes:
- • *Computer Engineering*
- • *Software Engineering*
- • *Industrial Information Systems*

Subject are: *ELECTRICAL ENGINEERING*

M.Sc. Programmes:
- *Digital Measuring Systems*
- *Power Electronics and Electrical Power Engineering*
- *Information Systems Engineering*
- *Computer Systems Engineering*

Common courses for all M.Sc. programmes: Semesters I-IV

Notation: E - Examination, Pr - Problem Classes, Lab - Laboratory, Sem - Seminar

Semester I

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Physical Education		30		2		2
2.	Mathematical Analysis *E*	30	30	2	2	3	2
3.	Algebra *E*	30	30	2	2	3	2
4.	Mathematical Logic	30		2		2	
5.	Introduction to Solid State Physics	30	30	2	2	2	2
6.	Computer Science Essentials *E*	30	45	2	3	3	3
7.	Introductory Electronics	30	30	2	2	2	4
	Total:	180	195	12	13	15	15
		375		25		30	

Semester II

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Physical Education		30		2		2
2.	English		30		2		2
3.	Discrete Mathematics *E*	30	30	2	2	3	2
4.	Computer Science Essentials *E*	30	30	2	2	3	3
5.	Circuits and Systems Theory	30	30	2	2	2	2
6.	Digital Circuits and Systems	30	30	2	2	3	3
7.	Fundamentals of Nets and Graph Theory *E*	30	30	2	2	3	2
	Total:	150	210	10	14	15	15
		360		24		30	

Semester III

No	Courses		Teaching hours per year		Teaching hours per week		ECTS points	
			Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Physical Education			30		2		2
2.	English			30		2		2
3.	Digital Circuits and Systems	E	30	30	2	2	2	3
4.	Numerical Methods	E	30	30	2	2	3	2
5.	Algorithms and Data Structures	E	30	30	2	2	3	2
6.	Programming Languages		30	30	2	2	2	2
7.	Operating Systems		15	30	1	2	2	2
8.	Software Engineering	E	30		2		3	
	Total:		165	210	11	14	15	15
				375		25		30

Semester IV

No	Courses		Teaching hours per year		Teaching hours per week		ECTS points	
			Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	English	E		30		2		3
2.	Programming Languages	E	30	30	2	2	3	2
3.	Operating Systems	E	30	45	2	3	3	3
4.	Experimental Techniques		30	30	2	2	2	2
5.	Database Systems	E	30	45	2	3	3	3
6.	Computer Networks		30	30	2	2	2	2
7.	Software Engineering			30		2		2
	Total:		150	240	10	16	13	17
				390		26		30

M.Sc. programme: Computer Engineering

Semester V

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	English		30		2		2
2.	Selected Topics in Mathematics *E*	30	30	2	2	3	2
3.	Mathematical Statistics Essentials *E*	30	30	2	2	3	2
4.	Modelling and Simulation	30	30	2	2	2	2
5.	Hardware Description Languages	15	30	1	2	1	2
6.	Network Application Programming		45	2	1	2	1
7.	Object-Oriented Programming *E*	30	30	2	2	2	2
8.	Database Management Systems *E*	15	15	1	1	2	2
	Total:	150	240	12	14	15	15
			390		26		30

Semester VI

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	English		30		2		2
2.	Hardware Description Languages *E*	30	45	2	3	2	3
3.	Global-Area Networks *E*	30	30	2	2	3	2
4.	Computer Architecture	30		2		2	
5.	Optimisation Methods	30	30	2	2	2	3
6.	Computer-Aided Design *E*	30	30	2	2	3	2
7.	CAD of Digital Systems	15	30	1	2	1	1
8.	Windows Application Programming	15	30	1	2	1	2
	Total:	165	225	11	15	14	16
			390		26		30

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	English		30		2		2
2.	Computer Architecture E	30	30	2	2	2	2
3.	CAD of Digital Systems	15	45	1	3	2	3
4.	Elective Course A		30		2		2
5.	Elective Course B	15	15	1	1	2	2
6.	Intelligent Computation Systems	30	30	2	2	3	3
7.	Multimedia Systems Technologies	30	30	2	2	2	2
8.	Microprocessor Systems E	30	30	2	2	1	2
	Total:	150	240	10	16	12	18
		390		26		30	

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	English		30		2		2
2.	CAD of Digital Systems	15	30	1	2	1	4
3.	Elective Course B		30		2		2
4.	Multimedia Systems Technologies		30		2		3
5.	Computer Graphics E	30	45	2	3	2	3
6.	Microprocessor Systems		30		2		2
7.	Elective Course C E	30	45	2	3	1	3
8.	Genetic Algorithms and Evolutionary Processes E	30	30	2	2	3	2
9.	Supervised Project Research		30		2		3
	Total:	105	300	7	20	7	23
		405		27		30	

Semester IX

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Elective Course B		45		3		5
2.	Computer Graphics		30		2		3
3.	Advanced Algorithmic Techniques *E*	15	30	1	2	1	2
4.	Elective Course D *E*	30	60	2	4	3	5
5.	Inventiveness and Patent Protection	30		2		2	
6.	Economics		30		2		2
7.	Master's Thesis Research		60		4		4
8.	Graduate Seminar		30		2		3
	Total:	75	285	5	19	6	24
		360		24		30	

List of Elective Courses

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
	Elective Course A Semester VII						
1.	Architecture of PCs		30		2		2
2.	Modern Programming Languages						
	Elective Course B Semester VII						
1.	Problem-Oriented Laboratory	15	15	1	1	2	2
2.	Intranets and the Internet						
	Elective Course B Semester VIII						
1.	Problem-Oriented Laboratory		30		2		2
2.	Intranets and the Internet						
	Elective Course B Semester IX						
1.	Problem-Oriented Laboratory		45		3		5
2.	Intranets and the Internet						
	Elective Course C Semester VIII						
1.	Formal Digital System Design *E*	30	45	2	3	1	3
2.	Formal Software Development *E*						
	Elective Course D Semester IX						
1.	Embedded Systems *E*	30	60	2	4	3	5
2.	Integrated Hardware and Software Design *E*						

M.Sc. programme: Software Engineering

Semester V

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	English		30		2		2
2.	Selected Topics in Mathematics E	30	30	2	2	3	2
3.	Mathematical Statistics Essentials E	30	30	2	2	3	2
4.	Software Engineering	15	30	1	2	2	3
5.	Modelling and Simulation	30	30	2	2	2	2
6.	Elective Course A E	30	30	2	2	3	2
7.	Elective Course B	30	30	2	2	2	2
	Total:	165	210	11	14	15	15
			375		25		30

Semester VI

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	English		30		2		2
2.	Signal Processing	30	30	2	2	2	2
3.	Global-Area Networks E	30	30	2	2	3	3
4.	Computer Architecture	30		2		2	
5.	Optimisation Methods	30	30	2	2	2	3
6.	Computer-Aided Design E	30	30	2	2	3	2
7.	Control Systems	30	30	2	2	3	3
	Total:	180	180	12	12	15	15
			360		24		30

Semester VII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	English		30		2		2
2.	Computer Architecture *E*	30	30	2	2	2	2
3.	Control Systems		15		1		1
4.	Elective Course C *E*	30	30	2	2	3	2
5.	Elective Course D *E*	30	30	2	2	3	2
6.	Intelligent Computation Systems *E*	30	30	2	2	3	3
7.	Multimedia	30	30	2	2	1	2
8.	Topics in Artificial Intelligence and Expert Systems	30	30	2	2	2	2
	Total:	180	225	12	15	14	16
		405		27		30	

Semester VIII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	English		30		2		2
2.	Topics in Artificial Intelligence and Expert Systems *E*	30	45	2	3	3	4
3.	Computer Graphics *E*	30	45	2	3	2	3
4.	Elective Course E	30	30	2	2	2	2
5.	Elective Course F *E*	30	30	2	2	3	2
6.	Neural Networks	30	30	2	2	2	2
7.	Supervised Research Project		30		2		3
	Total:	150	240	10	16	12	18
		390		26		30	

Semester IX

No	Courses		Teaching hours per year		Teaching hours per week		ECTS points	
			Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Elective Course G			15		1		2
2.	Neural Networks	E	30	45	2	3	3	5
3.	Advanced Algorithmic Techniques	E	15	30	1	2	1	2
4.	Evolutionary Computations	E	30	45	2	3	3	3
5.	Inventiveness and Patent Protection	.	30		2		2	
6.	Economics			30		2		2
7.	Master's Thesis Research			60		4		4
8.	Graduate Seminar			30		2		3
	Total:		105	255	7	17	9	21
			360		24		30	

List of Elective Courses

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
	Elective Course A Semester V						
1.	Operations Research E	30	30	2	2	3	2
2.	Discrete Programming E						
	Elective Course B Semester V						
1.	Computer-Algebra Systems	30	30	2	2	2	2
2.	Computer-Aided Engineering						
	Elective Course C Semester VII						
1.	Modelling of Discrete Event Systems E	30	30	2	2	3	2
2.	Data Protection in Computer Systems and Networks E						
	Elective Course D Semester VII						
1.	Chaos Theory and Fractals E	30	30	2	2	3	2
2.	Modelling and Optimisation of Dynamic Systems E						
	Elective Course E Semester VIII						
1.	Correction Coding Techniques	30	30	2	2	2	2
2.	Computer Typesetting Systems						
	Elective Course F Semester VIII						
1.	Concurrent and Distributed Programming E	30	30	2	3	3	2
2.	UNIX Network Programming E						
	Elective Course G Semester IX						
1.	Concurrent and Distributed Programming E		15		1		2
2.	UNIX Network Programming E						

M.Sc. programme: Industrial Information Systems

Semester V

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	English		30		2		2
2.	Selected Topics in Mathematics E	30	30	2	2	3	2
3.	Mathematical Statistics Essentials E	30	30	2	2	3	2
4.	Computer Networks E	30	30	2	2	3	3
5.	Modelling and Simulation	30	30	2	2	2	2
6.	Microprocessor Systems	30	60	2	4	3	5
	Total:	150	210	10	14	14	16
		360		24		30	

Semester VI

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	English		30		2		2
2.	Microprocessor Systems		60		4		5
3.	Global-Area Networks E	30	30	2	2	3	3
4.	Computer Architecture	30		2		2	
5.	Optimisation Methods	30	30	2	2	2	3
6.	Computer-Aided Engineering E	30	30	2	2	3	2
7.	Sensors and Systems	30	30	2	2	3	2
	Total:	150	210	10	14	13	17
		360		24		30	

Semester VII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	English		30		2		2
2.	Computer Architecture *E*	30	30	2	2	2	2
3.	Sensors and Systems *E*	30	15	2	1	2	2
4.	Elective Course A *E*	30	45	2	3	3	4
5.	Designing with Microprocessors	15	45	1	3	2	3
6.	Computer-Aided Design	15	45	1	3	2	2
7.	Visualisation Systems *E*	15	45	1	3	2	2
	Total:	135	255	9	17	13	17
		390		26		30	

Semester VIII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	English		30		2		2
2.	Designing with Microprocessors		30		2		2
3.	Computer-Aided Design II		45		3		2
4.	Computer Graphics *E*	30	45	2	3	2	3
5.	Digital Signal Processing *E*	30	45	2	3	3	4
6.	Monitoring System Design *E*	15	45	1	3	2	2
7.	Elective Course B	15	60	1	4	2	3
8.	Supervised Project Research		30		2		3
	Total:	90	330	6	22	9	21
		420		28		30	

Semester IX

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Monitoring System Design		45		3		3
2.	Advanced Algorithmic Techniques E	15	30	1	2	1	2
3.	Processing in Distributed Systems E	15	75	1	5	2	4
4.	Elective Course C E	30	45	2	3	3	4
5.	Inventiveness and Patent Protection	30		2		2	
6.	Economics		30		2		2
7.	Master's Thesis Research		60		4		4
8.	Graduate Seminar		30		2		3
	Total:	90	315	6	21	8	22
		405		27		30	

List of Elective Courses

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
	Elective Course A Semester VII						
1.	Computer Networks in Industry E	30	45	2	3	3	4
2.	Distributed Intelligence Systems E						
	Elective Course B Semester VIII						
1.	Industrial Computer Systems	15	60	1	4	2	3
2.	Analysis and Design of Information Systems						
	Elective Course C Semester IX						
1.	Expert Systems E						
2.	Topics in Artificial Intelligence E	30	45	2	3	3	4

Common courses for all M.Sc. programmes

Semester X

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Master's Thesis Research		150		10		10
2.	Graduate Seminar		30		2		5
3.	Dissertation		15		1		15
	Total:		195		13		30
		195		13		30	

ELECTRICAL ENGINEERING

Common courses for all M.Sc. programmes: Semesters I - IV

Semester I

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Physical Education		30		2		2
2.	Humanities or Social Science	30	30	2	2	2	2
3.	Mathematics *E*	30	15	2	1	3	2
4.	Physics	30	15	2	1	2	2
5.	Electrical Engineering *E*	30	30	2	2	3	2
6.	Computer Science Essentials	30	30	2	2	2	3
7.	Materials Science	30		2		2	
8.	Electrical Metrology *E*	30		2		3	
	Total:	210	150	14	10	17	13
		360		24		30	

Semester II

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Physical Education		30		2		2
2.	Humanities or Social Science		30		2		2
3.	Mathematics *E*	30	15	2	1	4	
4.	Physics *E*	30		2		3	
5.	Physics		30		2		2
6.	Electrical Engineering *E*	30	30	2	2	2	1
7.	Computer Science Essentials *E*	30		2		3	
8.	Computer Science Essentials		30		2		3
9.	Electrical Metrology *E*	30	30	2	2	2	2
10.	Introductory Electronics	30	30	2	2	2	2
	Total:	180	225	12	15	16	14
			405		27		30

Semester III

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Physical Education		30		2		2
2.	European Language		30		2		2
3.	Mathematics *E*	30	15	2	1	2	2
4.	Electrical Engineering	30	45	2	3	2	4
5.	Computer Science Essentials		30		2		2
6.	Electrical Metrology		45		3		3
7.	Introductory Electronics *E*	30		2		3	
8.	Introductory Electronics		30		2		3
9.	Fundamentals of Microprocessor Systems *E*	30		2		3	
10.	Power Systems	30		2		2	
	Total:	150	220	10	15	12	18
							30

Semester IV

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language *E*		30		2		2
2.	Mathematics *E*	30	15	2	1	2	2
3.	Electrical Engineering		30		2		3
4.	Electrical Metrology		30		2		2
5.	Introductory Electronics		30		2		2
6.	Fundamentals of Power Electronics		30		2		2
7.	Fundamentals of Power Systems *E*	30	30	2	2	3	2
8.	Fundamentals of Microprocessor Systems		30		2		2
9.	Sensors and Systems	30		2		2	
10.	Control Theory *E*	30	15	2	1	2	2
11.	Power Systems		30		2		2
	Total:	120	270	8	18	9	21
			390		26		30

M.Sc. programme: Digital Measuring Systems

Semester V

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Mathematics	30	30	2	2	3	2
3.	Physics	30		2		2	
4.	Electrical Engineering *E*	30	15	2	1	2	2
5.	Computer Science Essentials		30		2		2
6.	Fundamentals of Microprocessor Systems	15	45	1	3	2	3
7.	Control Theory		30		2		2
8.	Fundamentals of Electric Motor Drives *E*	30		2		2	
9.	Computer-Aided Design		30		2		2
10.	Measuring Devices and Systems *E*	15	30	1	2	2	2
	Total:	150	240	10	16	13	17
			390		26		30

Semester VI

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Mathematics *E*	30	30	2	2	3	2
3.	Physics *E*	30		2		3	
4.	Electrical Engineering	30		2		3	
5.	High-Voltage Engineering	30		2		2	
6.	Computer-Aided Design		30		2		2
7.	Measuring Devices and Systems *E*	30	30	2	2	2	2
8.	Measurement Transducers	30		2		2	
9.	Microprocessor Systems	30	45	2	3	2	3
10.	Elective Course A	15		1		2	
	Total:	225	165	15	12	19	11
		390		27		30	

Semester VII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Computer-Aided Design		30		2		2
3.	Measurement Transducers *E*	30	75	2	5	3	5
4.	Microprocessor Systems *E*	15	69	1	3	2	5
5.	Computer Networks *E*	30	15	2	1	2	2
6.	Designing with Measurement Equipment	15	45	1	3	2	3
7.	Elective Course B		30		2		2
	Total:	90	285	6	19	9	21
		375		25		30	

Semester VIII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Computer Networks		30		2		2
3.	Designing with Measurement Equipment		45		3		3
4.	Metrology of Non-Electrical Quantities *E*	30	15	2	1	3	2
5.	Electronic Measuring Devices *E*	30	60	2	4	2	4
6.	Control Systems *E*	30	30	2	2	3	2
7.	Digital Networks and Protocols	15	30	1	2	2	2
8.	Supervised Project Research		30		2		3
	Total:	105	270	7	18	10	20
		375		25		30	

Semester IX

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Humanities or Social Science	30		2		2	
2.	Digital Measuring Devices *E*	30	75	2	5	2	3
3.	Measuring Device Design	30	30	2	2	2	2
4.	Measuring Device Technology	30	30	2	2	2	2
5.	Elective Course C *E*	30	30	2	2	2	2
6.	Inventiveness and Patent Protection	30		2		2	
7.	Economics		30		2		2
8.	Master's Thesis Research		60		4		4
9.	Graduate Seminar		30		2		3
	Total:	150	285	12	19	12	18
		435		31		30	

List of Elective Courses

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
	Elective Course A Semester VI						
1.	Correlation Methods in Measurement	15		1		2	
2.	Magnetic Measurements						
	Elective Course B Semester VII						
1.	Databases		30		2		2
2.	Virtual-Instruments Technology						
	Elective Course C Semester IX						
1.	Digital Signal Processing in Measuring Devices *E*	30	30	2	2	2	2
2.	Principles of Intelligent Measurement Transducer Design *E*						

M.Sc. programme: Power Electronics and Electrical Power Engineering

Semester V

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Mathematics	30	30	2	2	3	2
3.	Physics	30		2		2	
4.	Electrical Engineering *E*	30	15	2	1	2	2
5.	Fundamentals of Microprocessor Systems	15	45	1	3	2	3
6.	Control Theory		30		2		2
7.	Fundamentals of Electric Motor Drives *E*	30		2		2	
8.	Transmission and Distribution of Electrical Energy *E*	30		2		2	
9.	Power Electronics Systems	30		2		2	
10.	CAD in Electrical Engineering		15		1		2
11.	Electromechanical Energy Conversion	30		2		2	
	Total:	225	165	15	11	17	13
			390		26		30

Semester VI

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Mathematics *E*	30	30	2	2	3	2
3.	Physics *E*	30		2		3	
4.	Electrical Engineering *E*	30		2		3	
5.	Fundamentals of Electric Motor Drives		30		2		2
6.	High-Voltage Engineering	30		2		2	
7.	Transmission and Distribution of Electrical Energy		30		2	2	
8.	Power Electronics Systems *E*	30	15	2	1	2	1
9.	CAD in Electrical Engineering		30		2		2
10.	Principles of Energy Conversion		15		1		2
11.	Control of Power Electronics Systems	30	30	2	2	2	2
	Total:	180	210	12	14	15	15
			390		26		30

Semester VII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Transmission and Distribution of Electrical Energy		30		2		2
3.	Power Electronics Systems		30		2	2	
4.	CAD in Electrical Engineering	30	15	2	1	2	2
5.	Control of Power Electronic Systems	30	15	2	1	2	2
6.	Programmable Controllers E	30	60	2	4	2	4
7.	Principles of Energy Conversion		30				
8.	Control Engineering E	30	15	2	1	2	2
9.	Power Systems Protection	30		2		2	
10.	Power Electronics Motor Drives Control E	30		2		2	
11.	Computer Tools in Electrical Engineering		30		2		3
	Total:	150	250	10	16	10	20
			390		26		30

Semester VIII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Power Electronics Systems		60		4		4
3.	Control of Power Electronics Systems		15		1		2
4.	Power Systems Protection		30		2	2	
5.	Power Electronics Motor Drives Control E	15	30	1	2	1	3
6.	Computer Tools in Electrical Engineering		30		2		3
7.	Electromagnetic Compatibility and Power Quality E	30	30	2	2	2	2
8.	Power Electronics Laboratory		45		3		3
9.	Elective Course A, B or C E	30	15	2	1	2	1
10.	Supervised Project Research		30		2		3
	Total:	75	315	5	21	6	24
			390		26		30

Semester IX

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Power Electronics Systems		15		1		2
2.	Industrial Controllers		30		2		3
3.	Power Electronics Motor Drives Control		60		4		4
4.	Electromagnetic Compatibility and Power Quality		15		1		2
5.	Elective Course A, B or C E	45	30	3	2	3	3
6.	Inventiveness and Patent Protection	30		2		2	
7.	Economics		30		2		2
8.	Master's Thesis Research		60		4		4
9.	Graduate Seminar		30		2		3
10.	Humanities or Social Science	30		2	2	2	
	Total:	105	270	7	18	7	23
			375		25		30

List of Elective Courses

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
Elective Course A Semester VIII							
1.	Advanced Control Systems E	30	15	2	1	2	1
Elective Course A Semester IX							
1.	Fundamentals of Mechatronics and Precise Devices E	45	30	3	2	3	3
2.	Advanced Control Systems E	30	15	2	1		
Elective Course B Semester VIII							
1.	Problems of Energy Efficiency E	15	30	1	2	2	1
Elective Course B Semester IX							
1.	Problems of Energy Efficiency E	30		3		3	3
2.	Alternative Sources of Electrical Energy E	30	60	2	4		
Elective Course C Semester VIII							
1.	Illuminating Engineering	15		1		2	
2.	Manufacturing Scheduling E	30		2			
Elective Course C Semester IX							
1.	Illuminating Engineering E	15	30	1	2	3	3
2.	Manufacturing Scheduling E		30		2		
3.	Electric Heating Engineering E	30	15	2	1		

M.Sc. Programme: Information Systems Engineering

Semester V

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Mathematics	30	30	2	2	2	2
3.	Physics	30		2		2	
4.	Electrical Engineering *E*	30	15	2	1	2	2
5.	Fundamentals of Microprocessor Systems	15	45	1	3	1	3
6.	Control Theory		30		2		2
7.	Fundamentals of Electric Motor Drives *E*	30		2		3	
8.	Numerical Methods *E*	30	30	2	2	3	2
9.	Elective Course A	15	30	1	2	2	2
	Total:	180	210	12	14	15	15
		390		26		30	

Semester VI

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Mathematics *E*	30	30	2	2	3	2
3.	Physics *E*	30		2		3	
4.	Electrical Engineering	30		2		3	
5.	High-Voltage Technology	30		2		2	
6.	Elective Course B	30		2		2	
7.	Signal Processing *E*	30	30	2	2	3	2
8.	Optimisation Methods *E*	30	30	2	2	3	2
9.	Network Operating Systems	15	30	1	2	1	2
	Total:	225	150	15	11	20	10
		375		26		30	

Semester VII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Network Operating Systems _E_	30	30	2	2	2	2
3.	Elective Course C	30	30	2	2	2	2
4.	Topics in Artificial Intelligence and Expert Systems _E_	30	30	2	2	3	2
5.	Computer Architecture _E_	30	30	2	2	3	2
6.	Elective Course D _E_	30	30	2	2	3	2
7.	Elective Course E	30	30	2	2	2	3
	Total:	180	210	12	14	15	15
			390		26		30

Semester VIII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Elective Course B _E_	30	30	2	2	3	2
3.	Topics in Artificial Intelligence and Expert Systems		30		2		2
4.	Elective Course E		30		2		2
5.	Elective Course F	15	30	1	2	2	3
6.	Concurrent and Distributed Programming _E_	30	30	2	2	3	2
7.	Control Systems _E_	30	45	2	3	3	3
8.	Supervised Project Research		30		2		3
	Total:	105	255	7	17	11	19
			360		24		30

Semester IX

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Humanities or Social Science	30		2		2	
2.	Elective Course B		30		2		2
3.	Control Systems		45		3		2
4.	Industrial Computer Networks _E_	30	30	2	2	4	2
5.	Correcting Coding Techniques _E_	30	30	2	2	4	3
6.	Inventiveness and Patent Protection	30		2		2	
7.	Economics		30		2		2
8.	Master's Thesis Research		60		4		4
9.	Graduate Seminar		30		2		3
	Total:	120	255	8	17	12	18
		375		25		30	

List of Elective Courses

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
	Elective Course A Semester V						
1.	Computer-Algebra Systems						
2.	Computer-Aided Engineering	15	30	1	2		2
	Elective Course B Semester VI						
1.	Intelligent Computation Systems						
2.	Modelling and Optimisation of Dynamic Systems	15		1		2	
	Elective Course B Semester VIII						
1.	Intelligent Computation Systems E	30	30	2	2	3	2
2.	Modelling and Optimisation of Dynamic Systems E						
	Elective Course B Semester IX						
1.	Intelligent Computation Systems						
2.	Modelling and Optimisation of Dynamic Systems		30		2		2
	Elective Course C Semester VII						
1.	Modelling of Discrete Event Systems						
2.	Data Protection in Computer Systems and Networks	30	30	2	2	2	2
	Elective Course D Semester VII						
1.	Identification Techniques E	30	30	2	2	3	2
2.	Optimal Control E						
	Elective Course E Semester VII						
1.	Databases						
2.	Computer Graphics and Multimedia	30	30	2	2	2	3
	Elective Course E Semester VIII						
1.	Databases						
2.	Computer Graphics and Multimedia		30		2		2
	Elective Course F Semester VIII						
1.	Introduction to Machine Learning						
2.	Design and Analysis of Algorithms	15	30	1	2	2	3

M.Sc. programme: Computer Systems Engineering

Semester V

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Mathematics	30	30	2	2	3	2
3.	Physics	30		2		2	
4.	Electrical Engineering *E*	30	15	2	1	2	2
5.	Fundamentals of Microprocessor Systems	15	45	1	3	2	3
6.	Control Theory		30		2		2
7.	Fundamentals of Electric Motor Drives *E*	30		2		2	
8.	Hardware Description Languages *E*	15	30	1	2	2	2
9.	Operating Systems	30	30	2	2	2	2
	Total:	180	210	12	14	15	15
		390		26		30	

Semester VI

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Mathematics	30	30	2	2	3	2
3.	Physics	30		2		2	
4.	Electrical Engineering *E*	30	15	2	1	2	2
5.	Fundamentals of Microprocessor Systems	15	45	1	3	2	3
6.	Control Theory		30		2		2
7.	Fundamentals of Electric Motor Drives *E*	30		2		2	
8.	Hardware Description Languages *E*	15	30	1	2	2	2
9.	Operating Systems	30	30	2	2	2	2
	Total:	180	210	12	14	15	15
		390		26		30	

Semester VII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	CAD of Digital Electronic Circuits *E*	15	45	1	3	2	3
3.	Elective Course A		45		3		3
4.	Elective Course B *E*	30	30	2	2	3	2
5.	CAD of Analogue Electronic Circuits		45		3		3
6.	Computer Architecture *E*	30	15	2	1	3	2
7.	Computer Networks	15	30	1	2	1	2
8.	Microprocessor Systems	30	30	2	2	2	2
	Total:	120	270	8	18	11	19
			390		26		30

Semester VIII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Computer Networks *E*	15	30	1	2	3	2
3.	Microprocessor Systems		45		3		3
4.	Electronic Device Design		45		3		3
5.	Advanced Programming Techniques *E*	30	45	2	3	2	4
6.	Digital Signal Processing	15	45	1	3	1	3
7.	Elective Course C	30	30	2	2	2	2
8.	Supervised Project Research		30		2		3
	Total:	90	300	6	20	8	22
			390		26		30

Semester IX

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Humanities or Social Science			2			
2.	Advanced Programming Techniques	15	30	1	2	1	2
3.	Digital Signal Processing _E_	15	45	1	3	2	4
4.	Elective Course C _E_	30	30	2	2	2	2
5.	Elective Course D	15	30	1	2	2	2
6.	Architecture of PCs		30		2		2
7.	Inventiveness and Patent Protection	30		2		2	
8.	Economics		30		2		2
9.	Master's Thesis Research		60		4		4
10.	Graduate Seminar		30		2		3
	Total:	105	285	9	19	9	21
			375		28		30

List of Elective Courses

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
	Elective Course A Semester VI						
1.	Databases						
2.	Multimedia Systems Technologies	15	30	1	2	2	2
	Elective Course B Semester VI						
1.	Programming in C/C++						
2.	Modern Programming Languages	15	30	2	1	1	2
	Elective Course A Semester VII						
1.	Databases						
2.	Multimedia Systems Technologies		45		3		3
	Elective Course B Semester VII						
1.	Programming in C/C++ E						
2.	Modern Programming Languages E	30	30	2	2	3	2
	Elective Course C Semester VIII						
1.	Adaptive Systems	30	30	2	2	2	2
2.	Embedded Systems						
	Elective Course C Semester IX						
1.	Adaptive Systems E	30	30	2	2	2	2
2.	Embedded Systems						
	Elective Course D Semester IX						
1.	Elements of Visual Programming	15	30	1	2	2	2
2.	Programmable Logic Controllers						

Common courses for all M.Sc. programmes

Semester X

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Master's Thesis Research		150		10		10
2.	Graduate Seminar		30		2		5
3.	Dissertation		15		1		15
	Total:		195		13		30
		195		13		30	

Faculty Management

Prof. Ryszard Rohatyński   Dean
Prof. Jerzy Mutwil   Vice-Dean for Research and Science
Dr. Tadeusz Szmigielski   Vice-Dean for Student Affairs

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The Faculty of Mechanical Engineering was established in 1967 and at that time offered courses only in Mechanics. Currently, the Faculty's study programme comprises Mechanics, Mechanical and Production Engineering, as well as Engineering Management. Both full-time and part-time students can choose from among the following options for specialisation: production engineering, automation and organisation of production processes, vehicle maintenance and marketing, engineering design and management, agriculture engineering, management and marketing in agriculture, vehicle engineering.

In October 2000 the Faculty, in co-operation with the Faculty of Fundamental Technological Research, is going to offer courses in Management and Production Engineering.

The Faculty employs 7 full professors, 12 associate professors and 30 assistant professors. In December 1999, the Faculty was granted the right to confer Doctor's degrees in Mechanical Engineering . The number of students increases every year. So far, 3,506 students have completed their studies at the Faculty and graduated. In the academic year 1999/2000 there were 1,338 students of Mechanics and Mechanical Engineering, 674 of which full-time.

Organisational Structure

The Faculty is composed of two Institutes:
- *Institute of Production Engineering and Materials Science,* and
- *Institute of Mechanical Engineering and Vehicles*

The institutes are, for organisational purposes, divided into divisions handling different areas of teaching and research. Each institute is responsible for providing basic education to all students in subject areas related to its research pursued, for one or two specialisation options of the M.Sc. programme.

INSTITUTE OF PRODUCTION ENGINEERING AND MATERIALS SCIENCE

Organisational Structure

Division of Materials Science and Non-Machining Processing, Division of Organisation and Automation of Production Processes, Division of Machine Design and Concurrent Engineering, and Division of Machining and Machinery Operation

Research Activity

The main research areas at the Institute are:
- refining, grain refinement and crystallisation of metals and alloys: extractive refining of copper and its alloys with carbide calcium containing slag, nucleus - creative grain refinement of copper and aluminium alloys,
- constructional materials, tools, materials and lubricants:quantitative and qualitative analysis of metal and alloy microstructures, influence of machining and heat treatment technologies on the properties of steel and its surface layer,
- optimisation of design using CAD systems, methodology of concurrent engineering, procedures and algorithms applied in the configuration and parametric design of machineryand engineering systems, engineering creativity,
- quality in manufacturing processes: optimisation of inspection stand locations in modelling due to the applied strategy of quality assurance,
- design and testing of surgical implant systems: optimisation of anodising treatment for implants made from titanium alloys.

Teaching and Research Laboratories

The Institute's laboratories are the main base for research and development of ideas related to the scientific interests of research teams. They are also used during taught courses for experiments and project work. In particular, the Institute's facilities include:
- *Computer - Aided Engineering Laboratory* equipped with networked high-performance PC machines, as well as CAD, FEM and other software systems,
- *Robotics Laboratory* based on an Irb-6 industrial robot, a FESTO AB manipulator, ARA linear positioning modules and a FESTO educational robot, and

- *Programmable Logic Controllers Laboratory* based on FPC 101A, FPC 404, SIMATIC and FMEA controllers.

The Institute also possesses highly specialised equipment such as an IMSL-10 induction furnace, a device for metal flow testing in a casting mould, a microprocessor system for casting contraction tests, a VDN-1.13 vacuum furnace, as well as a facility for testing lubrication properties of oil and grease.

INSTITUTE OF MECHANICAL ENGINEERING AND VEHICLES

Organisational Structure

Engineering Mechanics Division, Automotive Vehicle Division

Research Activity

The main research areas at the Institute are:
- analysis of fluids with microstructure: fluid flows, simulating certain biological processes, consumption and technical fluids in channels with enclosed straight and curved surfaces,
- viscoplastic fluid flow analysis: fluids simulating flows of melted polymers and metals,
- theory of slide bearing lubrication: slide bearings with flat and curvilinear work surfaces,
- electrorheology, active materials in machine construction: electro- and magneto -rheological fluids in geometrically complex mechanical systems,
- dynamics and strength of thin-walled structures, especially sandwich constructions, in regions of (in)stability.

Teaching and Research Laboratories

The Institute's laboratories are extensively used in research and education, especially for students who take their courses in subjects such as Mechanics, Strength of Materials, Motion Theory and Vehicle Dynamics, Automotive Engineering, Combustion Engines and Combustion Thermodynamics. Apart from standard equipment, the Institute has a collection of tensile testing machines, a Zwick N3U hardness tester, a computer system for noise measurements, a stand for manufacturing composite suspension springs, two fatigue test stands, as well as facilities for measuring vibrations, modelling flow rounds, diagnosing electric systems of vehicles, and testing LPG engines and engine braking. Moreover, the Institute has 16 computers, including two networked SUN-Ultra workstations.

Subject area: *MECHANICS AND MECHANICAL ENGINEERING*

M.Sc. Programmes:
- *Automation and Organisation of Production Processes*
- *Vehicle Maintenance and Marketing*
- *Engineering Design and Management*
- *Biomedical Engineering*
- *Machine Engineering*
- *Mechanisation, Management and Marketing in Agriculture*

Subject area: *MANAGEMENT AND PRODUCTION ENGINEERING*

M.Sc. Programmes:
- *Manufacturing Management*
- *Agricultural Engineering and Management*
- *Quality Engineering*

Common courses for all M.Sc. programmes: Semesters I - VII

Notation: E - Examination, Pr - Problem Classes, Lab - Laboratory, Sem - Seminar

Semester I

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Chemistry	15	15	1	1	1	1
2.	Theory of Machines	30		2		1	
3.	Descriptive Geometry	15	30	1	2	1	3
4.	Structure Description		30		2		3
5.	Computer Science Applications		30		2		2
6.	Mathematics *E*	45	45	3	3	4	4
7.	Manufacturing Engineering	30		2		2	
8.	Mechanical Engineering *E*	30	30	2	2	3	3
9.	Machine Design Fundamentals	15	15	1	1	1	1
	Total:	180	195	12	13	13	17
			375		25		30

Semester II

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Chemistry		15		1		1
2.	Structure Description		30		2		2
3.	Computer Science Applications		30		2		2
4.	Electrical Engineering	15	30	1	2	1	2
5.	Mathematics *E*	30	30	2	2	3	3
6.	Manufacturing Engineering	15	30	1	2	1	2
7.	Mechanical Engineering *E*	30	30	2	2	2	2
8.	Strength of Materials *E*	30	30	2	2	3	3
9.	Materials Science	30		2		3	
	Total:	150	225	10	15	13	17
			375		25		30

Semester III

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Manufacturing Engineering	30	30	2	2	3	3
3.	Strength of Materials		30		2		2
4.	Materials Science *E*	30	15	2	1	3	1
5.	Fluid Mechanics	30	15	2	1	2	1
6.	Thermodynamics *E*	30		2		2	
7.	Machine Construction Essentials	30	30	2	2	3	3
8.	Theory of Machines	15	30	1	2	1	2
9.	Metrology and Measuring Systems *E*	30		2		3	
10.	Physical Education		30		2		1
	Total:	195	210	13	14	16	14
			405		27		30

Semester IV

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Materials Science		30		2		2
3.	Fluid Mechanics		15		1		1
4.	Thermodynamics		15		1		1
5.	Machine Construction Essentials *E*	30	60	2	4	3	5
6.	Control Systems *E*	15	30	1	2	2	2
7.	Metrology and Measuring Systems		30		2		2
8.	Power Transmission Systems	15	15	1	1	1	1
9.	Machine Maintenance Essentials	30	30	2	2	2	2
10.	Physics	15	15	1	1	2	1
11.	Physical Education		30		2		1
	Total:	105	300	7	20	10	20
			405		27		30

Semester V

No	Courses		Teaching hours per year		Teaching hours per week		ECTS points	
			Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language			30		2		2
2.	Mathematics	E	30	30	2	2	2	2
3.	Manufacturing Engineering		30	30	2	2	3	2
4.	Mechanical Engineering	E	30	30	2	2	3	3
5.	Strength of Materials	E	30	30	2	2	3	3
6.	Power Transmission Systems		30	15	2	1	3	3
7.	Physics		30	30	2	2	2	2
	Total:		180	195	12	13	15	15
				375		25		30

Semester VI

No	Courses		Teaching hours per year		Teaching hours per week		ECTS points	
			Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language			30		2		2
2.	Computer Science Applications		15	45	1	3	1	3
3.	Mathematics		15	15	1	1	2	2
4.	Materials Science	E	30	15	2	1	3	2
5.	Physics			30		2		2
6.	Elective Course A	E	30	30	2	2	3	2
7.	Design Engineering		30	30	2	2	2	2
8.	Quality Control		30	30	2	2	2	2
	Total:		150	225	10	15	13	17
				225		25		30

Semester VII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Computer Science Applications		30		2		2
3.	Supervised Project Research		60		4		4
4.	Engineering Optimisation E	30	30	2	2	3	3
5.	Manufacturing Automation E	30	30	2	2	3	3
6.	Organisation and Management of Manufacturing Processes	30		2		3	
7.	Environmental Protection	30		2		2	
8.	Patent Law	30		2		2	
9.	Manufacturing Economics	30		2		3	
	Total:	180	180	12	12	16	14
		360		24		30	

List of Elective Courses

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
	Elective Course A Semester VI						
1.	Elasticity and Plasticity Theory E	30	30	2	2	3	2
2.	Continuous Media E Mechanics with Rheology						

M.Sc. programme: Automation and Organisation of Production Processes

Semester VIII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Process Modelling and Simulation *E*	30	15	2	1	3	3
2.	Elective Course A *E*	30	30	2	2	2	3
3.	Systems Analysis	30		2		2	
4.	Elective Course B	30	30	2	2	2	2
5.	Total Quality Management	30	30	2	2	2	2
6.	CAx	30	30	2	2	2	2
9.	Programmable Control Systems *E*	30	30	2	2	3	2
	Total:	210	165	14	11	16	14
		375		25		30	

Semester XI

No	Courses	Teaching hours per year		Teaching hours per week		ECTS poins	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	CAx	15	15	1	1	2	2
2.	Programmable Control Systems	15	15	1	1	2	2
3.	Elective Course C	30	30	2	2	2	2
4.	Assembly Automation *E*	30	15	2	1	2	2
5.	Elective Course D *E*	30	30	2	2	2	2
6.	MRP II *E*	30	30	2	2	2	2
7.	Elective Course E	15	15	1	1	2	2
8.	Supervised Project Research		60		4		2
	Total:	165	210	11	14	14	16
		375		25		30	

Semester X

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Process Management	30	30	2	2	2	2
2.	Master's Thesis Research		60		4		2
3.	Graduate Seminar		30		2		4
4.	Advanced Topics in Mechanics and Mechanical Engineering	30		2		2	
5.	Dissertation						18
	Total:	60	120	4	8	4	26
			180		18		30

List of Elective Courses

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
	Elective Course A Semester VIII						
1.	Logistics and Transport Systems E	30	30	2	2	2	3
2.	Logistic Transport and Storage Systems E						
	Elective Course B Semester VIII						
1.	Control Engineering	30	30	2	2	2	2
2.	Automated Quality Control						
	Elective Course C Semester IX						
1.	Artificial Intelligence and Neural Networks	30	30	2	2	2	2
2.	Expert Systems						
	Elective Course D Semester IX						
1.	Automated Process Design E	30	30	2	2	2	2
2.	Design, Visualisation and Simulation of Processes E						
	Elective Course E Semester IX						
1.	Sensor Systems	15	15	1	1	2	2
2.	Measurement of Physical Quantities						

M.Sc. programme: Engineering Design and Management

Semester VIII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language for Engineers		30		2		2
2.	Topics in Production Automation *E*	30	30	2	2	2	3
3.	Engineering Systems	15	15	1	1	1	2
4.	Machinery and Mechanism Synthesis	15	30	1	2	1	3
5.	Marketing	30		2		2	
6.	Elective Course A *E*	30	30	2	2	2	2
7.	Topics in Machine Design	30	30	2	2	2	3
8.	CAD/CAM	30	30	2	2	2	3
	Total:	180	195	12	13	12	18
			375		25		30

Semester IX

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language for Engineers		30		2		2
2.	Topics in Machine Design *E*	15	15	1	1	1	2
3.	CAD/CAM		30		2		2
4.	Modelling and Simulation for Design *E*	30	30	2	2	2	3
5.	Elective Course B	30	30	2	2	2	3
6.	Elective Course C	15	15	1	1	1	2
7.	Creative Problem Solving for Engineering	30	15	2	1	2	2
8.	Documentation and Presentation of Engineering Work	15	15	1	1	1	1
9.	Supervised Project Research		60		4		4
	Total:	135	240	9	16	9	21
			375		25		30

Semester X

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Elective Course D	30	30	2	2	1	3
2.	Elective Course E	15	30	1	2	1	3
3.	Master's Thesis Research		45		3		3
4.	Graduate Seminar		45		3		3
5.	Dissertation						16
	Total:	45	150	3	10	2	28
			195		13		30

List of Elective Courses

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
	Elective Course A Semester VIII						
1.	Machine Construction Producibility E	30	30	2	2	2	2
2.	Choice of Construction Materials E						
	Elective Course B Semester IX						
1.	Advanced Computation Techniques E	30	30	2	2	2	3
2.	Engineering Optimisation E						
	Elective Course C Semester IX						
1.	Design Reliability	15	15	1	1	1	2
2.	Statistical Decisions in Design						
	Elective Course D Semester X						
1.	Economic Issues Related to Design	30	30	2	2	1	3
2.	Design for Cost						
	Elective Course E Semester X						
1.	Project Management	15	30	1	2	1	3
2.	Management of Small-Sized Businesses						

M.Sc. programme: Vehicle Maintenance and Marketing

Semester VIII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Vehicle Diagnostics	30	15	2	1	2	1
2.	Trade and Distribution	30	15	2	1	2	1
3.	Vehicle Engineering *E*	30	30	2	2	3	2
4.	Vehicle Dynamics	15	30	1	2	2	2
5.	Elective Course A *E*	30	15	2	1	2	2
6.	Automotive Vehicle Maintenance	15	15	1	1	2	2
7.	Special Vehicles	30	15	2	1	2	1
8.	Transport Systems	30		2		2	
9.	Vehicle Automation and Control *E*	30		2		2	
	Total:	240	135	16	9	19	11
		375		25		30	

Semester IX

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Vehicle Engineering *E*	30	15	2	1	2	3
2.	Vehicle Dynamics *E*	30	15	2	1	2	2
3.	Elective Course B		30		2		2
4.	Automotive Vehicle Maintenance *E*	30	15	2	1	1	1
5.	Special Vehicles	15		1		2	
6.	Transport Systems		15		1		1
7.	Vehicle Automation and Control		15		1		1
8.	Elective Course C	30	15	2	1	1	1
9.	Vehicle Service Organisation		30		2		2
10.	Supervised Project Research		45		3		5
11.	Accounting	15	15	1	1	1	1
12.	Plastics in Vehicle Engineering		15		1		2
	Total:	150	225	10	15	9	21
		375		25		30	

Semester X

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Plastics in Vehicle Engineering	15	15	1	1	1	1
2.	Automotive Electrical Engineering		30		2		3
3.	Reliability of Machines and Vehicles	30	15	2	1	2	1
4.	Marketing	30		2		2	
5.	Business Organisation and Management	30		2		2	
6.	Master's Thesis Research		45		3		4
7.	Graduate Seminar		60		4		4
8.	Dissertation						10
	Total:	105	165	7	11	7	23
			270		18		30

List of Elective Courses

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
	Elective Course A Semester VIII						
1.	Motor-Car Engines E						
2.	Hybrid Propulsion E	30	15	2	1	2	2
	Elective Course B Semester IX						
1.	Motor-Car Engines						
2.	Hybrid Propulsion		30		2		2
	Elective Courses C Semester IX						
1.	Automotive Vehicle Servicing and Repairs	30	15	2	1	1	1
2.	Motor-Car Body Production						

M.Sc. programme: Machine Engineering

Semester VIII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Machining Principles *E*	30	15	2	1	3	2
2.	Machine Tools	30	30	2	2	1	2
3.	Design Principles of Machining Operations	30		2		2	1
4.	Foundry Engineering	30	30	2	2	2	3
5.	Foundry Machines and Installations	30		2		2	
6.	Design Principles for Foundry Processes	30		2		3	
7.	Plastic Working Theory *E*	30		2		4	
8.	Design Principles of Plastic Working	30	2	2		2	
9.	Welding Technology	15	15	1	1	1	1
10	Heat Treatment	15	15	1	1	1	1
	Total:	270	105	18	7	21	9
		375		25		30	

Semester IX

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Theory of Machines *E*	30	15	2	1	3	1
2.	Assembly Technology	30	15	2	1	1	1
3.	Non-Metals and Protective Coatings	30	15	2	1	1	1
4.	Manufacturing Design		30		2		5
5.	CAD/ CAM		30		2		3
6.	Physico-Chemical Foundations of Manufacturing Processes *E*	15	15	1	1	2	1
7.	Supervised Project Research		15		1		3
8.	Elective CourseA	15	45	1	3	1	3
9.	Metal Finishing Processes	30	15	2	1	1	1
10	Instrumentation Engineering	15	15	1	1	1	1
	Total:	165	210	11	14	10	20
			375		25		30

Semester X

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	CAD/ CAM		60		4		4
2.	Advanced Topics in Mechanics and Mechanical Engineering	30		2		2	
3.	Manufacturing Management	30		2		2	
4.	Master's Thesis Research		60		4		5
5.	Graduate Seminar		30		2		2
6.	Dissertation						15
	Total:	60	150	4	10	4	26
			210		14		30

List of Elective Courses

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
	Elective Course A Semester IX						
1.	Numerical Methods in Engineering Computation	15	45	1	3	1	3
2.	Optimum Experimental Design						
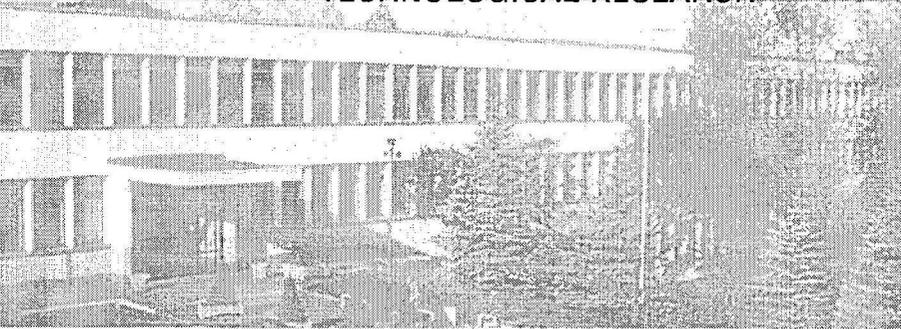
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The Faculty of Fundamental Technological Research was established in 1987. It offers undergraduate (B.Sc.) and graduate (M.Sc.) curricula for both full-time and part-time students in the following subject areas and the corresponding options for specialisation:

- Mathematics: mathematical computer science, industrial mathematics, econo-mathematics, finance and insurance mathematics, teacher's training in computer science and mathematics,
- Management and Marketing: European economic integration, computer science in management, marketing and staff management, finance management, management of small and medium business, environmental and technical infrastructure management, finance and banking, strategic management and marketing strategic management and finance.

In October 2000 the Faculty is going to offer, in co-operation with the Faculty of Mechanical Engineering, a course in Management and Production Engineering. Furthermore, the Faculty also offers post-graduate courses in:
- Business Management,
- School Management, and
- Financial Management.

Altogether there are 3,404 students:
- 753 students of Mathematics, 492 of which full-time, and
- 2,651 students of Management and Marketing, 835 of which full-time.

So far 2,356 students have graduated from the Faculty, including 403 in Mathematics and 1,953 in Management and Marketing. The Faculty employs 6 full professors, 27 associate professors and 28 assistant professors.

Organisational Structure

The Faculty is composed of three institutes:
- *Institute of Mathematics,*
- *Institute of Organisation and Management,* and
- *Institute of Computer Science and Management.*

The institutes are, for organisational purposes, divided into divisions handling different areas of teaching and research. Each institute is responsible for providing basic education to all students in subject areas related to its research pursued.

INSTITUTE OF MATHEMATICS

Organisational Structure

Division of Mathematical Analysis, Division of Discrete Mathematics and Computer Science, Division of Industrial Mathematics, Division of Economathematics, Division of Statistics and Econometrics

Research Activity

The main research areas at the Institute are:
- graph theory,
- differential and integral equations,
- multivalued mappings and stochastic inclusions,
- probability theory and statistics,
- non-differentiable optimisation,
- mathematical modelling.

Teaching and Research Laboratories

The Institute's internal network of over 70 PC machines is linked to the University's campus network which in turn is connected to the Internet. Two central servers run UNIX and Windows NT operating systems. Almost half of the Institute's computers are used in teaching laboratories.

In addition to specialist software available in research laboratory environments, a wide range of software is available to all staff and students via the University network.

INSTITUTE OF ORGANISATION AND MANAGEMENT

Organisational Structure

Management and Marketing Division, Environment Management and Public Economy Division and Social Science Division

Research Activity

The main research areas at the Institute are:
- modern management techniques: strategic management, marketing, human resources management, management of production and environment, management of change, modern information systems,
- research on the Polish emigration in Great Britain, Germany and France,

- advertisement theory, its place in the contemporary culture (structure and functions),
- applications of mathematics, statistics and econometrics in management, application of fuzzy logic in economic processes, occupational and industrial safety and risk management.

Teaching and Research Laboratories

The major facilities available for students include four teaching laboratories equipped with 32 PC machines linked to the Institute's internal network managed by two servers. This network is connected to the high-speed campus network. The labs are used for teaching and project development. All PCs can access Internet services and a large number of PC software packages.

INSTITUTE OF COMPUTER SCIENCE AND MANAGEMENT

Organisational Structure

System Management Division, Applied Computer Science Division, Logistics and Computer Systems Division

Research Activity

The main research areas of the Institute are:
- trajectory planning and optimal control of industrial robots, including control of redundant robots acting in dynamic environments (containing both static and dynamic obstacles),

- security of information and computer systems against unauthorised access, including cryptography issues such as data protection and error-correcting codes design,
- computer integrated management system design for multi-product manufacturing, including the logistic modelling of virtual manufacturing and performance evaluation modelling of modern enterprises.

Teaching and Research Laboratories

Apart from computer labs with a number of PCs connected to the campus-wide ATM network (all PCs can access Internet services and a large number of PC software packages for Windows 98/NT), students can benefit from the Laboratory of Patent and Technology Information. The aim of this lab is to offer both training for students and research for the staff in the area of retrieval, acquisition, analysis and utilisation of technical and patent information. The activities are mainly focused on on-line database systems (classical, such as STN International, and Internet-driven, e.g. PATONline), as well as on systems based on optical media (CD-ROM databases, e.g. Preces, TechLine).

CURRICULUM

Subject area: *MANAGEMENT AND MARKETING*

M.Sc. Programmes:
- *European Economic Integration,*
- *Computer Science in Management,*
- *Marketing and Staff Management,*
- *Finance Management,*
- *Management of Small and Medium-Sized Businesses,*
- *Strategic Management,* and
- *Environmental and Technical Infrastructure Management.*

Subject area: *MATHEMATICS*

M.Sc. Programmes:
- *Mathematical Computer Science,*
- *Industrial Mathematics,*
- *Mathematics and Computer Science in Economics,*
- *Mathematics and Computer Science in Finance and Insurance,* and
- *Teacher's Mathematics and Computer Science*

Subject area: *MANAGEMENT AND PRODUCTION ENGINEERING*

M.Sc. Programmes:
- *Logistic Management*
- *Quality Management*

Common courses for all M.Sc. programmes: Semesters I - IV

Notation: E - Examination, Pr - Problem Classes, Lab - Laboratory, Sem - Seminar

Semester I

No	Courses	Teaching hours Per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Physical Education		30		2		2
2.	Philosophy		30		2		2
3.	Sociology	15	30	1	2	1	2
4.	Economic History		15		1		2
5.	Mathematics *E*	30	30	2	2	3	2
6.	Macroeconomics *E*	30	30	2	2	4	2
7.	Computer Science *E*	15	15	1	1	2	1
8.	Environmental Science	30	30	2	2	2	2
9.	Integration of Application Tools in Marketing	30	30	2	2	1	2
	Total:	150	240	10	16	13	17
			390		26		30

Semester II

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Physical Education		30		2		2
2.	English		30		2		2
3.	Mathematics *E*	30	30	2	2	4	2
4.	Macroeconomics *E*	30	30	2	2	4	2
5.	Microeconomics	30	30	2	2	3	3
6.	Electronic Spreadsheets	15	30	1	2	1	2
7.	Production Management *E*	30	30	2	2	3	2
	Total:	135	210	9	14	15	15
			345		23		30

Semester III

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	English *E*		30		2		3
2.	Mathematical Statistics *E*	30	30	2	2	3	1
3.	Microeconomics *E*	30	30	2	2	4	2
4.	Management Fundamentals *E*	15	30	1	2	3	2
5.	Law	15	30	1	2	2	2
6.	Application Software in Marketing	15	45	1	3	1	2
7.	Marketing Fundamentals *E*	30	30	2	2	3	2
	Total:	135	225	9	15	16	14
		360		24		30	

Semester IV

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	English		30		2		2
2.	Econometrics	30	30	2	2	3	2
3.	Institutions and Programmes of European Integration	30		2		2	
4.	Accounting *E*	30	30	2	2	4	2
5.	Ergonomics	30	30	2	2	1	2
6.	Market Analysis *E*	30	30	2	2	4	2
7.	Production Technical Support	15	15	1	1	1	1
8.	Safety Management in Work Processes	15	15	1	1	2	2
	Total:	180	180	12	12	17	13
		360		24		30	

Semester V

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	English		30		2		
2.	Operations Research *E*	15	15	1	1	2	2
3.	Finance *E*	30	30	2	2	4	2
4.	Sociology of Organisation and Management *E*	30	30	2	2	4	2
5.	Control Systems	15	30	1	2	1	2
6.	Internet Techniques	30	60	2	4	2	2
7.	Principles of Pro-Ecological Production *E*	15	30	1	2	3	2
	Total:	135	225	9	15	16	14
		360		24		30	

Semester VI

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	English *E*		30		2		4
2.	Managerial and Organisation Methods *E*	15	30	1	2	3	2
3.	Business Law		30		2		2
4.	Logistics	30	30	2	2	2	2
5.	Information Systems in Organisations and Institutions	30	30	2	2	2	2
6.	Business Infrastructure		30		2		2
7.	Strategic Management *E*	30	30	2	2	4	2
8.	Fundamentals of Robotics *E*	30	30	2	2	2	1
	Total:	135	240	9	16	13	17
		375		25		30	

Semester VII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Quality Assurance *E*	30	30	2	2	4	2
2.	Computer Simulation in Management	30	30	2	2	2	2
3.	Staff Management *E*	30	30	2	2	4	3
4.	Economic Analysis *E*	15	30	1	2	3	2
5.	Neural Networks *E*	30	45	2	3	2	2
6.	Computer Science for Management	15	30	1	2	2	2
	Total:	150	180	10	13	17	13
		330		23		30	

M.Sc. programme: European Economic Integration

Semester VIII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Law Essentials *E*	30	30	2	2	3	2
2.	Strategies of Regional Cooperation *E*	30	30	2	2	3	2
3.	Strategies of Regional Development *E*	30	30	2	2	3	2
4.	Graduate Seminar		30		2		2
5.	European Language		30		2		2
6.	Specialised Elective Course — See List 1						11
	Total:	90	150	6	10	9	21
		330		16		30	

Semester IX

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	International Economic Circulation	15	30	1	2	1	1
2.	Ecological Safety in Europe	15	30	1	2	2	2
3.	European Structural Funds	30		2		2	
4.	Foreign Commerce *E*	30	15	2	1	3	1
5.	Regional Promotion		30		2		2
6.	Guided Research		30		2		2
7.	Specialised Elective Courses – See List 2						14
	Total:	90	135	6	9	8	22
			225		15		30

Semester X

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Guided Research		60		4		30
	Total:		60		4		30
			60		4		30

M.Sc. programme: Computer Science in Management

Semester VIII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Computer-Aided Decision Making *E*	30	60	2	4	3	3
2.	Optimisation Methods *E*	30		2		3	
3.	Task Planning and Project Management *E*	30	15	2	1	3	1
4.	Game Theory	15	30	1	2	1	2
5.	Graduate Seminar		30		2		2
6.	European Language		30		2		2
7.	Specialised Elective Courses – See List 1						10
	Total:	105	165	7	11	10	20
		270		18		30	

Semester IX

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Optimisation Methods		60		4		4
2.	Decision-Support Systems *E*	15	30	1	2	2	1
3.	Innovation Management *E*	30	30	2	2	3	2
4.	Guided Research		30		2		2
5.	Specialised Elective Courses – See List 2						16
	Total:	45	150	3	10	5	25
		195		13		30	

Semester X

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Guided Research		60		4		30
	Total:		60		4		30
		60		4		30	

M.Sc. programme: Marketing and Staff Management

Semester VIII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Marketing Management *E*	30	30	2	2	3	2
2.	Business Communication *E*	15	30	1	2	2	2
3.	Economic Negotiations	15	30	1	2	2	2
4.	Promotion and Advertising	30	30	2	2	2	1
5.	Graduate Seminar		30		2		2
6.	European Language		30		2		2
7.	Specialised Elective Courses – See List 1						10
	Total:	90	180	6	12	9	21
			270		18		30

Semester IX

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Innovation Marketing *E*	30	30	2	2	3	2
2.	Staff Marketing	15	30	1	2	2	2
3.	Organisational Behaviour	30	30	2	2	3	2
4.	Guided Research		30		2		2
5.	Specialised Elective Courses – See List 2						14
	Total:	75	120	5	8	8	22
			195		13		30

Semester X

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Guided Research		60		4		30
	Total:		60		4		30
			60		4		30

M.Sc. programme: Finance Management

Semester VIII

No	Courses		Teaching hours per year		Teaching hours per week		ECTS points	
			Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Public Finance	E	30	30	2	2	3	2
2.	Tax Consulting	E	30	30	2	2	3	2
3.	Risk and Insurance		30		2		2	
4.	Fiscal Accounting			30		2		2
5.	Graduate Seminar			30		2		2
6.	European Language			30		2		2
7.	Specialised Elective Courses – See List 1							12
	Total:		90	150	6	10	8	22
				240		16		30

Semester IX

No	Courses		Teaching hours per year		Teaching hours per week		ECTS points	
			Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Banking	E	30	30	2	2	3	2
2.	Finance Management	E	30	30	2	2	3	2
3.	Economic and Finance Policies		15	30	1	2	1	2
4.	Bank Liquidity Management		30		2		2	
5.	Guided Research			30		2		2
6.	Specialised Elective Courses – See List 2							13
	Total:		105	120	7	8	9	21
				225		15		30

Semester X

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Guided Research		60		4		30
	Total:		60		4		30
			60		4		30

M.Sc. programme: Management of Small and Medium-Sized Businesses

Semester VIII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Economic Analysis *E*	15	30	1	2	2	2
2.	Marketing for Small and Medium-Sized Businesses	30	30	2	2	2	2
3.	Accounting for Small and Medium-Sized Businesses *E*	30	30	2	2	3	2
4.	Law for Small and Medium-Sized Businesses	15	30	1	2	1	2
5.	Graduate Seminar		30		2		2
6.	European Language		30		2		2
7.	Specialised Elective Courses- See List 1						10
	Total:	90	150	6	10	8	22
			240		16		30

Semester IX

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Finance of Small and Medium-Sized Businesses *E*	30	30	2	2	3	2
2.	Strategic Project		30		2		2
3.	Logistics and Quality Management *E*	30	30	2	2	3	2
4.	Business Development	15	15	1	1	1	1
5.	Guided Research		30		2		2
6.	Specialised Elective Courses – See List 2						14
	Total:	75	135	5	9	7	23
			210		14		30

Semester X

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Guided Research		60		4		30
	Total:		60		4		30
		60		4		30	

M.Sc. programme: Strategic Management

Semester VIII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Economic Decision Analysis *E*	30	30	2	2	3	2
2.	Capital Management	15	30	1	2	1	2
3.	Business Communication *E*	15	30	1	2	2	2
4.	Economic Negotiations	15	30	1	2	2	2
5.	Graduate Seminar		30		2		2
6.	European Language		30		2		2
7.	Specialised Elective Courses- See List 1						10
	Total:	75	180	5	12	8	22
		255		17		30	

Semester IX

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Venture Planning	30	30	2	2	2	2
2.	Turnover		30		2		2
3.	Logistics and Quality Management *E*	30	30	2	2	3	2
4.	Business Development	15	15	1	1	1	1
5.	Guided Research		30		2		2
6.	Specialised Elective Courses – See List 2						14
	Total:	75	135	5	9	7	23
		210		14		30	

Semester X

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Guided Research		60		4		30
	Total:		60		4		30
		60		4		30	

M.Sc. programme: Environmental and Technical Infrastructure Management

Semester VIII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Regional Development Strategies	30	30	2	2	1	2
2.	Public Capital Investments *E*	30	30	2	2	3	2
3.	Economic Negotiations	15	30	1	2	2	2
4.	Business Communication *E*	15	30	1	2	2	2
5.	Graduate Seminar		30		2		2
6.	European Language		30		2		2
7.	Specialised Elective Courses- See List 1						10
	Total:	90	180	6	12	8	22
			270		18		30

Semester IX

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Pro-Ecological Management *E*	30	30	2	2	3	2
2.	Public Sector Organisation *E*	15	15	1	1	2	2
3.	International Economic Circulation	15	30	1	2	1	1
4.	Regional Promotion		30		2		2
5.	Guided Research		30		2		2
6.	Specialised Elective Courses – See List 2						15
	Total:	60	135	4	9	6	24
			195		13		30

Semester X

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Guided Research		60		4		30
	Total:		60		4		30
		60		4		30	

Specialised elective courses: List 1

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Capital Management	15	30	1	2	1	2
2.	Technical and Financial Preparation of Investments _E_	30	30	2	2	3	2
3.	Financial Mathematics	15	15	1	1	1	1
4.	Space Management	15	30	1	2	1	2
5.	Management System Design	15	30	1	2	1	2
6.	Administrative and Budgetary Law	15	30	1	2	1	2
7.	Game Theory	15	30	1	2	1	2
8.	Regional Development Strategies	30	30	2	2	3	2
9.	Economic Negotiations	15	30	1	2	2	2
10.	Promotion and Advertising	30	30	2	2	2	1
11.	Presentation Techniques	15	15	1	1	1	1
12.	Business Communication _E_	15	30	1	2	2	2
13.	Manufacturing Technologies	15	15	1	1	1	1
14.	Energy-Efficient Economy	15	15	1	1	1	1
15.	Bank Systems	30		2		2	
16.	Economic Decision Analysis _E_	30	30	2	2	3	2
17.	Marketing Management	30	30	2	2	3	2

Specialised elective courses: List 2

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Intercultural Communication	15	30	1	2	1	2
2.	Pro-Ecological Management	30	30	2	2	3	2
3.	Exchange Law	30		2		2	
4.	Patent and Technology Information	15	15	1	1	1	1
5.	Industrial Ecology	15	15	1	1	1	1
6.	Security Market	30	30	2	2	2	2
7.	Controlling	15	15	1	1	1	1
8.	Management Accounting *E*	15	30	1	2	2	2
9.	Organisational Behaviour *E*	30	30	2	2	3	2
10.	International Economic Circulation	15	30	1	2	1	1
11.	Tax Consulting *E*	30	30	2	2	3	2
12.	Decision Making under Uncertainty	15	15	1	1	1	1
13.	Time Series in Market Analysis	15	30	1	2	2	2
14.	Topics in Logic	15	15	1	1	1	1
15.	Mathematical Techniques for Management	30		2		2	
16.	Capital Markets		30		2		2
17.	Venture Planning	30	30	2	2	2	2
18.	Supply Management	15	15	1	1	1	1
19.	Waste Management	15	30	1	2	1	2

Common courses for all M.Sc. programmes: Semesters I - IV

Notation: E - Examination, Pr - Problem Classes, Lab - Laboratory, Sem - Seminar

Semester I

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Principles of Mathematics *E*	30	30	2	2	3	3
2.	Mathematical Analysis *E*	60	60	4	4	6	5
3.	Linear Algebra *E*	60	45	4	3	6	4
4.	Analytlc Geometry		45		3		3
	Total:	150	180	10	12	17	13
			330		22		30

Semester II

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Mathematical Analysis *E*	60	60	4	4	5	5
2.	Linear Algebra *E*	60	60	4	4	5	5
3.	Programming Principles	30	30	2	2	2	2
4.	Philosophy *E*	30		2		2	
5.	English		30		2		2
6.	Physical Education		30		2		2
	Total:	180	210	12	14	14	16
			390		26		30

Semester III

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Mathematical Analysis *E*	45	45	3	3	4	3
2.	Algebra	30	30	2	2	2	2
3.	Discrete Mathematics	30	30	2	2	2	2
4.	Topology *E*	30	30	2	2	3	2
5.	Programming Principles *E*	30	30	2	2	2	2
6.	English		30		2		2
7.	Physical Education		30		2		2
	Electives						
1.	Sociology	30		2		2	
2.	Astronomy	30		2		2	
3.	Economics	30		2		2	
	Total:	150	225	13	15	15	15
			375		28		30

Semester IV

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Mathematical Analysis *E*	60	60	4	4	4	4
2.	Differential Equations *E*	30	30	2	2	2	2
3.	Algebra *E*	30	30	2	2	2	2
4.	Discrete Mathematics *E*	30	30	2	2	2	2
5.	Programming Principles	30	30	2	2	2	2
6.	Application Software		30		2		2
7.	English		30		2		2
	Electives						
1.	Philosophy II	30		2		2	
2.	Cosmology	30		2		2	
3.	Law	30		2		2	
	Total:	210	240	14	16	14	16
			450		30		30

M.Sc. programme: Mathematical Computer Science

Semester V

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Programming Principles E	30	30	2	2	4	2
2.	European Language		30		2		2
3.	Numerical Methods E	30	60	2	4	2	4
4.	Mathematical Probability E	30	30	2	2	3	2
5.	Computer Networks	30	30	2	2	2	2
6.	Combinatorial Analysis E	30	30	2	2	3	2
7.	Internet Resources and Tools	15	15	1	1	1	1
	Total:	165	225	11	15	15	15
		390		26		30	

Semester VI

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Mathematical Statistics E	30	45	2	3	4	3
3.	Mathematical Programming E	45	45	3	3	5	3
4.	Random Discrete Structures E	30	30	2	2	4	2
5.	Functional Analysis E	30	30	2	2	3	2
6.	LaTeX	15	15	1	1	1	1
	Total:	150	195	10	13	17	13
		345		23		30	

Semester VII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Database Systems *E*	30	60	2	4	5	4
3.	Windows Application Programming	30	30	2	2	3	2
4.	Algorithms and Data Structures	30	30	2	2	2	2
5.	Mathematical Modelling *E*	30	30	2	2	4	2
6.	Application Software		30		2		2
Specialised Elective Courses (a total of 4 ECTS points is required)							
1.	Introductory Computer Graphics	30	15	2	1	3	1
2.	Topics in Discrete Mathematics *E*	45		3		4	
3.	Computer Networks II	30	15	2	1	3	1
	Total:	150/165	210/225	10/11	14/15	17/18	13/12
			360/390		24/26		30

Semester VIII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Database Systems		30		2		2
2.	Database Systems II *E*	30	60	2	4	4	4
3.	Mathematical Software	15	30	1	2	1	2
4.	Algorithms and Data Structures *E*	30	30	2	2	3	2
5.	Graduate Seminar		30		2		4
6.	Advanced Topics in Mathematical Computer Science	30		2		2	
Specialised Elective Courses (a total of 2 ECTS points is required)							
1.	Topics in Algebra	30		2		2	
2.	Convergence of Probability Measures	30		2		2	
3.	Numerical Linear Algebra	30		2		2	
Specialised Elective Courses (a total of 4 ECTS points is required)							
1.	Sociology of Organisation and Management		30		2		1
2.	Business Communication		30		2		1
3.	Computer Modelling and Simulation *E*	30	15	2	1	2	1
4.	Artificial Intelligence Methods *E*	30	15	2	1	2	1
5.	UNIX Network Programming *E*	15	30	1	2	2	2
	Total:	150/165	210/225	10/11	14/15	14	16
			360/390		24/26		30

Semester IX

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Physical Education		30		2		2
2.	Database Systems II *E*		30		2		5
3.	Mathematical Software	15	30	1	2	1	2
4.	Specialised Computer Science Laboratory		30		2		4
5.	Graduate Seminar		60		4		8
6.	Advanced Topics in Mathematical Computer Science	30		2		2	
Elective Mathematical Courses (a total of 2 ECTS points is required)							
1.	Combinatorial Optimisation	30		2		2	
2.	Decision-Making Theory	30		2		2	
3.	Mathematical Methods in Management	30		2		2	
Specialised Elective Courses (a total of 4 ECTS points is required)							
1.	Promotions and Advertising		30		2		2
2.	Marketing		30		2		2
3.	Discrete Optimisation *E*	30		2		2	
4.	Cryptology *E*	30		2		2	
	Total:	75/105/135	180/210/240	5/7/9	12/14/16	5/7/9	25/23/21
							30

Semester X

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Physics	30	30	2	2	2	2
2.	Graduate Seminar		60		4		26
	Total:	30	90	2	6	2	28
			120		8		30

M.Sc. programme: Industrial Mathematics

Semester V

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Programming Principles E	30	30	2	2	4	2
2.	European Language		30		2		2
3.	Mathematical Probability E	30	30	2	2	4	2
4.	Computer Networks	30	30	2	2	2	2
5.	Combinatorial Analysis E	30	30	2	2	4	2
6.	Numerical Methods E	30	45	2	3	3	3
	Total:	150	195	10	13	17	13
		345		23		30	

Semester VI

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Numerical Methods II	30	45	2	3	2	3
3.	Partial Differential Equations E	30	30	2	2	3	2
4.	Mathematical Statistics E	30	45	2	3	2	3
5.	Functional Analysis E	30	30	2	2	3	2
6.	Stochastic Processes E	30	30	2	2	2	2
7.	Physics I	30	30	2	2	2	2
	Total:	180	225	12	15	14	16
		405		27		30	

Semester VII

No	Courses		Teaching hours per year		Teaching hours per week		ECTS points	
			Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language			30		2		2
2.	Physics I	E	30	30	2	2	4	2
3.	Dynamic Systems	E	30	30	2	2	4	2
4.	Database Systems	E	30	45	2	3	5	3
5.	Algorithms and Data Structures		30	30	2	2	2	2
6.	Mathematical Modelling		30	30	2	2	2	2
	Total:		150	195	10	13	17	13
				345		23		30

Semester VIII

No	Courses		Teaching hours per year		Teaching hours per week		ECTS points	
			Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Database Systems			30		2		2
2.	Algorithms and Data Structures	E	30	30	2	2	4	2
3.	Mathematical Modelling	E	30	30	2	2	4	3
4.	Advanced Topics in Industrial Mathematics		30		2		2	
5.	Graduate Seminar			30		2		3
Elective Mathematical Courses (a total of 2 ECTS points is required)								
1.	Topics in Algebra		30		2		2	
2.	Convergence of Probabilistic Measures		30		2		2	
3.	Numerical Linear Algebra		30		2		2	
Specialised Elective Courses (a total of 8 ECTS points is required)								
1.	Reliability Theory	E	30		2		4	
2.	Qualitative Methods for Differential Equations	E	30		2		4	
3.	Econometrics	E	30		2		4	
4.	Random Discrete Structures	E	30		2		4	
5.	Computer Modelling and Simulation	E	30		2		4	
	Total:		180	120	12	8	20	10
				380		20		30

Semester IX

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Physical Education		30		2		2
2.	Optimum Experimental Design E	30	30	2	2	4	2
3.	Advanced Topics in Industrial Mathematics	30		2		2	
4.	Graduate Seminar		60		4		8
Elective Mathematical Courses (a total of 2 ECTS points is required)							
1.	Combinatorial Optimisation	30		2		2	
2.	Decision-Making Theory	30		2		2	
3.	Mathematical Methods in Management	30		2		2	
Specialised Elective Courses (a total of 10 ECTS points is required)							
1.	Optimal Control E	30		2		5	
2.	Cryptology E	30		2		5	
3.	Calculus of Variations E	30		2		5	
4.	Discrete Optimisation E	30		2		5	
5.	Selected Applications of Discrete Mathematics E	30		2		5	
	Total:	150	120	10	8	18	12
		270		18		30	

Semester X

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Graduate Seminar		60		4		14
Specialised Elective Courses (a total of 16 ECTS points is required)							
1.	Statistical Quality Control E	30		2		8	
2.	Mechanics E	30		2		8	
3.	Finite Fields and Coding Theory E	30		2		8	
4.	Dimensional Analysis E	30		2		8	
	Total:	60	60	4	4	16	14
		120		8		30	

M.Sc. programme: Mathematics and Computer Science in Economics

Semester V

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Programming Principles E	30	30	2	2	4	2
2.	European Language		30		2		2
3.	Mathematical Probability E	30	30	2	2	2	2
4.	Combinatorial Analysis E	30	30	2	2	3	2
5.	Numerical Methods I E	30	45	2	3	3	3
6.	Computer Networks	30	30	2	2	2	2
7.	Microeconomics	30	15	2	1	2	1
	Total:	180	210	12	14	16	14
		390		26		30	

Semester VI

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Functional Analysis *E*	30	30	2	2	3	2
3.	Mathematical Statistics *E*	30	45	2	3	3	3
4.	Financial Mathematics *E*	30	30	2	2	2	2
5.	Macroeconomics	30	15	2	1	2	1
6.	Mathematical Programming	45	45	3	3	3	3
Specialised Elective Courses (a total of 4 ECTS points is required)							
1.	Stochastic Processes	30	30	2	2	2	2
2.	Partial Differential Equations	30	30	2	2	2	2
3.	Multifunction Theory	30	30	2	2	2	2
4.	Numerical Methods II	30	30	2	2	2	2
	Total:	195	210	13	15	15	15
		405		28		30	

Semester VII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	European Language		30		2		2
2.	Mathematical Programming *E*	30	60	2	4	3	4
3.	Game Theory *E*	30	15	2	1	3	1
4.	Mathematical Economics	30	30	2	2	2	2
5.	Database Systems	30	45	2	3	2	3
6.	Algorithms and Data Structures	30	30	2	2	2	2
Specialised Elective Courses (a total of 4 ECTS points is required)							
1.	Insurance Mathematics	30	30	2	2	2	2
2.	Time Series	30	30	2	2	2	2
3.	Multifunction Theory	30	30	2	2	2	2
4.	Mathematical Modelling	30	30	2	2	2	2
	Total:	180	240	12	16	14	16
		420		18		30	

Semester VIII

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Mathematical Economics *E*	30	30	2	2	4	2
2.	Database Systems		30		2		2
3.	Algorithms and Data Structures *E*	30	30	2	2	3	2
4.	Econometrics *E*	30	30	2	2	3	2
5.	Application Software in Economics		30		2		2
6.	Advanced Topics in Mathematical Economics	30		2		2	
7.	Graduate Seminar		30		2		4
Elective Mathematical Courses (a total of 2 ECTS points is required)							
1.	Selected Applications of Algebra	30		2		2	
2.	Convergence of Probabilistic Measures	30		2		2	
3.	Numerical Linear Algebra	30		2		2	
Specialised Elective Courses (a total of 2 ECTS points is required)							
1.	Time Series	30		2		2	
2.	Selected Topics in Optimisation	30		2		2	
3.	Mathematical Software		30		2		2
	Total:	180	210	12	14	14/16	16/14
		390		26		30	

Semester IX

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Physical Education		30		2		2
2.	Econometrics E	30	30	2	2	3	2
3.	Application Software in Economics		30		2		2
4.	Advanced Topics in Mathematical Economics	30		2		2	
5.	Discrete Optimisation E	30		2		3	
6.	Graduate Seminar		60		4		12
Elective Mathematical Courses (a total of 2 ECTS points is required)							
1.	Combinatorial Optimisation	30		2		2	
2.	Decision-Making Theory	30		2		2	
3.	Mathematical Methods in Management	30		2		2	
Specialised Elective Courses (a total of 2 ECTS points is required)							
1.	Asset Pricing Theory	30		2		2	
2.	Multidimensional Analysis	30		2		2	
3.	Optimal Control	30		2		2	
4.	Mathematical Software		30		2		2
5.	Programming in Fortran		30		2		2
6.	Cryptology	30		2		2	
	Total:	150/180	150/180	8/10	10/12	10/12	20/18
		330		18/22		30	

Semester X

No	Courses	Teaching hours per year		Teaching hours per week		ECTS points	
		Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem	Lectures	Pr/Lab/Sem
1.	Physics	30	30	2	2	2	2
2.	Graduate Seminar		60		4		24
Specialised Elective Courses (a total of 2 ECTS points is required)							
1.	Multidimensional Analysis II	30		2		2	
2.	Business Law	30		2		2	
	Total:	60	90	4	6	4	26
		150		10		30	