Jan Wyżykowski University

ECTS Information Package
Valid in the Academic Year 2016/2017

Update: September 2016

Contents

1. Background information

The Package includes the most essentials information referring to Jan Wyżykowski University (UJW) and describes the educational offer of 3 faculties in the academic year 2016/2017. The information included in the package is aimed at students who are willing to commence the studies in UJW within the European Credit Transfer System ECTS.

1.1 European Credit Transfer System

ECTS is the European system of accumulation and transfer of credit points. The aim of the system is to provide the transparency of the educational process and its effects. The ECTS points reflect the student's work that is necessary to reach the assumed educational goals and effects. The educational effects for each of the subjects offered by UJW are referred to in both National Qualification Framework as well as in the European Qualification Framework.

The ECTS points are credited to students after completing the subject. Students accumulates the points in the course of studies and is able to transfer them between the programmes he or she is doing.

UJW use the common rules of ECTS and with this incorporates the idea of mobility and international character of studying.

1.2 Jan Wyżykowski University

Jan Wyżykowski University was created due to the cooperation of Polkowice Commune and Polkowice County. The founder of the University is the ZAMPOL company, which Polkowice Commune and Polkowice County own all the shares of. On 30th August 2001, the Founder received the permit to establish non-state high vocational school from the Minister of National Education and Sport.

On 8 January 2002 following the decision of the Minister of National Education and Sport, The Lower Silesian University of Entrepreneurship and Technology in Polkowice was registered as the Non-state high vocational schools at number 91, in the register kept by the Minister of National Education and Sport (currently Minister of Education and Science) Polkowice is the seat of the University, district town, located in the Lower Silesia Voivodship. in Polkowice, there is a sub-zone Legnica Special Economic Zone – quite a few international companies are located in the zone (Volkswagen, Sanden, Sitech, etc.) DWSPIT develops the cooperation with the business sector and within the University Council DWSPiT tightly adjusts its educational offer to the labour market needs.

Of 1st of January 2016, following the consent issued by the Minister of Science and Higher Education, (decision number: DSW.ZNU.6013.247.2015.3.MC) the Lower Silesian University of Entrepreneurship and Technology in Polkowice merged with the Copper Basin High Vocational College in Lubin.

As a result of the merger at the second decision (number DSW.ZNU. 6014.406.2015.2.MC, of 18th of February 2016) issued by the Minister of Science and Higher Education, our University received also the name: Jan Wyżykowski University.

Currently UJW runs studies within the Bachelor's, Engineer's, Master's programmes and postgraduated studies and courses

Bachelor's studies (3-year studies) in the fields of:

- Administration,
- International Relations,
- Pedagogy,
- Management.

Engineer's studies (3.5-year studies) in the fields of:

- Information Technology,
- Mechatronics,
- Logistics
- Mining and Geology,
- Production Management and Engineering.

Master's studies (2-year) in the fields of:

- Management,
- International Relations.

UJW runs the intensive international cooperation within the Erasmus+ Programme and bilateral agreements with Universities in Russia and Ukraine.

2. University

2.1 Address

Jan Wyżykowski University
ul. Skalników 6 b
59-101 Polkowice
www.ujw.pl
tel.: +48 (76) 746 53 58, +48 (76) 746 53 53, +48 (76) 746 53 51
tel./fax: +48 (76) 746 53 52
e-mail: ujw@ujw.pl

2.2 The Office for International Cooperation

Rector's Proxy for International Cooperationand Erasmus Programme
Dr inż. Zdzisław Pólkowski,
e-mail: z.polkowski@ujw.pl
tel. +48 (76) 746 53 58

2.3 ECTS Faculty Coordinators

Faculty of Technical Sciences:
Dean: prof. nadzw. dr hab. Stanisław Piesiak,
tel. +48 (76) 746 53 31, e-mail: s.piesiak@ujw.pl

Faculty of Social Sciences:
Dean: prof. nadzw. dr hab. Rafał Czachor,
tel. +48 (76) 746 53 30, e-mail: r.czachor@ujw.pl

2.4 Functioning of the University in the academic year 2016/2017

The start of fall semester: 01.10.2016
The end of fall semester: 03.02.2017
Examination session after the fall semester: 4.02.2017 - 17.02.2017
Re-take session after the fall semester: 18.02.2017 - 24.02.2017
The start of the spring semester: 18.02.2017
The end of the spring semester: 23.06.2017
The examination session after the spring semester: 24.06.2017 - 07.07.2017
Re-take session after the spring semester : 20 – 30.09.2017

3. The terms of admission and the conditions of studying

3.1 Methodology of calculating the ECTS credit points

The ECTS credit points transfer system is applied to all types of studies carried out within all faculties and specializations.

The calculation of the effects of education expressed with credit points ECTS is done with the use of the rule: one ECTS point corresponds to the effects of the studies, which require at least 30 hours of students' working time.

The calculation of the effects for particular subject includes the student's working time related to:

a) workload during the classes and classes carried outside of the University, trainings, job trainings, etc.,
b) workload devoted to preparing oneself for the exams,
c) one's own studying time,
d) number of didactic hours with the academic teacher,
e) workload devoted to writing the diploma paper and preparing oneself for the diploma exam,
f) workload while preparing the final paper related to completing postgraduate studies,
g) workload related to developing the skills within the area of methodology and techniques of the scientific research,
h) recommendations of the educational standards specified for some fields of study according to the current legal regulations.

The calculation of particular subject carried out within the postgraduate studies includes the educational standards preparing for particular profession or obtaining Professional licenses.

Minimum number of ECTS points required to complete a semester equals 30 points

The number of points required to complete the studies equals respectively:

1) at least 180 ECTS points for the studies of the I level – bachelor's,
2) at least 210 ECTS points for the studies of the I level – engineer's,
3) at least 90 ECTS points for the studies of the II level – master's.

The evaluation for the educational effects should be done according to the rules specified below:

a) foreign language - up to 2 ECTS points for 30 hours,
b) IT - up to 2 ECTS points for 30 hours,
c) PE - 1 ECTS point,
d) subjects of the general education in the University offer - up to 2 ECTS points for 30 hours,
e) subject conducted within the framework of "modular education" within the offer of the Faculty - up to 2 ECTS points for 30 hours,
f) work safety, ergonomy - for 6 hours,
library training - for 4 hours,
Total up to 2 ECTS points.

The calculation of points for particular subjects is done in such a way that particular subjects/modules, that student may choose alternatively, have the same number of ECTS points in the semester.

The calculation of ECTS points when referred to diploma paper altogether with the preparation for the diploma final exam should equal, at least:

1) licentiate's diploma paper - 10 ECTS points,
2) engineer's diploma paper - 15 ECTS points,
3) Master's thesis - 20 ECTS points,

unless the standard of education issued for some studies states otherwise.

3.2 Students' organizations

There are several students' organizations in the Jan Wyżykowski University:
- WOD Students' Scientific Association – Virtual Activity Organization operating since 2008 – Tutor: Zdzisław Pólkowski, PhD Eng.;
- Student's Political Scientist Association UJW operating since 2007 – tutor: Arkadiusz Z. Kotliński, PhD;
- Foreign Language Student's Association operating since 2008 – tutor: Małgorzata Walczak, M.A.;
-KoSyOrPa Students' Scientific Association of the Constitutional Law operating since 2011 – tutor: Paweł Kuczma, PhD;
- ProMa Marketing and Promotion Student's Association operating since 2014 – Miłosz Czopek, PhD.

3.3 Students' Insurance

Fees for the accident insurance valid within the period of studies as well as for the doctor's check-ups required by the law are covered by the student.

3.4 Scholarships

Among the financial support paid from the Financial Support Fund, full time and extramural students in UJW may apply for the following financial, nonreturnable support:

a) Social scholarship,
b) Special scholarship for disabled students,
c) Rector's scholarship for the best students,
d) Minister's scholarship for outstanding achievements,
e) Special scholarship for students - citizens of Polkowice Commune,
f) Motivational scholarship for students-citizens of Polkowice Commune,
g) Financial support for students in difficult financial situation.

Detailed information is available in the *Regulation for granting and paying financial support for students.*

3.5 Accommodation and living in Polkowice

UJW does not own a students' dormitory, however offers assistance with room or flat rental for students. The University has several flats at its disposal. Polkowice is relatively small town (over 22 thousand citizens) of very calm and safe environment. Living in Polkowice is comfortable: convenient connections with other cities in the region (Wrocław, Lubin, Głogów), wide offer of the supermarkets, well-developed sport and recreational offer: all these aspects make that studies in Polkowice is the joint of valuable didactic offer and opportunity to spend free time actively. The cost of living in Polkowice do not exceed such costs in other cities in Poland. Moreover, Polkowice is one of the richest communes in Poland, which has received the title "Super town" several times.

4. Educational Offer

4.1 Licentiate studies in the Faculty of Social Sciences

The faculty of Social Science in UJW offers 6-semester I degree studies (licentiate) in four fields:

a. Administration with 2 specializations:
- Public Administration
- Management of Enterprise and Administration

b. International Relations with 3 specializations:
- International Political and Economic Relations
- International Co-operation Management
- International Tourism

c. Pedagogy with 3 specializations:
- Pre-school and Early-school Education
- Rehabilitation and Sociotherapy
- Family Assistant

d. Management with 2 specializations
- Personnel Management and Marketing
- Accountancy and Finance Management

Current curricula of the studies and further information related to the subjects offered by the University are available at http://www.ujw.pl/plany_stud

4.2. Engineer's studies in the Faculty of Technical Sciences

The Faculty of Technology of UJW offers 7-semester studies of the I degree (engineer's) in five fields :

a. Information Technology with 2 specializations:
- Computer and Multimedia Graphics
- Computer Systems and Networks

b. Mechatronics

c. Logistics
- Logistics of Enterprises
- International Logistics

d. Mining and Geology
- Techniques of Deposit Exploitation
- Mining Machines and Devices

e. Production Management and Engineering
- Work Safety Engineering
- Production Processes Engineering
- Quality Systems Management

Current curricula of the studies and further information related to the subjects offers by the University are available at http://www.ujw.pl/plany_stud

4.3 Master's Studies in the Faculty of Social Sciences

The Faculty of Social Sciences of UJW offers 4 semester studies for II degree (master's degree) in International Relations. Within this field, the University offers three majors:
- Administration and the Common Regional Policy of the EU
- International Political and Economic Relations
- International Affairs and Economy (studies in English-language is not required)

and in Management with four majors:
- Management in Industry
- Human Resources Management
- Management in Administration
- Quality and Environment Management

Current curricula of the studies and further information related to the subjects offers by the University are available at http://www.ujw.pl/plany_stud

4.4 Students' internships – terms of internships and receiving credits

Students of licentiate and engineer's studies are obliged to do the apprenticeship. According to the regulations valid in UJW, it is fair to say that this module is an integral part of the educational procedure. The apprenticeship is done according to the studies curriculum approved for particular academic year in specified field of studies.
Obtaining credit for doing the apprenticeship is a condition to be approved for the diploma exam. The supervision of the apprenticeship is done by the tutor appointed by the Rector of the University. The supervisor is responsible for doing the apprenticeship according to the aims of it and to specified plan. He/She is also entitled to settle, together with the company reps, the issues related to the course of the apprenticeship.
The students use the offer prepared by the University or search other opportunities to do the apprenticeship themselves.
The apprenticeship is approved as credited when the 2 conditions are fulfilled:

a) student has done the apprenticeship in the period and in the amount as specified in the studies curriculum,
b) student has submitted, in the period specified in the curriculum of the studies, the certificate of completing apprenticeship issued by the company, where he/she has done the training.

Student receives credit for the apprenticeship from the Dean in the form of the appropriate record in the appropriate document. Detailed rules of the apprenticeship can be found in *Regulation of Apprenticeship*

5. International cooperation

Jan Wyżykowski University owns Erasmus + Charter for the period and due to that it participate in the biggest in Europe program of mobility for students and lecturers. Besides, the international cooperation is being intensively developed with foreign universities following the bilateral agreements. Currently, UJW, within such bilateral agreements, we run the cooperation with:
-International University of Nature, Society and Human „Dubna" (Dubna Russia),
- International University of Nature, Society and Human „Dubna" branch in Dmitrow (Dmitrow, Russia)
- University of Trade and Economics in Moscow, branch in Dmitrow (Dmitrow, Russia)
-Ivan Franko National University of Lviv (Lviv, Ukraine)

5.1 The list of partner Universities within the Erasmus+ Programme

In the academic year 2016/2017 Jan Wyżykowski University runs the cooperation with the following universities:

- University of Pitesti in Romania
- University of Nicosia in Cyprus
- Izmir University in Turkey
- University of West Bohemia in the Czech Republic
- University of Debrecen in Hungary
- University of Economics – Varna (Bulgaria)

5.2 The terms and dates of foreign student's arrivals within the Erasmus+ Programme

Within the Erasmus+ Programme, only students from the partner universities may arrive. The people who wish to do the semester studies within the Erasmus+ Programme are asked to submit the application documents till:

15. July - for the fall semester of the academic year
15. December - for the spring semester of the academic year

5.3 Application documents for the Erasmus+ Programme

For students:

- Application form
- Acceptance Letter – confirmation of admission from the partner university
- Learning Agreement – agreement on the curriculum (original copy)
- Agreement concluded between UJW and beneficiary

Documents necessary to be submitted after the return

- Transcript of Records – list of credits (original copy)
- Certificate of stay (original copy)
- Questionairre (on-line)

For lecturers and administration employees:

- Application form
- Staff Mobility for Teaching/for Training – prepared by the academic teacher before leaving and approved by the mother University and partner university – the form must be identical to the template form the National Agency of the Erasmus + Programme or the Staff Mobility for Teaching/for Training prepared by the employee (approved by the mother University and partner university)
- Specification of the job career
- Document confirming the knowledge of the Foreign Language spoken in the partner university.

Within the period of two weeks, after the return, the academic teacher or the administration worker is obliged to settle all the issues related to the stay abroad:

- Submitting the signed document (document confirming the stay, Individual Teaching/Work Programme) as well as the copies of the tickets (if applicable),
- Questionairre on-line

The documents are available at: http://www.ujw.pl/erasmus

5.4 The educational offer of the Social Sciences Faculty within the Erasmus+ Programme

Faculty of Social Sciences			
Name	**Subject**	**hours**	**ECTS**
dr Arkadiusz Kotliński	Cold war and its consequences for the World	30	4
dr Arkadiusz Kotliński	International Conflicts	30	4

dr Rafał Czachor	Contemporary Politics	30	4
dr inż. Zdzisław Pólkowski	International Trade – practical aspect of negotiating	30	4
dr inż. Zdzisław Pólkowski	E-business and e-commerce	30	4
dr inż. Zdzisław Pólkowski	Data Organization and Management	30	4
dr inż. Zdzisław Pólkowski	E-administration in Poland and EU	30	4
dr inż. Zdzisław Pólkowski	Computer Systems in International Relations	30	4
Peter Lambert	Foreign language: English	30	4
dr inż. Zdzisław Pólkowski	Doing Business in Poland and EU	30	4
dr Tadeusz Kierzyk	Commercial Law	30	5
dr Tadeusz Kierzyk	European Community Law	30	4
TOTAL		360	49

Subject Cards

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Cold war and its consequences for the World**
Level of course	Bachelor
Major	Administration/International Relations
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	PhD Arkadiusz Z. Kotliński

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Explanation of cold war aspects and influences on present international security.
2.	Cause and effect analysis in cold war history.
Learning outcomes of the course	
1.	Student knows genesis of cold war, participants and their interests.
2.	Student can also present the most important moments in the cold war history.

3	Student got to know the consequences of cold war on international security.

Course contents	
1.	Definition of cold war.
2.	Cold war phases.
3.	Reasons of Soviet Union collapse.
4.	Consequences of cold war for the soviet block countries.
5.	Consequences of cold war for Europe.
6	Consequences of cold war for particular countries.

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
	25	5			30

Criteria for assessments	
1.	Oral examination

Required and recommended readings	
1.	http://www.history.com/topics/cold-war
2.	J.Gaddis, We now know, Rethinking Cold War History, 1997.
3.	Security Dilemma, Fear, Cooperation, and Trust in World Politics, Ken Booth and Nicholas Wheele, 2007.

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**International conflicts**
Level of course	Bachelor
Major	Administration/International Relations
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	PhD Arkadiusz Z. Kotliński

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Explanation of crisis and international conflicts in theory.
2.	Cause and effect analysis in particular international conflicts.
Learning outcomes of the course	
1.	Student knows genesis of particular conflicts and can indicate participants and their interests.
2.	Student can also present the most important moments in the conflict.
3	Student got to know the consequences and conflict influence on international security.

Course contents	
1.	Definition of crisis and international conflict.
2.	Reasons, schedule and consequences of war In Afghanistan.
3.	Reasons, schedule and consequences of war In Iraq.
4.	Reasons, schedule and consequences of war In Middle East (arabs – Israel conflict)
5.	The influence of particular international conflicts on international security.
6	Scenario of potential future Korean conflict.

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
	25	5			30

Criteria for assessments

1.	Oral examination

Required and recommended readings	
1.	www.sipri.org
2.	http://www.crisisgroup.org
3.	Security Dilemma, Fear, Cooperation, and Trust in World Politics, Ken Booth and Nicholas Wheele, 2007

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Contemporary Politics**
Level of course	Bachelor
Major	Administration/International Relations
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	PhD Rafal Czachor

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Explanation of main types of political systems and their features
2.	Explanation of the process of political changes in the world, especially in Europe
3.	Explanation of the process of democratization of post-communist countries in Central and Eastern Europe
Learning outcomes of the course	
1.	Student understands political and cultural roots of contemporary European states
2.	Student understands and knows main types of political regimes
3.	Student can explain the process of uniting Europe, main goals and institution of the EU
4.	Student can explain political and economical changes in Central and Eastern Europe after the collapse of communism

Course contents	
1.	What is politics – theoretical approaches
2.	Types of contemporary political systems
3.	Evolution of the term of democracy, process of democratization
4.	Authoritarianism in contemporary world
5.	Contemporary Europe: European identity, struggle for unity and its limits
6.	Political development in the Central and East European countries
7.	Regions and regional politics in Europe
8.	Idea of governance and the possibility of its implementation

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
				30	

Criteria for assessments	
1.	Activity during seminar
2.	Oral presentation

Required and recommended readings	
1.	A. Heywood, Politics, Palgrave Macmillan 2007
2.	R. Sakwa, A. Stevens, Contemporary Europe, Palgrave Macmillan 2012
3.	M. Gallagher, M. Laver, P. Mair, Representative government in modern Europe, New York 2005
4.	S. Levitsky, L.A. Way, Competitive Authoritarianism. Hybrid Regimes After the Cold War, Cambridge

	2010
5.	K. Dawisha, B. Parrott (eds.), Democratic changes and authoritarian reactions in Russia, Ukraine, Belarus and Moldowa, Cambridge 1997
6.	M. Bevir, Key concepts in governance, Sage 2009

ECTS COURSE CATALOGUE	
Lower Silesian University of Entrepreneurship and Technology in Polkowice	
Course title	**International Trade – Practical Aspect of Negotiating**
Level of course	Bachelor
Major	Administration/International Relations
Semester	Winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Developing knowledge about international trade.
2.	Knowledge of the practical aspects of negotiation.
3.	Impact of international trade.
Learning outcomes of the course	
1.	The student knows that involve international trade.
2.	The student has knowledge about negotiation style.
3.	The student knows the advantages and disadvantages of international trade.

Course contents	
1.	General information about trade and in particular on international trade.
2.	Techniques and styles of negotiation.
3.	Practices in international trade.
4.	Advantages and disadvantages (risks) of international trade.
5.	Secrets of a successful international trade.
6.	The importance of international trade.
7.	International trade purposes.

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15		15			30

Criteria for assessments	
1.	The student must to know advantages and disadvantages of international trade.
2.	The student must know the style of negotiation.

Required and recommended readings	
1.	International Trade http://www.un.org/en/development/desa/policy/wesp/wesp_archive/2012chap2.pdf
2.	Globalization and International Trade http://www.worldbank.org/depweb/beyond/beyondco/beg_12.pdf
3.	International Trade Statistics 2012 http://www.wto.org/english/res_e/statis_e/its2012_e/its2012_e.pdf

ECTS Course Catalogue	
Lower Silesian University of Entrepreneurship and Technology in Polkowice	
Course title	**E-business and E-commerce**
Level of course	Bachelor

Major	Administration/International Relations
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	PhD Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Developing the knowledge on E-business and E-commerce
2.	Presenting some sites for E-business and E-commerce such as E-bay, DHgate, AliExpress, Tradetang, Amazon
3.	Presentation of acquisition of goods in China and other countries
Learning outcomes of the course	
1.	The student knows the methods by which can make E-commerce
2.	The student knows the types of E-Business and E-commerce: B2B, B2C, C2B, C2C
3.	The student knows the advantages and disadvantages of E-business and E-commerce

Course contents	
1.	General Information about E-business and E-commerce
2.	E-business and E-commerce in Poland and Romania
3.	Creating accounts on different portals of E-commerce
4.	E-payment systems
5.	Information on logistics regarding e-business
6.	Presenting the entire process of acquisition of goods
7.	Advantages and disadvantages of using E-business and E-commerce

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15		15			30

Criteria for assessments	
1.	Exercises related how to use E-business and E-commerce in different countries and search portals used
2.	Creating the accounts on E-bay, Amazon, DHgate, Aliexpress, Tradetang

Required and recommended readings	
1.	Zorayda Ruth Andam, E-commerce and E-business: https://www.uop.edu.jo/download/research/members/eprimer-ecom.pdf
2.	E-commerce and E-business models: B2B, B2C, C2B, C2C: http://www.eservglobal.com/uploads/files/index.pdf
3.	Electronic payment system: http://ocw.metu.edu.tr/pluginfile.php/354/mod_resource/content/0/Lecture_4.pdf
4.	Logistics: http://iaemeuropa.terapad.com/resources/8959/assets/documents/UN%20DMTP%20-%20Logistics.pdf

ECTS Course Catalogue

Lower Silesian University of Entrepreneurship and Technology in Polkowice	
Course title	**Data organization and management**
Level of course	Bachelor
Major	Administration/International Relations
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	PhD Eng. Zdzisław Pólkowski

Objectives of the course	
1.	Developing the knowledge on Data organization and management
2.	Developing the knowledge on data bases in administration
3.	Presentation on data bases in business
Learning outcomes of the course	
1.	The student knows the methods of data organization
2.	The student knows the types of data management
3.	The student knows the basic data storing methods and their manipulation algorithms
4.	The student knows the advantages and disadvantages data organization and management

Prerequisites and co-requisites	
1.	None

Course contents	
1.	General Information about Data organization and management
2.	Organizational Communication
3.	Management of the Information Systems
4.	Principles of Management
5.	Information about data bases in the Internet
6.	Strategic Marketing Management
7.	Advantages and disadvantages of data organization and management

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15		15			30

Criteria for assessments	
1.	Exercises related on how to use data management in different countries and search portals used
2.	Create accounts on sites related to data organisation

Required and recommended readings	
1.	Minglong Shao, Efficient data organization and management on heterogeneous storage hierarchies http://reports-archive.adm.cs.cmu.edu/anon/2007/CMU-CS-07-170.pdf
2.	Organizational Management, https://help.sap.com/saphelp_byd35/en/KTP/Software-Components/01200615320100003379/SAP_BBD/Print_Files/PDF_FILES/OrganizationalManagement_BA_en.pdf

ECTS Course Catalogue	
Lower Silesian University of Entrepreneurship and Technology in Polkowice	
Course title	**E-administration in Poland and EU**
Level of course	Bachelor
Major	Administration/International Relations
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Developing the knowledge on e-administration
2.	Differentiating the platforms of E-administration in Poland and Romania
3.	Debate on the use of electronic signatures in the present and in the future
Learning outcomes of the course	
1.	The student knows the various portals using electronic administration
2.	The student knows how to use the E-administration and how to create account on that platform
3.	The student knows how to use the electronic signature

Course contents	
1.	General information about public administration and especially on E-administration
2.	Presentation on electronic administration platform in Poland: ePUAP and ePLATNIK
3.	Creating an account on ePUAP platform
4.	Presentation on electronic administration platform in Romania
5.	The importance of using electronic signatures
6.	Advantages and disadvantages of using E-Administration
7.	Recommendations on best E-administration in the world and new trends in e-administration

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15		15			30

Criteria for assessments	
1.	Exercises related how to use E-administration in different countries and search portals used
2.	Create the account on e-PUAP platform

Required and recommended readings	
1.	E-Administration as a way of Increasing the Managerial Capacity in Public Sector: http://unpan1.un.org/intradoc/groups/public/documents/nispacee/unpan009207.pdf
2.	ePUAP : http://epuap.gov.pl/wps/portal/
3.	Electronic Signature: http://itextpdf.com/book/digitalsignatures20130304.pdf

ECTS Course Catalogue	
Lower Silesian University of Entrepreneurship and Technology in Polkowice	
Course title	**Computer Systems in International Relations**
Level of course	Bachelor
Major	Administration/International Relations
Semester	Winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	Ph. D. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	The importance of international relations.
2.	The role of computer systems in international relations.
3.	Ability to use the computer system in international relations.
Learning outcomes of the course	
1.	The student knows the importance of international relations.
2.	The student knows the role of computer systems in international relations.
3.	The student knows how to use computer systems in international relations.

Course contents	
1.	Classification of computer systems.

2.	The role of computer systems in international relations.
3.	Cloud computing systems
4.	Security of computer systems
5.	Using of the Internet during business trip
6.	Advantages and disadvantages of using computer systems in international relations
7.	Importance of internet computer systems in international relation

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15		15			30

Criteria for assessments	
1.	Basic knowledge in Microsoft Office and Microsoft Visio.
2.	The knowledge on the Internet.

Required and recommended readings	
1.	http://www.infolegal.ro/sisteme-informatice-schengen-cooperare-politieneasca-internationala-20-22-mai-2013/2013/05/16/
2.	http://www.feaa.ugal.ro/index.php/ro/relatii-internationale

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**English Language**
Level of course	Bachelor
Major	International Relations / Administration/ Information Technology/Mechatronics
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	Peter Lambert

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Introduction of business English material at Intermediate level
2.	Widen students' reading, listening, speaking and lexical skills
Learning outcomes of the course	
1.	Students more confident in the practical use of language at this level
2.	

Course contents	
1.	Careers/CV
2.	Companies/presentations
3.	Stress/discussions
4.	Entertaining/socialising
5.	Planning/meetings
6.	Conflict/negotiating
7.	New businesses/numbers
8.	Products/presentations
9.	Marketing/telephoning
10.	Managing people/online selling
11.	Intermediate grammar structures

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL

	10	10	10		30

Criteria for assessments	
1.	2 written tests and 2 written exams
2.	2 oral assessments

Required and recommended readings	
1.	Material prepared by teacher

ECTS Course Catalogue	
Lower Silesian University of Entrepreneurship and Technology in Polkowice	
Course title	**Doing business in Poland and EU**
Level of course	Bachelor
Major	Administration/International Relations
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	PhD Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Developing the knowledge on conditions to do business in Poland and EU
2.	Presenting some sites for business in Poland and EU
3.	Presentation of new technologies used by companies in Poland.
Learning outcomes of the course	
1.	The student knows law regulations on doing business in Poland and EU
2.	The student knows the types of enterprises in Poland and EU
3.	The student knows the advantages and disadvantages doing business

Course contents	
1.	Background and conditions for doing business in Poland and selected countries in the European Union.
2.	The environment to do business in Poland and EU especially in IT sector
3.	Doing business in Poland and EU- the advantages and disadvantages
4.	Giving information on the support (financial, know-how, trainings, etc.) from EU for Poland.
5.	Comparing the functioning of SMEs in Poland before and after entering the EU.
6.	Creating business plan
7.	New technologies used by companies in Poland.
8.	Presentation of using B2B, B2C and auction systems to do business and of the most efficient portals in Poland and trends in this field.
9.	IT systems in business- Cloud Computing, Virtualization
10.	Information on support for SMEs in Poland and EU
11.	Presenting the entire process of acquisition of goods
12.	Advantages and disadvantages using online payment systems in SMEs
14.	Trends in running business following the scientific research carried out in Poland.

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15		15			30

Criteria for assessments	
1.	Exercises related how to create business plan for SME.
2.	Using the B2B, B2C and auction systems to do business.
3.	Activity during seminar
4.	Oral presentation

Required and recommended readings	
1.	Zorayda Ruth Andam, E-commerce and E-business: https://www.uop.edu.jo/download/research/members/eprimer-ecom.pdf
2.	E-commerce and E-business models: B2B, B2C, C2B, C2C: http://www.eservglobal.com/uploads/files/index.pdf
3.	Electronic payment system: http://ocw.metu.edu.tr/pluginfile.php/354/mod_resource/content/0/Lecture_4.pdf
4.	Logistics: http://iaemeuropa.terapad.com/resources/8959/assets/documents/UN%20DMTP%20-%20Logistics.pdf
5.	Support for SMES in Poland: http://www.parp.gov.pl/index/main/
6.	Doing business in Poland: http://www.doingbusiness.org/data/exploreeconomies/poland

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Commercial Law**
Level of course	Bachelor
Major	Law
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	5
Mode of delivery	face-to-face
Name of lecturer	PhD. Tadeusz Kierzyk

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Acquiring basic notions of technical peculiarities commercial obligations , special contracts trade , debt securities , collateral securities and insolvency.
2.	
3.	
4.	
Learning outcomes of the course	
1.	The ability to understand what a commercial legal relationship involves.
2.	The ability to put into practice the gained knowledge and recognize commercial rights and obligations.
3	The ability to find the appropriate information in the low when needed.

Course contents	
1.	Unity and diversity professionals and non-professionals regime applicable obligations . Special provisions for contracts between professionals and between them and consumers.
2.	Special scheme obligations under the influence of consumer protection rules .
3.	The contents of commercial contracts : the consumer's right to be informed, prohibition of unfair terms . Product quality and safety of consumers .
4.	The contract of sale . Sales of special trade Sales prohibited. Special forms of legally regulated sales.
5.	Supply contracts (distribution) . Formation supply contracts and their effects . The main distribution contracts Consignment agreement . Consignment Contract .
6.	Intermediation contract itself. Species contracts intermediation . The contract fee . An agency contract.
7.	Contract report . Current account agreement . Insurance contract . Concept . Common rules and enforcement training . Varieties of insurance contract.
8.	Insurance contract . Special arrangements provision of goods , loan guarantees and financial losses ; insurance and liability insurance people . Coinsurance , reinsurance and retrocession.
9.	The securities . Cambia

	The securities . The promissory note . CEC
10.	Leasing contract.
11.	Insolvency . The participants in the proceedings. Initiation . The first measures . Simplified procedure . general Procedure.
12.	Insolvency . Cancellation of fraudulent acts . The reorganization . Bankruptcy . Termination . The personal liability of members of the management of the company.

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15				15	30

Criteria for assessments	
1.	Scientific article for the journal.
2.	Presentation
3.	Examination

Required and recommended readings // wymagana i zalecana literatura	
1.	https://www.law.cornell.edu/wex/commercial_law
2.	http://www.hg.org
3.	http://www.laws.ucl.ac.uk

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**European Community law**
Level of course	Bachelor
Major	Law
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	PhD. Tadeusz Kierzyk

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	The European Community Law discipline seeks exposure to students aiming Getting Started Community law, the legal basis of Community law by providing that the constituent treaties subsequent treaties , the main functional institutions in the European Union .
2.	Discipline approach to present the students follow a common schema that most community organizations brief history , composition, organization and functioning, but also the presentation of each institution in terms of the Treaty of Lisbon.
3.	
4.	
Learning outcomes of the course	
1.	The ability to understand what a community legal relationship involves.
2.	The ability to put into practice the gained knowledge and recognize the rights and obligations the EU law provides.
3	The ability to find the appropriate information in the low when needed.

Course contents	
1.	European Community law . Concept and characteristics.
2.	Institutional sources of Community Law.
3.	The history of the European Communities.
4.	Consequential Treaties.

5.	Lisabon Treaty
6.	EU Council
7.	European Council
8.	European Commission
9.	European Parliament
10.	Court of Justice of the European Union
11.	European Central Bank and Eurosystem
12.	EU's advisory bodies . Economic and Social Committee and the Committee of the Regions.

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15				15	30

Criteria for assessments	
1.	Presentation
2.	Examination

Required and recommended readings // wymagana i zalecana literatura	
1.	http://europa.eu/documentation/legislation/pdf/oa8107147_en.pdf
2.	http://eur-lex.europa.eu

5.5 The educational offer of the Technical Sciences Faculty within the Erasmus+ Programme

Faculty of Technical Sciences			
Name	**Subject**	**hours**	**ECTS**
dr inż. Zdzisław Pólkowski	Information Technology	30	4
dr inż. Zdzisław Pólkowski	IT Systems in Business	30	4
dr inż. Arkadiusz Liber / dr inż. Zdzisław Pólkowski	Creating Websites and Portals	30	3
dr inż Piotr Kowalewski	Engeneering Designing with the use Autocad	30	4
dr inż. Zdzisław Pólkowski	Computer Networks	30	4
dr Rafał Czachor	Introduction to Social Sciences	30	4
dr inż. Zdzisław Pólkowski	IT Tools in Business and Commerce	30	4
dr inż. Zdzisław Pólkowski	Logistics	30	4
dr inż. Zdzisław Pólkowski	Analysis of Algorithms	20	3
dr inż. Zdzisław Pólkowski	Numeric Computers	20	3
dr inż. Zdzisław Pólkowski	Operating Systems	20	3
dr inż. Antoni Izworski	Microprocessors	22	3
dr inż. Zdzisław Pólkowski	Basics of data acquisition systems	30	3
dr inż. Antoni Izworski	Microsystems with microprocessor and microcontrollers	30	3
dr inż. Zdzisław Pólkowski	Digital integrated circuits	30	3

dr inż. Zdzisław Pólkowski	Digital signal processing	30	3
dr inż. Zdzisław Pólkowski	Television	30	3
dr inż. Zdzisław Pólkowski	Video systems	30	3
dr inż. Zdzisław Pólkowski	Fundamental (basic) electronic circuits	30	3
dr inż. Zdzisław Pólkowski	Theory of computing	30	4
dr inż. Zdzisław Pólkowski	Programming labour	30	5
dr inż. Zdzisław Pólkowski	Artificial intelligence	30	5
dr inż. Zdzisław Pólkowski	Parallel computer architecture	30	5
dr inż. Zdzisław Pólkowski	Neuronal networks	30	4
dr inż. Zdzisław Pólkowski	Parallel programming	30	5
dr inż. Zdzisław Pólkowski	Real-time systems	30	4
dr inż. Zdzisław Pólkowski	Communications equipments	30	3
dr inż. Zdzisław Pólkowski	Electronics devices construction and technology	30	4
dr inż. Zdzisław Pólkowski	Multimedia communications	30	4
dr inż. Zdzisław Pólkowski	Optical communications	30	4
dr inż. Zdzisław Pólkowski	Remote control and radio navigation systems	30	4
dr inż. Zdzisław Pólkowski	Switching techniques and systems	30	4
dr inż. Zdzisław Pólkowski	Mobile radiocommunication	30	4
dr inż. Zdzisław Pólkowski	Linear algebra and analytical geometry	30	5
dr inż. Zdzisław Pólkowski	Communication systems	30	4
dr inż. Zdzisław Pólkowski	Microwaves	30	3
dr inż. Zdzisław Pólkowski	Measurement systems in electronics	30	4
dr inż. Zdzisław Pólkowski	Automation in electronics and telecommunication	30	3
dr inż. Zdzisław Pólkowski	Microprocessor architecture	30	6
TOTAL		1132	148

Subject Cards

ECTS Course Catalogue	
Lower Silesian University of Entrepreneurship and Technology in Polkowice	
Course title	**Information Technology**
Level of course	Engineer studies
Major	Mechatronics/Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	The ability to have skills in computer software
2.	Familiarizing students with the basic techniques, fundamentals, hardware and software used in the creating documents
Learning outcomes of the course	
1.	Student will understand the basic features of software such as operating systems, desktop applications that includes Word for documents, Excel for spreadsheets, PowerPoint for presentations, Access for databases
2.	Student will be familiarized with the typical and advanced options of desktop applications
3	The student will be able to design and analyze databases

Course contents	
1.	Communicate via the Internet
2.	Apply for jobs via the Internet
3.	Operating systems: Windows, Linux, Unix
4.	Desktop applications
5.	Create of databases
6.	Work with mathematical data
7.	Create presentations

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings	
1.	http://www.investintech.com/content/beginnersmsoffice/
2.	http://www.mousetraining.co.uk/ms-office-training-manuals.html

ECTS Course Catalogue	
Lower Silesian University of Entrepreneurship and Technology in Polkowice	
Course title	**IT Systems in Business**
Level of course	Engineer studies
Major	Mechatronics/Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face

Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Basic knowledge on acquisition and distributed parallel computing
2.	Developing fundamental algorithms for parallel and distributed processing of information
3	Models of parallel applications and distributed systems.
4.	Changing role of information technology in the modern enterprise
Learning outcomes of the course	
1.	Have introductory knowledge about information technology, databases, systems analysis, database management, decision support systems, and expert systems
2.	Have an understanding of the changing role of information technology in the modern enterprise
3.	Have a clearer notion of the increasing acceleration rate of development of it resources and the increasing difficulty in deploying these critical assets into the various functions of the enterprise
4.	Have a better analyzing of systems development process including software development
5.	Recognize the strategic roles elevated by information technologies as well as legal, social and ethical aspects of internet in relation to customers, corporations and countries

Course contents	
1.	Parallel and Distributed Algorithms
2.	Developing algorithms using message communication: synchronous and asynchronous communication, clients and servers
3.	Algorithm development using shared variables: shared memory communication and synchronization mechanisms
4.	Techniques used in designing algorithms for parallel processing: general considerations, broadcasting, recursive doubling technique, the amount of prefixes

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	Behrooz Parhami – Introduction to Parallel Processing. Algorithm and Architectures, Kluwer Academic Publishers, New York, 2002
2.	http://www.elenota.pl/datasheet-pdf/131874/Atmel/ATMEGA16
3.	http://wazniak.mimuw.edu.pl/index.php?title=Strona_g%C5%82%C3%B3wna
4.	Laudon, Kenneth C. & Laudon, Jane P. Essentials of Management Information Systems, 10th Edition
5.	Lucey, T. (2005). Management Information Systems, 9th Edition.

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Creating websites and portals**
Level of course	Engineer studies
Major	International Relations/Administration / Information Technology/Mechatronics
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	3
Mode of delivery	face-to-face
Name of lecturer	PhD Eng. Arkadiusz Liber, PhD Eng. Zdzisław Pólkowski

Prerequisites and co-requisites

1.	None

Objectives of the course	
1.	Educating abilities from the scope of designing and implementing of web applications.
2.	Providing the competences of using the new technologies and environment in the process of creating internet applications
3.	Providing the knowledge of modern internet document standards and modern used for modelling and implementing applications
Learning outcomes of the course	
1.	Student has a knowledge about new internet technologies
2.	Student has competence in the designing and implementing modern internet applications.
3.	Student knows contemporary models, design templates and technologies used for designing and implementations of internet applications
4.	Student is able to cooperate in team during the designing and implementing internet applications.

Course contents	
1.	Basic definitions. Standards of internet documents.
2.	HTML, XHTML and XML languages. Data structures, metaflags, formatting and preparing the elements and tags.
3.	Tables, frames, reference marks and forms in the internet documents and applications. Client and server side of application.
4.	ECMA-262 language specification. Introduction to internet applications programming.
5.	PHP, RUBY, C#, F# languages and internet applications
6.	Multuimedia in internet documents and applications.
7.	XML and new languages to describe internet applications functionality.
8.	Internet applications and databases. DML and QML levels.
9.	Integration and interoperability in internet applications.

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
			30		30

Criteria for assessments	
1.	Assessment of skills of the independent design, the implementation and testing web sites and web applications
2.	The evaluation of the knowledge and abilities of applying internet technologies used in creating web applications.

Required and recommended readings	
1.	Miller J.: Internet Technologies and Information Services. Library Unlimited. Westport 2008.
2.	Johnson G.: Training Guide: Programming in HTML5 with JavaScript and CSS3. Microsoft Press. Washington 2013.
3.	www.ii.pwr.wroc.pl/~liber

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Engineering designing with the use of Autocad**
Level of course	Engineer studies
Major	Mechatronics/Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	PhD Eng. Piotr Kowalewski

Prerequisites and co-requisites	
1.	Basic knowledge of the principles of design writing

2.	Practical skills exploitable Internet

Objectives of the course	
1.	The acquisition of computer skills geometric shape of technical forms.
2.	The acquisition of computer skills axonometric and ortographic projections for mapping elements of the space on the plane.
3.	Learn how to write computer design using views, sections and examples in the record of the structure.
4.	The acquisition of computer skills dimensioning and tolerancing of dimensions of machine parts.
5.	The acquisition of computer skills designate the characteristics of the surface elements and the shape and position tolerances.
6.	The acquisition of computer skills to present connections of machine elements and standards in the record structure.
7.	The acquisition of competence in complex computerized recording system (assembly drawings) and elements (drawings) and the rules of schematization.
Learning outcomes of the course	
1.	The student has knowledge of computer design and write technical documentation components and sub-machines.
2.	Student after the course can using computer technology to save the characteristics and parameters characterizing the product in the form of drawings.
3.	Student after the course can using computer technology to perform complex technical design entry system using the principles of standardization.

Course contents	
1.	Basic principles in rectangular projection - 1 h. Composition of technical drawing - 1h. Basics of CAD-1h.
2.	Drawing formations of simple geometry. The drawing task. Extended AutoCAD commands. 3h.
3.	Drawing formations of complicated geometry. Drawings of simple and complex cross-section. 3h.
4.	Basics of solid geometry. Basic Auto CAD commands for creating and editing solids. 3h.
5.	A design task of simple device(2-4 pieces). 3h.

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
			30		30

Criteria for assessments	
1.	Validation of the use of computerized recording of the structure.
2.	Validation of the computer dimensioning and geometric characteristics in machine elements.
3.	Validation of the computer to present connections of machine elements and write complex technical systems.
4.	Assessment of the knowledge of the design features of the computerized recording of machine parts.
5.	Validation of the computer work drawing (drawings of machine parts and a complex system of technical writing and recording the schematic).

Required and recommended readings	
1.	Dobrzański T., Rysunek Techniczny Maszynowy. WNT, Warszawa, 2004.
2.	Rydzanicz I., Zapis konstrukcji. Podstawy. Oficyna Wyd. PWr., Wrocław 2000.

ECTS Course Catalogue	
Lower Silesian University of Entrepreneurship and Technology in Polkowice	
Course title	**Computer Networks**
Level of course	Engineer studies
Major	Mechatronics/Information Technology
Semester	winter-spring

Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Learning the basic concepts of technologies used in current computer networks
2.	Study of the OSI communication model and the TCP / IP
3.	To know the structure and operation of the protocols used in computer networks
4.	Be able to identify equipment used in computer networks and be able to configure some of these
5.	Acquiring new concepts for the design and management of computer networks
6.	introducing the fundamentals of computer networks and communication including addressing, routing and communication principles
7.	To know the mechanisms for providing security in computer networks
Learning outcomes of the course	
1.	Learn the major communication protocols, their features, details, and functionality
2.	Learn how to design secure local and wide area networks
3	Understand management of local and wide area networks

Course contents	
1.	Definition of computer networks.
2.	Types of computer networks: client-server, point-to-point hybrid. Servers.
3.	Networking and internetworking devices
4.	The physical layer of the OSI model: Ethernet Networks, interfaces, transmission media.
5.	Network topologies and protocols
6.	Network layer (OSI) network services and addressing. Routing and routing algorithms. Congestion control algorithms.
7.	Local and wide area networks: LAN topologies, LAN technologies
8.	Computer Network Design: Objectives of the design of computer networks. Sizing a computer network: the distance between the number of users computers, software, costs, special requirements
9.	The choice of network technology. Choosing the transmission

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	http://wazniak.mimuw.edu.pl/index.php?title=Strona_g%C5%82%C3%B3wna
2.	http://vfu.bg/en/e-Learning/Computer-Networks--Introduction_Computer_Networking.pdf
3.	http://heather.cs.ucdavis.edu/~matloff/Networks/Intro/NetIntro.pdf
4.	http://icapeople.epfl.ch/thiran/CoursED/Ch1_Intro.pdf
5.	http://www.cp.eng.chula.ac.th/~fyta/663/Curose-Ross%20-%20Computer_Networking_-_A_Top-down_Approach_Featuring_the_Internet__Third_Edition.pdf

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Introduction to Social Sciences (Research Design and Research Methods)**

Level of course	Engineer studies
Major	Mechatronics/Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	PhD Rafal Czachor

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Explanation of main areas (sub-disciplines) in social sciences
2.	Explanation of research methods in social sciences
3.	Explanation of the process of research design
Learning outcomes of the course	
1.	Student knows main areas of social sciences and can explain its specificity
2.	Student knows how to conduct research in social sciences
3.	Student is able to collect, select and use data in research process
4.	Student can implement main methods in the research process
5.	Student can effective present results of his investigation

Course contents	
1.	Social sciences – roots, history and sub-disciplines
2.	The meaning and types of research design
3.	Comparative Method
4.	Qualitative Methods
5.	Quantitative Methods
6.	Surveys and Opinion Polls
7.	Descriptive Statistics
8.	Ethics and Research

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
		10		20	30

Criteria for assessments	
1.	Activity during seminar
2.	Oral presentation, presentation in Power Point

Required and recommended readings	
1.	P. Burnham, K. Gilland, W. Grant, Z. Layton-Henry, Research Methods in Politics, Palgrave Macmillan 2008
2.	D. Marsh, G. Stoker, Theory and Methods in Political Science, Palgrava Macmillan 2010

ECTS Course Catalogue	
Lower Silesian University of Entrepreneurship and Technology in Polkowice	
Course title	**IT tools in Business and Commerce**
Level of course	Engineer studies
Major	Mechatronics/Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites

1.	None

Objectives of the course	
1.	Incorporating IT tools and e-commerce into business model
2.	Use of AI in business forecast
3.	Recognition of problems in e-commerce
4.	Learning methods for using IT tools in business
Learning outcomes of the course	
1.	Students will be able to develop their own business ideas
2.	Student will be able to apply IT tools to his/her business plan regarding e-commerce

Course contents	
1.	The definition of SMEs
2.	International activity of SMEs
3.	Business IT systems in Poland and in Romania
4.	Intranet and Extranet
5.	Cloud computing
6.	Predicting effect of cloud computing on E-commerce
7.	Social networks, blogs, e-mails and news feed
8.	Mobile commerce
9.	Using of Artificial Intelligence tools in business
11.	Comparison of declarative programming and procedural programming
12.	Representing knowledge in the form of production rules

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	K. C. Laudon, C. C. Traver, "E-Commerce 2011 Business. Technology. Society", Seventh Edition, Pearson, 2011
2.	C. Fellenstein, R. Wood, "Exploring E-Commerce, Global E-business, and E societies", Prentice Hall PTR, 2000
3.	G. Lugger, W. Stubblefield, „Artificial intelligence – Structures and Strategies for Complex Problem Solving", third edition, Addison Wesley Longman, 1998
4.	J. Hendler, H. Kitano, B. Nebel, „Foundations of ARTIFICIAL INTELLIGENCE - Handbook of Knowledge Representation", First edition, Elsevier, 2008
5.	Red. R. Galar, "Studia z nauk technicznych", DWSPiT, 2012

ECTS Course Catalogue	
Lower Silesian University of Entrepreneurship and Technology in Polkowice	
Course title	**Logistics**
Level of course	Engineer studies
Major	Mechatronics/Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Logistics Management
2.	The strategic objectives of logistics. Types of costs
3.	Logistical aspects of the customer-oriented company
4.	Designing strategies that will improve the delivery of services and goods for different companies
5.	Use mathematical programming to implement logistics/supply chain strategies
6.	Understand the need of mathematics to the effective and efficient solution of real problems
Learning outcomes of the course	
1.	Student can develop his/her own business ideas
2.	Student can prepare and present a business plan
3	Student can work E-commerce, logistics, foreign trade will be able to

Course contents	
1.	Matching Supply and Demand
2.	Inventory Management
3.	Usage of delivery companies in small scale logistics
4.	Continuous replenishment
5.	Complexities of implementing large scale information systems
6.	Mathematical Programming
7.	Networks & Distribution systems
8.	Facilities location
9.	Tracking international shipments via delivery companies (DHL, UPS)
10.	Usage of data base systems in logistics

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	C. Fellenstein, R. Wood, “Exploring E-commerce, Global E-business, and E-societies”, Prentice Hall PTR, 2000
2.	A. M. Rugman, “The Oxford Handbook of International Business”, Second Edition, Oxford University Press, 2010
3.	K. Laudon, C. Traver, “E-Commerce 2011 Business. Technology. Society”, Seventh Edition, Pearson, 2011

ECTS Course Catalogue	
Lower Silesian University of Entrepreneurship and Technology in Polkowice	
Course title	**Analysis of Algorithms**
Level of course	Engineer studies
Major	Mechatronics/Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	20
Number of ECTS credit allocated	3
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Formation of algorithmic thinking and advanced programming techniques

2.	Acquisition of knowledge and practical skills in relation to advanced data types and current ways of use and implementation
3.	Support knowledge acquisition algorithms for evaluating complexity
4.	Discussion about standard techniques such as divide and conquer, dynamic programming, greedy algorithm.
Learning outcomes of the course	
1.	Understand a problem by its input and output,
2.	Use the standard techniques, like divide and conquer, dynamic programming and greedy approach, for some problems
3	Explain the inadequacy of each technique by examples
4.	Perform correctness proof and time complexity analysis
5.	Appreciate the inseparability of design and analysis of algorithms
6.	NP completeness and its implication
7.	Solve some NP complete problems by approximate algorithms or randomized algorithms

Course contents	
1.	Order and Order Statistics: heap sort, quick sort, sorting in linear time, complexity analysis of algorithms for sorting
2.	Algorithms for graphs: Search in width, depth search, topological sorting
3.	Advanced Design and Analysis Techniques: backtracking method, greedy method, divide and conquer, dynamic programming
4.	Sorting algorithms in tables and lists: Binary trees and graphs, Stack, queue, The complexity of computing

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
10			10		20

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings	
1.	Cormen, C. Leiserson, R. Rivest, C. Stein, Introduction to Algorithms, MIT Press,2001
2.	K.Bruce, Foundations of Object-Oriented Languages: Types and Semantics, MIT Press, 2002
3.	D. Friedman, M. Wand, C. Haynes, Essentials of Programming Languages, MIT Press, 2001

ECTS Course Catalogue	
Lower Silesian University of Entrepreneurship and Technology in Polkowice	
Course title	**Numeric Computers**
Level of course	Engineer studies
Major	Mechatronics/Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	20
Number of ECTS credit allocated	3
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Discipline aims to study the structures of semiconductor memories under numerical computer architecture and related issues
2.	Based on the hierarchical structure of memory in computer systems are presented: the main memory (the

	types of circuits that form) cache (all modes of organization and related issues), virtual memory
3.	Addressing modes are set in the computer system
Learning outcomes of the course	
1.	Student knows fundamental architecture techniques and implement them for modern processors
2.	Student understands the major components of a computer including CPU, memory, I/O and storage

Course contents	
1.	Digital structures used in digital computer: automatic control (automatic CROM), FIFO memory structures, LIFO, Lines in digital computers
2.	Digital computers semiconductor memories (ROM / RAM / SRAM / DRAM / DRAM ASYNCHRONOUS / SYNCHRONOUS DRAM (SDRAM, DDRAM, RDRAM) Memory Cache
3.	Addressing memory: Addressing modes, classification; Default address; immediate addressing, direct addressing, indirect addressing; Based addressing, indexed addressing, addressing with displacement, addressing combined; Absolute addressing, relative addressing

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
10			10		20

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	John HENNESSY, David PATTERSON Computer Architecture A Quantitative Approach 4th ed., Morgan Kaufmann Elsevier 2007
2.	Bruce JACOB, Spencer NG, David WANG Memory Systems Cache, DRAM, Disk Morgan Kaufmann Elsevier 2008
3.	Miles MURDOCCA, Vincent HEURING Principles of Computer Architecture, Pretice Hill, 1999

ECTS Course Catalogue	
Lower Silesian University of Entrepreneurship and Technology in Polkowice	
Course title	**Operating Systems**
Level of course	Engineer studies
Major	Mechatronics/Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	20
Number of ECTS credit allocated	3
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Acquiring the basic knowledge on: Structure and functions of operating systems
2.	Management of the main physical and logical resources of the computer
3.	Scheduling the processes and threads using pipe's, sockets, signals, shared memory, message queues
Learning outcomes of the course	
1.	Student has a deeper understanding of the internals of operating systems
2.	Student can deal with the design and operational issues

Course contents	
1.	Planning processors. General scheme of planning, planning benchmarks UC, UC planning algorithms
2.	Process management. The notions of process and threads, processes and threads in UNIX and Windows
3.	Operating systems for parallel and distributed computers
4.	Network operating systems, multiprocessor operating systems, distributed operating systems, distributed

	operating system examples
5.	Memory management. Memory hierarchies, optimization and execution of a program loaded into memory, memory allocation, memory paging and segmentation, allocation of free space

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literature	
1.	http://www.cs.kent.edu/~farrell/osf03/oldnotes/
2.	http://www.mu.ac.in/myweb_test/MCA%20study%20material/OS%20-%20PDF.pdf
3.	http://www.cs.nchu.edu.tw/~hwtseng/OS/os.pdf

ECTS Course Catalogue	
Lower Silesian University of Entrepreneurship and Technology in Polkowice	
Course title	**Microprocessors**
Level of course	Engineer studies
Major	Mechatronics/Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	22
Number of ECTS credit allocated	3
Mode of delivery	face-to-face
Name of lecturer	Antoni Izworski, PhD. Eng.

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	The ability to program microcontrollers
2.	The ability to program the AD and DC converters.
3	The ability to use a standard serial interface.
Learning outcomes of the course	
1.	The student can modify the typical programs.
2.	The student can interpret and design hardware and software for simple real-time digital systems using a microcontroller
3.	The student understands the questions of matching energy signals.
4.	The students can program the serial interfaces.

Course contents	
1.	Interfacing the real world of micro-systems computing.
2.	AD-connected converters, DA, AD converters with successive approximations.
3.	Main circuit connection-specific I / O: I2C, SPI.
4.	Connecting peripherals type: DC motors, relays circuits, MCU initialization and supervision.
5.	Interfacing the real world of micro-systems computing.
6.	Introduction to microcontrollers
7.	Programming the structure and design

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
12			10		22

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	Atmel,AT89C2015 Datasheet catalog, available at: search.datasheetcatalog.net/key/AT89C2015
2.	http://www.elenota.pl/datasheet-pdf/131874/Atmel/ATMEGA16
3.	Atmel AVR Programmers, available at: http://www.xeltek.com/Atmega-pages-282?gclid=CP_n6_TM6LcCFci23godHC4AJw, may 2013.

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Basics of Data Acquisition Systems**
Level of course	Engineer studies
Major	Mechatronics/Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	3
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Defining the principles and methods of data acquisition and the principles of interfacing data acquisition system with the computer;
2.	Evaluation parameters of data acquisition systems to satisfy the performance criteria and quality requirements imposed by practical applications;
3.	Using data acquisition methods for the design of complex measurement systems.
Learning outcomes of the course	
1.	The student can project and use data acquisition systems interfaced with the computer;
2.	The student can apply basic methods for acquisition and signal processing;
3	The student can develop software applications for data acquisition control modul**es**.

Course contents	
1.	Getting Started on data acquisition, use AO in data acquisition, Transducers;
2.	Measuring circuits for transducers; Processing the signals from the transducers;
3.	Conversion circuits and analog signal processing (converters U/l; Converters I/U; Converters R/U; Converters Q/U; Converters R/f, C/f, L/f ; Converters U/f, f/U);
4.	Measuring amplifiers. AO amplifiers, amplifiers with modulation-demodulation, isolation amplifiers, attenuators, amplifiers and attenuators, programmable;
5.	Filters
6.	Other circuits used in data acquisition (comparators, limiters, switches, signal generators, timers, circuit PLL);
7.	Summative analog processing circuits; Circuit integration and differentiation; Logarithmic and exponential amplifiers;
8.	MUX / DEMUX analogical;
9.	Sampling circuits and memory
10.	Conversion circuits analog and digital signals (D/A converter, A/D)
11.	Data Acquisition Systems with PC

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
10		10	10		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.

2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	http://www.electronics-tutorials.ws/opamp/opamp_1.html
2.	http://www.analog.com/library/analogdialogue/archives/43-09/edch%201%20op%20amps.pdf
3.	http://www.ece.mtu.edu/labs/EElabs/EE3305/OpAmp_Lab_I.pdf

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Microsystems with microprocessors and microcontrollers**
Level of course	Engineer studies
Major	Mechatronics/Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	3
Mode of delivery	face-to-face
Name of lecturer	PhD Eng Antoni Izworski,

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	The ability to program microcontrollers
2.	The ability to program the AD and DC converters.
3	To know how to use classical circuit I / O circuit type timer, parallel port, USART, DMA..
Learning outcomes of the course	
1.	The student can modify the typical programs.
2.	The student understands the questions of matching energy signals.
3	The students can program the serial interfaces.

Course contents	
1.	Programmable circuit parallel port type for INTEL 8254, 8255A, 8251 – USART, 8259, 8237 (Circuit structure, Description of signals, Operating modes, Words of command and programming, parallel port circuit applications, managing a keyboard);
2.	INTEL 8051 microcontroller family (Internal architecture, Internal memory structure, Internal circuits I / O, description, operation and programming of their, interruptions logic, Instruction set, execution of instructions, microsystems structure with 8051 MCU);
3.	Interfacing with the real world of microsystems electronic computing (Connect the AD converter, DA, AD converters with successive approximations, Lines connecting specific circuits I / O: I2C, SPI, Connecting peripherals type: DC motors, relays, MCU circuit initialization and supervision);
4.	Designing applications with electronic computing microsystems (Translating specifications design theme in hardware and software, organizational, Structure of application software, interruptions, subroutines, variables, Implementation of applications, development environments, Testing, analysis processing time);
n	

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
10		10	10		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.
Required and recommended readings // wymagana i zalecana literatura	
1.	Ken Arnold, Embedded Controller Hardware Design, LLH Technology Publishing, 2001
2.	http://www.elenota.pl/datasheet-pdf/131874/Atmel/ATMEGA16
3.	Atmel AVR Programmers, available at: http://www.xeltek.com/Atmega-pages-282?gclid=CP_n6_TM6LcCFci23godHC4AJw, may 2013.

4.	Jack Ganssle, The Art of designing Embedded Systems, 2nd ed., Newnes, Elsevier, 2008

ECTS COURSE CATALOGUE

LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Digital Integrated Circuits**
Level of course	Engineer studies
Major	Mechatronics/Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	3
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Presenting fundamental logic circuits;
2.	Use basic logic circuits to small and medium complexity circuits, from truth tables or description in natural language;
3.	Analysis of sequential circuits and configuration mode to obtain specific functions;
Learning outcomes of the course	
1.	The student can describe the operation of electronic devices and circuits and fundamental methods of measuring electrical quantities;
2.	The student can perform circuits and electronic systems of small / medium complexity in order to design and measure them;
3	The student can analyze the methodological problems encountered in activity.

Course contents	
1.	Elements of binary analysis (truth tables, Simplifying Binary functions: Karnaugh diagram);
2.	Combinational logic circuits (Implementing NANd and NOR gates, Multiplexors, DMUX);
3.	Binary memory cell information (The internal structure of an SR flip-flop; Latch type structures (SR asynchronous, D asynchronous synchronized SR, D synchronized); Master slave type Flip-flops (RS, JK, D, T); Making a flip-flop functions using the structure of another flip-flop; Applications of flip-flops in digital electronics);
4.	Registers and counters (Shift registers: classification, running, internal structure; Counters: classification, function, internal structure; The design of frequency dividers; Designing counters);
5.	Synchronized automatic devices elementary (Classification; Elementary automatics synchronous (Moore, Mealy)Methods for automatic representation (transition matrix, transition graph, flowchart, truth table);The logical synthesis of controllers using D and JK flip-flop)
n	

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
10		10	10		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	http://ftp.utcluj.ro/pub/users/dadarlat/circ_analognumeric-calc/Curs1-engleza.pdf
2.	http://www.site.uottawa.ca/~petriu/Digital-Logic.pdf
3.	http://gk12.harvard.edu/modules/digitalcircuits.PDF

ECTS COURSE CATALOGUE

LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Digital Signal Processing**
Level of course	Engineer studies
Major	Mechatronics/Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	3
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzislaw Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Knowledge of the concepts and notions of digital signal processing;
2.	Programming principles and methods of digital signal processing in engineering applications;
3.	Development and application of concepts learned in digital signal processing digital signal processor;
Learning outcomes of the course	
1.	The student can work and design systems digital signal processing hardware;
2.	The student can use the methods, programs and software for signal processing;
3	The student can implement digital signal processing algorith**ms.**

Course contents	
1.	Numeric signals (or digital). Discrete-time signal processing. Mathematical modeling of digital systems. From analog signals to discrete signals. 1D digital signals. 1D sequences. Representing sequences numeric 1D. Elementary sequences. Correlation linear cyclic sequence number. Linear convolution, cyclic numerical sequences.
2.	The discrete Fourier transformation. The main properties (or theorems) PDT Fast Fourier Transform (FFT) and its implementation on DSP processors. Discrete-time signal processing. Mathematical modeling of digital systems. General properties of digital systems (SN)
3.	Discrete time systems. Numeric/digital systems (SNLI replies). Analysis of numerical and time-invariant systems. Answer SNLI proportion of the particular excitation δ [n] SNLI step response of the sequence u [n]. Answer SNLI complex exponential sequence. Answer SNLI periodic sequences SNLI representation by finite difference equations
4.	Representation of numerical sequences. Transform Z. Digital processing of analog signals SNLI representation by finite difference equations. Analysis SNLI variable z plane . Frequency Analysis SNLI
5.	Design stages of a FN. FN final response (Dirac impulse). FN linear phase FIR.FN-FIR design window method (or method "Fourier").FN-IIR design method. Design IIR NF-frequency sampling method. FN-FIR design through optimization .FN infinite response (Dirac impulse) FN-IIR
6.	FN type IIR design methods. FN-IIR design method numerical approximation of differential equations that characterize a FA. FN-IIR design method in variation unit impulse. Design an IIR type FN bilinear transformation method. IFN-IIR design optimization methods. Issues regarding the implementation of a computational algorithm FN FN
7.	The multirate processing of sequence number. Sampling discrete-time signals. Decimated sequences or sub-sampling by a factor M.Interpolation sequences or sequences with an oversampling factor L

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	Phil Lapsley, Jeff Bier, Amit Shoham, Edward A. Lee, DSP Processor Funddamentals, Willey Interscience 1996
2.	Sen M. Kuo, Digital Signal Processors – Architectures, implementations, and Applicatioins, Pearson

	Prentice Hall, 2005
3.	http://www.ece.rutgers.edu/~orfanidi/intro2sp/orfanidis-i2sp.pdf

ECTS COURSE CATALOGUE

LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Television**
Level of course	Engineer studies
Major	Mechatronics/Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	3
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Defining the principles and methods of transmitting voice messages, audio, video and data;
2.	Using simulation environment for analysis and signal processing;
3.	Using electronic tools and specific methods to characterize and assess the performance of electronic circuits and systems;
4.	Diagnosis / troubleshooting of circuits, equipment and electronic systems;
Learning outcomes of the course	
1.	The student can define the principles and methods of transmitting voice messages, audio, video and data;
2.	The student is able to use the simulation environment for analysis and processing of signal;
3	The student is able to use electronic tools and specific methods in order to characterize and assess the performance of electronic circuits and syste**ms.**

Course contents	
1.	Obtain an overview of what the concepts of analogue television and digital television (Essential steps of the transmission of the image information; The principle of transmission of the image information; Ways of exploring image; TV signals; PAL decoderTo study the main imaging techniques in motion (LCD, Plasma, LED, Organic LED, projection systems););
2.	PAL color TV system (Principle PAL system; PAL encoder; Videocomplex color signal (CVBS) PAL color bar mira)
3.	Know the types of analogic and digital video signal processing;
4.	Fundamental problems concerning the transmission of the image information in analog TV and digital TV (The signal for luminance, chrominance, and synchronization fighting in analog and digital TV);
5.	Specific devices for image capture processes (Camera tubes; Videocaptoare semiconductor devices; Video semiconductor devices, MOS capacitor, photosensor, etc.);
6.	Specific devices rendering processes images (Picture tube (picture tube-general; trichrome picture tube); Type LCD display systems, PDP (Plasma display systems panel), OLED Display Systems)

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	*Understanding Digital Television: An Introduction to DVB Systems with Satellite, Cable, Broadband and Terrestrial TV Distribution* Lars-Ingemar Lundstrom, 2006
2.	*Digital Television, Third Edition: Satellite, Cable, Terrestrial, IPTV, Mobile TV in the DVB Framework Herve Benoit,* 2008, Focal Press

3.	*Standard Handbook of Video and Television Engineering*, Jerry Whitaker, Blair K. Benson, 2003, McGraw-Hill Professional

ECTS COURSE CATALOGUE

LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE

Course title	**Video systems**
Level of course	Engineer studies
Major	Mechatronics/Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	3
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	To know the major video compression techniques used in television;
2.	To study the main modulation techniques used in transmission of digital television;
3.	To deepen the main imaging techniques (CCD, CMOS);
4.	To know the types of video signal processing;
Learning outcomes of the course	
1.	The student can define the principles and methods of transmitting voice messages, audio, video and data;
2.	The student is able to use electronic tools and specific methods in order to characterize and assess the performance of electronic circuits and systems.
3	The student is able to use the simulation environment for analysis and processing of signal;

Course contents	
1.	Further study fundamental issues regarding the transmission of the image information in analog TV and digital TV (The luminance signal; Fighting and synchronization signal; Chrominance signals; CVBS signal; Structure of a TV broadcasting system; TV reception system structure; Full block diagram camera 3CCD color; Full block diagram color camera with Bayer filter 1CCD; Full block diagram camera rotating color filter 1CCD);
2.	Complex ways in TV image display (The system PIP, POP, PAP; Compression of TV signals in the time domain; Multydisply display system);
3.	Digital television and high definition television (HDTV; Considerations related to the number of lines and images in HDTV formats; The structure of the digital TV system; Digital TV signals. Digitizing video. Primary digital signal processing D1 video format; Digitizing video. Working primary digital video signal format D2);
4.	The major standard of digitization in TV of the image (Sampling the video signal; The format of digital TV in TV lines; Standard 4:2:2., 4:1:1, 4:2:0; Transmission mode data stream);
5.	MPEG coding (Temporal compression; Compression space; DCT encoder);
6.	Channel coding (MA, MF, QAM, QPSK, COFDM);
7.	Signal transmission in analog and digital TV(Analogue TV transmitters land; Terrestrial digital TV transmitters (DVB-T); Digital cable TV (DVB-C); Digital satellite TV (DVB-S));
8.	Videoprojectors (with 3LCD, with LCoS, with mirrors);
9.	Digital television, computer, and multimedia;

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura

1.	*Video Demystified*, Fifth Edition: A Handbook for the Digital Engineer, Keith Jack, 2007, Newnes
2.	*Digital Video and Audio Broadcasting Technology: A Practical Engineering Guide,* Walter Fischer,2008, Springer
3.	*Standard Handbook of Video and Television Engineering,* Jerry Whitaker, Blair K. Benson, 2003, McGraw-Hill Professional

ECTS COURSE CATALOGUE

LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE

Course title	**Fundamental (Basic) Electronic Circuits**
Level of course	Engineer studies
Major	Mechatronics/Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	3
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzislaw Pólkowski

Prerequisites and co-requisites	
1	None

Objectives of the course	
1.	Discipline has as general objective knowledge forming about basis analog circuits used in telecommunications.
2.	Identifying the classic schemes, to know the analytical methods, to assess the performance of the circuit, to use appropriate laboratory devices and to measure the main parameter .
3.	Have the competence in analysis of analog circuits and performing measurements on them.
Learning outcomes of the course	
1.	The student must know piecewise linear models for basic electronics circuits, understanding of amplification circuits, switching, recovery, stabilization, understanding the positive and negative reaction;
2.	The student must know the explanation of the functioning of amplifiers with and without negative reaction and interpretation of frequency response;
3	The student must realize experimental verification of common circuits.

Course contents	
1.	Introduction(paramiters of Cuadripol, The consept of Small signal, Dynamic system model parameters at small signal
2.	Amplifiers (Amplifiers Properties of, specific parameters, classification. The concept of an ideal amplifier. Typical amplification stages with transistors. Performance evaluation methods. Capacity effect over frequency capabilities. Classes of operation.);
3.	Negative reaction (The principle of this circuit techniques. Properties of reaction circuits. reaction topologies. Properties. Analysis of a reaction circuit. Circuit with reaction voltage, parallel. Simplified method of analysis. The problem of GND);
4.	Oscillators (Types of oscillators, classification. The principle of harmonic oscillators with positive reaction. The condition of oscillation. Analysis Methods oscillators. Methods and circuits for stabilizing the oscillation amplitude. RC oscillators. LC oscillators. Quartz oscillators. Amplitude and frequency stability);
5	Voltage regulators (Stabilization principle, characteristics and specific parameters. Parametric stabilizers. Stabilizers with error amplifier. Current limitation. Methods of evaluating the performance of linear stabilizers. Typical Schemes of linear stabilizing reaction. Switching regulators.)
6	Barkhausen oscillation condition.

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
10		10	10		30

Criteria for assessments

1	Assess the degree of independence in performing the exercise.
2	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1	http://ftp.utcluj.ro/pub/users/dadarlat/circ_analognumeric-calc/Curs1-engleza.pdf
2	http://www.site.uottawa.ca/~petriu/Digital-Logic.pdf
3	http://gk12.harvard.edu/modules/digitalcircuits.PDF

ECTS Course Catalogue	
Lower Silesian University of Entrepreneurship and Technology in Polkowice	
Course title	**THEORY OF COMPUTING**
Level of course	Engineer studies
Major	Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	Face to face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski, Prof. Małgorzta Nycz (scientific adviser)

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	The ability to have skills in computer software regarding computing
2.	Familiarizing students with the basic techniques, fundamentals, hardware and software used in the creating projects
Learning outcomes of the course	
1.	Student will understand the basic features of deterministic and non-deterministic finite automata, regular language, context-free language, Turing machines, halting problem, computability and complexity
2.	Student will be familiarized with the typical and advanced options of desktop applications regarding to computing
3.	The student will be able to solve the problems using formal language and perceive the power and limitation of a computer
4.	Student will create the presentation on theory computing in Prezi
5.	Student will put the results of its educational activities on the internet website

Course contents	
1.	Recursive and recursively enumerable languages and the relation between these language classes
2.	Notion and existence of universal Turing-machines.
3.	Algorithmically unsolvable problem
4.	RAM machines.
5.	Kolmogorov complexity and its application.
6.	Relation between the complexity classes of P and NP
7.	The witness theorem.
8.	Basic notions of cryptography.

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
6	6	6	6	6	30

Criteria for assessments	
1.	Assess the degree of independence in performing the project.
2.	Number of completed practical exercises during laboratory
3.	Activity during seminar
4.	Assess the degree of the knowledge on the theory of computing
5.	Assess the presentation in Prezi on theory computing

Required and recommended readings	
1.	Papadimitriou, C. H.: Computational complexity, Addison Wesley, 1994.
2.	Cormen, T. H., Leiserson, C. E., Rivest, R. L.: Introduction to algorithms, MIT Press, Cambridge, Massachusetts, 1990.
3.	John C. Martin, Introduction to Languages and Theory of Computation,3rd Edition, McGraw Hill, 2003.
4.	Hopcroft, Motwani and Ullman, Introduction to Automata Theory, Languages, and Computation, 3rd Edition, Addison-Wesley, MA 2007

ECTS Course Catalogue	
Lower Silesian University of Entrepreneurship and Technology in Polkowice	
Course title	**PROGRAMMING LABOUR**
Level of course	Engineer studies
Major	Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	5
Mode of delivery	Face to face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski, Prof. Małgorzta Nycz (scientific adviser)

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	The ability to have skills in computer software regarding programming
2.	Familiarizing students with the basic techniques, fundamentals, hardware and software used in the creating projects
Learning outcomes of the course	
1.	Student will understand the basic features of software for programming
2.	Student will be familiarized with the typical and advanced functions of programming
3.	The student will be able to design and analyze software
4.	Student will create the presentation in Prezi on programming
5.	Student will put the results of its educational activities on the internet website

Course contents	
1.	Translators and interpreters for different languages
2.	A source code generation, programming language oriented text editors.
3.	Compilation controlling, Maps usage
4.	Program running, termination and debugging.
5.	Main properties of procedure-oriented, object-oriented, functional and logical development environments.
6.	Web-aided development environments.
7.	Trends in programming

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
6	6	6	6	6	30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise
2.	Number of completed practical exercises
3.	Activity during seminar
4.	Assess the degree of the knowledge on the programming
5.	Assess the presentation in Prezi on programming

Required and recommended readings	
1.	Stevens, W. R.: Advanced programming in the UNIX environment, Addison Wesley, 1993

2.	Petzold, C.: Programming Windows, Microsoft Press, 1998

ECTS Course Catalogue	
Lower Silesian University of Entrepreneurship and Technology in Polkowice	
Course title	**ARTIFICIAL INTELLIGENCE**
Level of course	Engineer studies
Major	Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	5
Mode of delivery	Face to face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski, Prof. Małgorzta Nycz (scientific adviser)
Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	The ability to have skills in computer software Artificial Intelligence
2.	Familiarizing students with the basic techniques, fundamentals, hardware and software used in the creating projects
Learning outcomes of the course	
1.	Student will understand the basic features of software regarding
2.	Student will be familiarized with the typical and advanced options of desktop applications
3.	Student will be able to design and analyze databases
4.	Student will create the presentation in Prezi on Artificial Intelligence
5.	Student will put the results of its educational activities on the internet website

Course contents	
1.	Introduction to Artificial intelligence methods and techniques
2.	Problem representations, state-space representation,
3.	State-space graph, graph-search procedures: depth-first, breadth-first.
4.	A and A* algorithms, variants of A algorithm, monotone restriction
5.	Problem-reduction representation and AND/OR graphs
6.	Search procedures for AND/OR graphs, AO algorithm.
7.	Mini-max procedure, alphabeta pruning procedure.
8.	Trends in Artificial Intelligence
9.	Sphinx software

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
6	6	6	6	6	30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise
2.	Number of completed practical exercises
3.	Activity during seminar
4.	Assess the degree of the knowledge on the Artificial Intelligence
5.	Assess the presentation in Prezi on the Artificial Intelligence
6.	Assess the degree of the knowledge on Sphinx software

Required and recommended readings	
1.	Nilsson, N.: Artificial Intelligence, A New Synthesis, The Morgan Kaufmann Series in Artificial Intelligence, 1998.
2.	Russel, S. J., Norvig, P.: Artificial Intelligence, A Modern Approach, PrenticeHall, 1995
3.	http://aitech.pl/home/
4.	https://krzysztof-michalik.com/free-download/

ECTS COURSE CATALOGUE

LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Parallel Computer Architecture**
Level of course	Engineer studies
Major	Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	5
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Acquire basic knowledge on computers with parallel architecture for high performance computing.
2.	Acquire knowledge on data routing mechanisms, scalability, memory organization, ensuring data consistency.
Learning outcomes of the course	
1.	The student will understand the logic on computers with parallel architecture
2.	The student can test the algoritms for operation in fusion

Course contents	
1.	Models of parallel computers, Interconnection networks of parallel computers: defining parameters, dynamic interconnection network topologies
2.	Static interconnection networks of parallel computers: topologies, implantation, benchmarking
3.	Message routing in parallel computers: message format, routing mechanisms, strangulation, strategies to control the data flow
4.	Routing algorithms for multicast, broadcast operations and circular movement, communication operations in different interconnection topologies.
5.	The evolution of parallel computers, Scalable parallel systems: defining and evaluating scalability. PARALLEL COMPUTER typical architecture: the reduction, data flow, vector, associative, systolic.
6.	Memory organization: hierarchy, inclusion, coherence and location. Memory capacity planning, distributed virtual memory with single address space and software-based protection.
7.	Ensuring consistency DATA: atomicity and order of events, sequential consistency model, low consistency models (weak Consistency models) cache coherence problem, coherence protocols based directories.

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	Behrooz Parhami – Introduction to Parallel Processing. Algorithm and Architectures, Kluwer Academic Publishers, New York, 2002.
2.	Hwang K "Advanced Computer Architecture. Parallelism, Scalability, Programability", McGraw-Hill, New York, 1993.

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Neuronal networks**
Level of course	Engineer studies
Major	Information Technology
Semester	winter-spring

Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Study of neural network models of learning algorithms
2.	Make applications of neural networks.
Learning outcomes of the course	
1.	The student will understand the logic of the neural netwok
2.	The student will test the neural network with algoritms for aplicantions

Course contents	
1.	The structure of artificial neural networks. Models of artificial neurons. McCulloch-Pitts neuron artificial.
2.	Feed forward neural networks. Architecture. Backpropagation algorithm. Application of feed forward neural networks. Recognition orientation of parts. Classification by form lines.
3.	Classification numbers from 0 to 9. Nonlinear Function Approximation. Simulation of neural networks. General characteristics.
4.	Making involvement in random order presentation templates, study of fault tolerance feed forward neural networks.
5.	. Defects of neurons or connections. Presentation program to study fault tolerance feed forward neural networks. Hopfield Neural Networks.
6.	Associative memories. Kohonen neural networks. Unsupervised learning. The drive algorithm.

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	http://www.dkriesel.com/_media/science/neuronalenetze-en-zeta2-1col-dkrieselcom.pdf
2.	http://arxiv.org/ftp/cs/papers/0308/0308031.pdf

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Parallel programming**
Level of course	Engineer studies
Major	Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	5
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzislaw Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Acquire basic knowledge on parallel computing and distributed theoretical models of parallel computing.

2.	Acquire knowledge on methods of parallel programming and parallel programming with shared variables through message passing.
3.	Knowledge on parallel programming languages and libraries.
Learning outcomes of the course	
1.	The student will understand how to use and work with libraries.
2.	The student will learn the ways of parallel programming.
3.	Student will work in parallel programming environment by transfer message

Course contents	
1.	Parallel programming model: conditions of parallelism, parallelization of programs; parallel programming environments;
2.	Programming parallel algorithms; Classification of parallel programming techniques ;
3.	Creation and execution of processes and threads;
4.	Parallel programming with shared variables;
5.	Transfer of massages parallel programming;
6.	Message passing primitives; Client-server communication;
7.	Programming languages parallel distributed systems. Concepts, characteristics, examples, typical applications;

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	https://computing.llnl.gov/tutorials/parallel_comp/
2.	Behrooz Parhami – Introduction to Parallel Processing. Algorithm and Architectures, Kluwer Academic Publishers, New York, 2002
3.	V.Kumar, A. Grama, A. Gupta, G. Karypis, Introduction to Parallel Computing, Benjamin-Cummings, 2003

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Real-time systems**
Level of course	Engineer studies
Major	Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Specifying requirements of real-time applications.
2.	Methods for description of real-time systems. Presentation languages for real-time applications with competitive technologies.
3.	Presentation of real-time operating systems, including operating systems for applications in microsystems (MyOS, uCOSII).
Learning outcomes of the course	
1.	The student learn steps in designing real-time systems: hardware requirements, software described steps.
2.	The student have the big picture of advanced methods of management processes.

Course contents	
1.	The concept of real-time system. Classification systems and features real-time systems
2.	Algebra proceselor.Definitie processes and states of processes. Algebra processes without time constraints: Operators, parts of algebra and axioms.
3.	Description of the diagrams of real-time applications programs. Grafcet diagrams and state machines extended
4.	Design of a real-time system. Sharing hardware resources in a real-time system
5.	Design of a real-time system. Sharing resources in real-time system software
6.	Programming languages for real.Caracteristica for a programming language in real time. ADA language. Extensions in hardware description languages
7.	Architectures for real-time operating systems

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	Albert Cheng, Real-Time Systems: Scheduling, Analysis and Verification,John Wiley & Sons, 2002
2.	Jing Chen, Real-Time and Embedded Computing Systems and Applications, Springer: Lecture notes in computer science, 2003
3.	Mathai Joseph, Real-time systems specification, verification and analysis, Prentice Hall, 2001

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Communications equipments**
Level of course	Engineer studies
Major	Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	3
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Gaining knowledge of communications equipment, radio channel, frequency bands, characteristic parameters.
2.	Knowledge on modulation, structure receivers and radio equipment.
Learning outcomes of the course	
1.	Student appropriates the basics of technologies for communications equipment;
2.	Student learns the use of communication equipment for specific applications;

Course contents	
1.	General terms of radio communications. RADIOCOM structure of a system. Classification. Functions. Peculiarities radio systems.
2.	Noise and distortion in communication systems. Sources of noise. Noise Factor Radio equipment. Parameters. Specific functions. Classification radioemitătoarelor. Block Diagram. Floors components. Frequency synthesizer.
3.	Radio equipment. General concepts. Features. Parameters. Block Diagram. Floors components.

4.	Multiple access systems radio resources. Multiplexing of signals in time and frequency.
5.	Multiple access techniques FDMA, TDMA, Broadband Wireless Communications. Definition. Classification. Standards. Local systems WLAN - WiFi

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	https://www.ncjrs.gov/pdffiles1/nij/191160.pdf
2.	http://memex.org/licklider.pdf
3.	http://free.success6.net/c/communications-network-equipment-pdf-s662/

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Electronics devices construction and technology**
Level of course	Engineer studies
Major	Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Know the main stages, requirements, methods and technologies used in electronics design using computer-aided design;
2.	Know how to work with specialized programs used in the design and electronics.
Learning outcomes of the course	
1.	Student are testing programs used in the design variety of electronics;
2.	Student test steps to be followed to design an electronic device;

Course contents	
1.	Define the concept of topological scheme of principle.
2.	Scheme topological fundamental element in achieving high performance systems parasitic coupling existing in the operation of electronic devices and solutions for reducing them.
3.	Electrical disturbances and solutions to reduce them.
4.	Designing and developing optimal topological schemes.
5.	Electronics design in terms of heat.
6.	Technologies for electronic wiring and assembly

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	Mentor Graphics Pads User's Guide www.mentorgraphics.com;
2.	Mark I. Montrose, Printed Circuit Board Design Techniques for EMC Compilance IEE press Series on Electronic Technology2000;
3.	Douglas Brooks Signal Integrity Issuses and Printed Circuit Board Design Ed. Prentince Hall PTR

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Multimedia communications**
Level of course	Engineer studies
Major	Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Understand the basics of analog and digital video: video representation and transmission
2.	Acquire the basic skill of designing video compression
3.	Know the fundamental video processing techniques
4.	Analyze analog and digital video signals and systems
Learning outcomes of the course	
1.	How to efficiently represent multimedia data, including video, image, and audio.
2.	How to deliver them over a variety of networks.

Course contents	
1.	Basics of analog and digital video: color video formation and specification, analog TV system, video raster, digital video formats
2.	Frequency domain analysis of video signals, spatial and temporal frequency response of the human visual system
3.	Scene, camera, and motion modeling, 3D motion and projected 2D motion, models for typical camera/object motions.
4.	2D motion estimation: optical flow equation, different motion estimation methods (pel-based, block-based, mesh-based, global motion estimation, multi-resolution approach)
5.	Basic compression techniques: information bounds for lossless and lossy source coding, binary encoding, scalar/vector quantization
6.	Waveform-based coding: transform coding, predictive coding including motion compensated prediction and interpolation, block-based hybrid video coding, scalable video coding
7.	Video compression standards (H.261 and H.263, MPEG1, MPEG2, MPEG4, MPEG7).
8.	Video transport over the Internet and wireless networks

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	D. Taubman and M. Marcellin, "JPEG2000: Image Compression Fundamentals, Standards, and Practice," Kluwer, 2001.
2.	A. Murat Tekalp, "Digital Video Processing," Prentice Hall, Englewood Cliffs, NJ, 1995.

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Optical communications**
Level of course	Engineer studies
Major	Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Developing awareness of key competencies in optoelectronics and optical communications aspects.
2.	Learning concepts and understanding of the fundamental phenomena underlying optoelectronics, as growing branch of electronic engineering.
Learning outcomes of the course	
1.	Student will understand the principles and methods for the main processes in optoelectronics: amplification, modulation, multiplexing, frequency division and multiplication.
2.	The student understands the principles of operation and exploitation of optical transmission systems in analogue and digital.

Course contents	
1.	Electromagnetic waves Maxwell's equations. electromagnetic field
2.	Stimulated emission of electromagnetic radiation. Effect of laser Stimulated emission of electromagnetic radiation
3.	Optical phenomena in semiconductors Internal photoelectric effect
4.	Fiber Optics Properties; propagation of light in optical fiber Basic parameters of optical conductors
5.	Optoelectronic devices semiconductors
6.	Optical communication systems Optical communication channel
7.	Optical modulators Multiplexers and demultiplexers optical Amplifiers Frequency dividers and multipliers

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	http://web.stanford.edu/class/ee122/Handouts/5-optoelectronics.pdf
2.	http://www.mitr.p.lodz.pl/evu/lectures/Abramczyk1.pdf

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Remote control and radio navigation systems**
Level of course	Engineer studies
Major	Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4

Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	The main objective of the course aims on the one hand, an understanding of the use of radio resources for tracking and remote control of technical systems, on the other hand skills in modeling and design of complex systems.
Learning outcomes of the course	
1.	Student systemic thinking and form their capacities integrative approach to engineering projects that include electronic means of remote applications in industry and consumer technology.
2.	The student learns how to work with simulative models and radio control applications laboratory, optical and navigation commands

Course contents	
1.	Defining the remote. The basic architecture of remote systems and structures. Classification of remote systems.
2.	Using the principles of transmitting information from remote systems. Principles and echniques used for remote using channel radio remote control, optical and acoustic.
3.	Structure systems for remote transceiver.
4.	Training Methods remote control signals. Coding modulation. Modulation types used in the remote control.
5.	Principles for selection of the control signals. Selection by code. Using phase information.
6.	Acoustic remote systems. Ultrasonic remote control.
7.	Navigation systems and remote radio control.

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	http://www.magnetecs.com/documents/2010_cardiology-review-remote-navigation_nguyen.pdf
2.	http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=4806058&url=http%3A%2F%2Fieeexplore.ieee.org%2Fiel5%2F10%2F5073244%2F04806058.pdf%3Farnumber%3D4806058
3.	http://www.health.qld.gov.au/healthpact/docs/nehtr/catheter-nav.pdf

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Switching techniques and systems**
Level of course	Engineer studies
Major	Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course

1.	Understanding the organization and operation of switching systems used in telecommunications equipment that allow transmission of voice information, data, video, multimedia.
Learning outcomes of the course	
1.	Student analyzes the traffic characteristics associated with different types of services and their implications in defining switching techniques used in network structures with multiple interconnections.
2.	Students simulate physical phenomena associated with the operation of modern communication structures based on switching techniques.

Course contents	
1.	The role and place of commutation in communications: communications networks; Units of data and packet switching;
2.	Network topologies; Switching function Networks with multiple interconnections: Grid connections; Tiered structure;
3.	Packet switching networks integrated services: Factors influencing the quality of services;
4.	Architectures high capacity switches: waiting configurations strings, packet classification and scheduling of service, searching routing tables;
5.	Level of service: Engset models, Erlang, Data traffic, statistical multiplexing and packet switching: data traffic characteristics; Layered architectures;

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	http://www.newagepublishers.com/samplechapter/000969.pdf
2.	http://www.eolss.net/Sample-Chapters/C05/E6-108-04.pdf

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Cellular (Mobile) Radiocommunications**
Level of course	Engineer studies
Major	Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Students will be able to know how to distinguish between different radio communication systems with elements of mobility
2.	Students will be able to know the radio channel characteristics, their significance and evolution parameters quantizes
3.	Students will be able to know to apply and interpret the design principles of cellular networks
Learning outcomes of the course	
1.	Students will be able to use software for analysis and design of the main aspects of mobile radio systems
2.	students will be able to measure certain parameters of cellular networks with field measurements, oscilloscope and spectrum analyzer

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Course contents	
1.	Overview on the main cellular systems: AMPS, PDC, TETRA, GSM, UMTS.
2.	Radio channel characteristics: propagation downfade, exterior propagation models Hata and Lee.
3.	Radio channel characteristics: indoor propagation models, multipath fading.
4.	Dispersive radio channel characteristics, fading models: Rice, Lognormal, Nakagami, Suzuki.
5.	Cells and cellular traffic: cell geometry
6.	Cells and cellular traffic: cell splitting
7.	Cells and cellular traffic: traffic and trunking capacity
8.	Multiple access techniques: FDMA
9.	Multiple access techniques: CDMA
10.	GSM cellular system: GSM characteristics and performances
11.	GSM cellular system: architecture
12.	GSM cellular system: BTS
13.	GSM cellular system: GPRS architecture and interfaces
14.	UMTS architecture and interfaces

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15				15	30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	http://www.wileyindia.com/media/pdf/0471457124.pdf
2.	http://www.buehrer.ece.vt.edu/papers/OverviewSistemiRadiomobili.pdf
3.	https://books.google.ro/books?id=D_saxiI5rH4C&pg=PR10&lpg=PR10&dq=mobile+radio+communication+books&source=bl&ots=Zw5sj4b85V&sig=ZmdR4uEtLlaiECQn-I25xwO469M&hl=ro&sa=X&ei=MWPzVKStEIT3OpbagMgH&ved=0CGAQ6AEwCA#v=onepage&q=mobile%20radio%20communication%20books&f=false

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Linear Algebra and Analytical Geometry**
Level of course	Engineer studies
Major	Information Technology
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	5
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Acquiring basic notions and concepts necessary for understanding and mastery of algebra and geometry concepts
2.	Improve the capacity of abstraction and organization of work
3.	Develop the capacity to integrate and teamwork.
Learning outcomes of the course	
1.	The student will improve the capacity of abstraction and organization of work
2.	The student can apply concepts of algebra and geometry concepts

Course contents	
1.	Free vector. Free vector operations. The decomposition of a vector after 2 or 3 directions. Scalar product.
2.	Vector product, mixed. Types of equations of the plane
3.	Types of equations of the straight line in space. Beam plane. Angles and distances in space
4.	Congruent. Classes debris. Vector spaces.
5.	The rank of a matrix. Solving systems of linear equations. Gauss elimination method
6.	Other circuits Used in Data Acquisition (comparators, limiters, switches, signal generators, timers, circuit PLL);
7.	Linear applications. Associated matrix. Changing the base matrix associated to the change. Getting category theory
8.	Eigenvalues and eigenvectors. Characteristic polynomial. Diagonalization of a matrix.

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	SEMINARY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	https://www.math.ucdavis.edu/~linear/linear-guest.pdf
2.	http://joshua.smcvt.edu/linearalgebra/book.pdf
3.	http://www.math.ubc.ca/~carrell/NB.pdf

ECTS COURSE CATALOGUE

LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE

Course title	**Communication Systems**
Level of course	Engineer studies
Major	Mechatronics
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Familiarizing students with theoretical and practical aspects on communication systems, multiple access systems, plesiochronous and synchronous transmission systems as well as digital systems and satellite communications, microwave.
2.	Defining principles and methods used for implementation of communication systems and multiple access systems.
3.	The evaluation parameters for communication systems to meet performance criteria and quality requirements imposed by practical applications.
Learning outcomes of the course	
1.	Develop technical specifications procurement, installation and operation of communication equipment, fixed and mobile, as well as planning, configuration and integration of telecommunications services and information security elements.
2.	Detailed knowledge of the principles of functioning and structure of communications systems; designing, installation and operation of modern communication systems.
3	

Course contents	
1.	**The role of communications systems**. Structure. Classification of communications systems. Functions -

	Modulation. Multiplexing. Wired communications systems.
2.	**Transmission media**. Classification and features. Optical fiber.Transmissions via radio waves.Propagation modes of waves.Specific phenomena of wave propagation. The particularities of wave propagation depending on the frequency range. Comparison of transmission media used in the transport information.
3.	**Multiple access techniques in communication systems.** Multiplexing in frequency and time Multiple access techniques FDMA.TDMA.CDMA-systems with spread spectrum, with direct sequence, with frequency hopping, with time hopping, hybrid.
4.	Fiber optic communications systems .
5.	**Methods of transmission.** The purpose and principles modulation modulation Classification of the modulation. Digital modulation. Pulse code modulation in (PCM).Sampling. Quantization. Coding. Functional structure of a PCM system.PCM systems of primary and higher order. _ Hierarchy (PDH) and Synchronous hierarchy (SDH).Asynchronous modes (ATM).
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Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	https://www.liu.se/utbildning/pabyggnad/6MCSY?l=en
2.	http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-973-communication-system-design-spring-2006/lecture-notes/
3.	http://www.prospects.ac.uk/search_courses_details/university_of_sussex/digital_communication_systems/48108?t=srs&criteria.keyword&criteria.institutionTnrs=4013&criteria.qualificationTnrs=21366&criteria.subjectsOfStudy=2081&p=1&id=48108

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Microwaves**
Level of course	Engineer studies
Major	Mechatronics
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	3
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Voltage and current on the line with two conductors;
2.	Propagation regimes; secondary parameters of the transmission lines;
3.	Adaptation circuits with line sections; field propagation on the fundamental mode in the waveguides; repartition parameters.
Learning outcomes of the course	
1.	Understand basic principles of microwave communication system.
2.	Demonstrate understanding of microwave transmitter and receiver.
3	Identify waveguides with other methods of energy transfer, know transmission devices and medium in microwave communication system.

Course contents	
1.	Waves propagation along transmission lines, propagation constant, characteristic impedance.

2.	Uniform plane wave. Plane Wave in dielectric with losses. Uniform plane wave in metals.
3.	Uniform Waves propagation guides: longitudinal component and transversal components of the field bonding relationships between them.TM,TE, TEM waves. Wave properties of TE. Wave properties of TE and TM in the ideal metal guides. Cut off frequency, phase velocity, a group velocity, wave impedance;
4.	Resonances cavities. Oscillation modes, reflexion method Resonance frequency sum of an oscillation mode. Quality factor. Perturbation methods in the calculation of the special shaped cavities;
5.	Voltages and currents equivalents in guides. Waves power. Single gates characterization. S matrix of a linear multiport. Determination of the S matrix .
n	

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	https://www.medialabinc.net/microwaves-keyword.aspx
2.	http://opencourses.emu.edu.tr/course/view.php?id=26
3.	http://courses.cardiff.ac.uk/postgraduate/course/detail/p324.html

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Measurement Systems in Electronics**
Level of course	Engineer studies
Major	Mechatronics
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	4
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Located at the base of knowledge, process control and analysis of experiments, measurement presents highly varied aspects and is the heart of science and different techniques. The aim of this course is to introduce methods of measurement, measurement devices, methods of design and implementation of schemes to measure and evaluate their performances.
2.	To analyze and interpret measurement data; to know the way of understand the principles and methods of measurement; to know the way of using electronic measuring instruments: oscilloscope, electronics voltmeters, digital frequency meter.
3.	To know how to known how to configure a scheme or a measurement system using electronic and appropriate measurement method; to know how to use the electronic measurement lab equipment: analog and digital oscilloscope, analog and digital multimeters, frequency meters.
Learning outcomes of the course	
1.	Function description of the electronic devices and circuits and fundamental methods for the measuring of electrical quantities; explanation and interpretation of methods for acquisition and signal processing; using simulation environments for analysis and signal processing.
2.	Using electronic tools and specific methods to characterize and evaluate performances of electronics circuits and systems.
3	Developing the ability of integrating and working as a team; improving the performance of using the computer and assisted design software tools; stimulate thinking and technological approaches.

Course contents	
1.	General Considerations, digital analog converters, electronic devices for displaying, DC and AC digital voltmeters ,frequency meters.,digital oscilloscope, flowcharts for software implementation of digital devices.
2.	Static measurements of the currents.
3.	Power measurement - Methods for measuring the power, electronic methods for the measurement of power.
4.	Measuring the main parameters of random circuit components.General considerations, measuring resistance in D.C, ohmmeter, resistance measurement through deck method , C.a bridges, Q-meter.
5.	Virtual measuring instruments. General considerations, block diagram for a measuring system with virtual instruments, specific structure for software and hardware .
6	The causes of distortions, linear distortions, nonlinear distortion, measuring distortion.

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana I zalecana literatura	
1.	https://books.google.pl/books/about/Electronic_Measurement_Systems.html?id=WLHk3L8UgU4C&redir_esc=y
2.	http://eu.wiley.com/WileyCDA/WileyTitle/productCd-0471911577.html
3.	http://www.pnnl.gov/nationalsecurity/technical/capabilities/sei_div/elec_meas_sys.stm

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Automation in electronics and telecommunications**
Level of course	Engineer studies
Major	Mechatronics
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	3
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Defining principles and methods of automatic control in electronics and telecommunication.
2.	The evaluation parameters automation equipment to satisfy the performance criteria and quality requirements imposed by practical applications.
3.	Study of typical architecture of electronic automation controllers encountered.
Learning outcomes of the course	
1.	Applying knowledge, concepts and basic methods: power electronics, automation systems, energy management, electromagnetic compatibility;
2.	Detailed knowledge of the principles of functioning and structure of switching systems;
3.	Design, installation and operation of modern commutation

Course contents	
1.	The role of automatic control systems in assembly automation tools.
2.	Continuous Models; Elementary loop control
3.	Transfer functions specific automatic control systems;

4.	Stability criteria specific automatic control systems;
5.	Synthesis of controllers P, PI, PD, PID continue;
6.	The design dead-beat controllers;
7.	The design regulators Dahlin;
8.	Designing regulators with allocation poles method;
9.	Automatic gain control and frequency;
10.	Control Power Supply in switching;
11.	Automated positioning of antennas;
12.	Study of the stability of circuits with AO.

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	Tarek Sobh, Khaled Elleithy, Innovative Algorithms and Techniques in Automation, Industrial Electronics and Telecommunications, ED.Springer,2007
2.	Laung-Terng Wang, Yao-Wen Chang, Electronic Design Automation, ED. Elsevier 2009
3.	http://www.pmfst.unist.hr/~milica/Matem_teorija_r/MTR_web/Introduction%20To%20Automata%20Theory.pdf

ECTS COURSE CATALOGUE	
LOWER SILESIAN UNIVERSITY OF ENTREPRENEURSHIP AND TECHNOLOGY IN POLKOWICE	
Course title	**Microprocessor Architecture**
Level of course	Engineer studies
Major	Mechatronics
Semester	winter-spring
Language of instruction	English
Number of teaching hours	30
Number of ECTS credit allocated	6
Mode of delivery	face-to-face
Name of lecturer	PhD. Eng. Zdzisław Pólkowski

Prerequisites and co-requisites	
1.	None

Objectives of the course	
1.	Study the basic principles of CISC and RISC microprocessors architecture: registers, memory organization, addressing techniques, data transfers, instruction set, strategies of input and output.
2.	Highlighting the architectural attributes for z80 microprocessor. It will use specific software tools allowing access to system resources microprocessor.
3.	
Learning outcomes of the course	
1.	Knowledge of general characteristics of RAM,ROM, SRAM, DRAM;
2.	Knowing the characteristic features for microprocessors which we studied;
3	Knowledge of hardware design methodology of a microsystem-based microprocessor and memory circuits connection.

Course contents	
1.	**The structure of a microcomputer. Definitions** Functional parts of a microcomputer, definitions; CISC and RISC microprocessors, representation of information in digital systems, conventions for notations;
2.	**The structure of a general microprocessor core, CISC** Data register and address register, general registers, detailed arithmetic processing unit, detailed control unit of memory addressing, the microprocessor control unit;

3.	**Development of functional general-purpose microprocessors CISC** Functional organization of a microprocessor on 16 or 32 bits, structure registers, memory organization of the microcomputer;
4.	**The basic principles of a typical CISC architectures** Data Transfers, addressing Techniques, types of instruction, examples of techniques for addressing various microprocessors.
5.	**The basic principles of a typical RISC architectures** The set of registers, the instruction set and addressing techniques, microprocessor control unit, RISC features to the software;
6	Characteristics of RAM,ROM, SRAM, DRAM.
7	**Z80 Characteristics.**

Planned teaching methods (hours)					
LECTURE	TUTORIALS	PROJECT/DISCUSSION	LABORATORY	SEMINAR	TOTAL
15			15		30

Criteria for assessments	
1.	Assess the degree of independence in performing the exercise.
2.	Number of completed practical exercises.

Required and recommended readings // wymagana i zalecana literatura	
1.	http://www.ece.ncsu.edu/research/cas/ma
2.	http://www.z80.info/zip/z80cpu_um.pdf
3.	http://www.gecassets.co.in/downloads/8085%20Microprocessor%20-%20Ramesh%20Gaonkar.pdf

5.6 The terms of receiving credits abroad for students going to partner universities

According to the Regulation of participating issued by UJW, the student who was approved for the studies abroad within the Erasmus+ Programme is obliged to fill in the Student's Registration Form, sign the agreement on the curriculum, so called Learning Agreement and the agreement with the mother University.
Student who applies for the Erasmus+ scholarship owns the Wright to study according to the individual plan and curriculum of the studies.
Detailed curriculum of the studies is agreed between the mother university and the partner one before the student leaves. All changes to the agreement must be submitted by the student within 1 month. If the university agrees to the suggested changes, the appropriate written correction is added to the agreement.
Together with the agreement on the curriculum, the student's Recognition sheet should be prepared. Such a document includes the list of courses/subjects from the curriculum in the mother university which should have equal course/subjects assigned from the partner university.
At the end of the stay in the partner university, student receives and submits to the mother university, a written confirmation of the stay together with the list of the subjects the student received the credits for so called Transcript of Records.
Student is obliged to submit to the Department of education and students affairs, a certificate from the partner university confirming that the agreed curriculum of the studies was carried out. The certificate must include the information on the credits and exams the student received and passed.
The documentation from the studies abroad is included to the personal student's file. On the basis of the list of credits and exams, Dean confirms in the grade book the credits and exams. Dean also writes the grades from the subjects done abroad. The conformation is done with the following note: Based on the certificate on completing part-time studies abroad I give credits for the following subjects. Dean – signature".

Student is obliged to obtain credit for the other subjects according to the valid program minimum of a particular specialization, which were not included in the curriculum for the stay abroad. He/She may do it after the return.
The deadline for obtaining the credits for the semester or year for the students who stay abroad is specified by the deadlines of the particular academic year. If the deadline cannot be met, Dean may give conditional credits and specifies – together with the lecturer responsible for particular subject- conditions and dates to complete the course.
Student has the right to take the exam on the first date exam has been set.