ECTS system – EU, Polish and LUT regulations

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Agenda

- Bologna Process in EU
- ECTS system
- European regulations
- Polish regulations
- LUT – the practice
- Practical issues
- Distance education

Bologna Process in EU (1)

- The process has created the **European Higher Education Area** (declaration in 1999)
- The aim: **harmonisation** of HE (no *equating* !!!), preserving **national diversity**
- The basic framework is **three cycles** of higher-education qualifications: first (B.), second (M.Sc), third (Ph.D)

Bologna Process in EU (2)

Cycle (level)	ECTSs (*)	Semesters
First (1)	180-240 (**)	6-8
Second (2)	60-120 (**)	2-4
Third (3)	No (120-420 typically)	4-7

(*) depends of pre-H educational system
(**) minimum 60 ECTS per academic year

60 ECTS == 1500 – 1800 hours of study

ECTS == **E**uropean **C**redit **T**ransfer and Accumulation **S**ystem (points)

ECTS

- **E**uropean **C**redit **T**ransfer and Accumulation **S**ystem
- Standard for comparing the "volume of learning based on the defined learning outcomes and their associated **workload**" for higher education across the European Union and other collaborating European countries

Workload

- An estimation of the time learners **typically** need to complete all learning activities such as lectures, seminars, projects, practical work, work placements, individual study required to achieve the defined learning outcomes in formal learning environments
- **Contact hours sheduled + Individual hours to be spent** (average)

ECTS. Aims

- Accumulation
- Comparison
- Recognition
- Transfer
- Student mobility
- Joint degree

ECTS == student's workload

- 1 ECTS = 25…30 hours of total workload
- One academic year corresponds to **60** ECTS credits
- One semester ≈ 30 ECTS
- *One trimester ≈ 20 ECTS*
- Variation in semesters is allowed

EQF

- **E**uropean **Q**ualifications **F**ramework:
  - Framework for Qualifications of the European Higher Education Area (QF-EHEA)
  - European Qualifications Framework for Lifelong Learning of the EU (EQFLLL)
- Bachelor – level 6
- Master – level 7
- Doctor – level 8

ECTS regulations in Poland (1)

- Polish national regulations (by Ministry)
- No „standards" (except hight regulated areas: medicine, pharmaceutics, architecture,…)

	Technical education (*)		Non-technical education	
	1st level	2nd level	1st level	2nd level
Name	**Eng.**	M.Sc. (Eng)	**Lic.**	M.Sc.
ECTS (min)	210	90	180	120
Semesters (min.)	7	3	6	4

(*) min. 50% **practical** classes (labs, projects, classes);
min. 50% **technical** courses (eg. programming)

ECTS in Poland (2)

- Workload: **min. 50%** MUST be in **CONTACT** hours (scheduled hours = mandatory for students; **NO** e-learning)
- 1 ECTS = min. 25 workload hours
- Preparation and defence of **diploma** (if exist in 1st level) thesis:
  - 1st level = min. 15 ECTS
  - 2nd level = min. 20 ECTS

LUT regulations (1)

- 1 ECTS = 25 hours (**no more**!)
- **Mandatory courses**):
  - Health and Safety (15 **a.h.**, 1 ECTS)
  - Science Information (2 a.h., O ECTS)
  - ***Polish Language*** (30 a.h., 2 ECTS)
  - Introduction to the Labor Market (15 a.h., 1 ECTS)
  - HES (Humanistic-Economic Courses) – min. 5 ECTS

LUT regulations (2)

- Elective courses (min. 30% ECTS)
- 50% ECTS courses should be associated with scientific research implemented at LUT in the area

LUT regulations - creating a new study program (1)

- Required documents:
  - General characteristics (attribution to the major characteristics of the graduate)
  - Description of learning outcomes (in terms: knowledges, skills and social competences)
  - Syllabuses of courses

LUT regulations - creating a new study program (2)

- Required procedures:
  - Positive feedback from industry and students
  - Faculty commissions (on the quality of education)
  - Faculty Council
  - Senate commissions (on the quality of education)
  - Senate
  - Information for the Ministry (Permission from the Ministry)

Syllabus content

1. Course parameters
2. Course objectives and Prerequisites
3. Learning outcomes
4. Course content
5. Didactic mathods
6. Assesment methods and criteria
7. Literature
8. Student workload calculation
9. Learning outcomes matrix
10. Author

Syllabus content - Course parameters

Module/Course Syllabus
COMPUTER SCIENCE
Master Degree Programme

Course:	Scientific Methods in Research Experiments
Type of the course:	Specialization
Course code:	IMS2.81
Year:	I
Semester:	2
Form of the degreeprogramme:	Full-time
Form of classes and number of hours per semester:	60
Lecture	30
Classes	30
Number of ECTS credits:	4
Form of assessment:	Exam
Course language:	English

Syllabus content – Course objectives and Prerequisites

	Course objective (C)
C1	To familiarize students with the methods of conducting scientific research and advanced concepts, theorems and methods of mathematical statistics
C2	Acquisition by the student of knowledge on the planning of a scientific experiment, analysis of results, conclusions and presentation of results

	Prerequisites in terms of knowledge, skills and other competencies
1	Knowledge of probability theory and basics of mathematical statistics
2	Programming in C ++

Syllabus content - Learning outcomes

Learning outcomes (LO)	
	In terms of knowledge:
LO 1	The student has knowledge of the principles of conducting scientific research and basic methods of verification of research hypotheses
LO 2	The student has knowledge of advanced methods of mathematical statistics and their use in the data analysis program
	In terms of skills:
LO 3	Student is able to develop experimental data using mathematical statistics methods and appropriate tools
LO 4	The student isable to present and verify hypotheses regarding the experiment and analyze the results
	In terms of social competence:
LO 5	The student isready to critically assess their knowledge

Syllabus content - Course content

Course content	
Form of classes – lectures (LE)	
	Course content
LE1	Stages of scientific and research work. Research methods and tools.
LE2	Introduction to the R program.
LE3	General population and sample. Distributions of random variables. Histograms and empirical cumulative distribution function.
LE4	Estimation and estimators. Construction of confidence intervals.
LE5	Verification of statistical hypotheses: parametric and nonparametric hypotheses
LE6	Distribution compliance tests. Pearson's chi-square test and Kolmogorov-Smirnov. Distribution normality test.
LE7	Independence tests. Contingency tables. Qualitative data analysis.
LE8	Analysis of the relationship between variables, correlation relationship. Correlation measures.
LE9	Linear and nonlinear regression. Factor analysis and variance.
LE10	Graphs of functional dependencies. Least squares method. Impact significance study.
Form of classes – classes (CL)	
	Course content
CL1	Introduction to the R program.
CL2	Random sample: mathematical and statistical functions.
CL3	Discrete and continuous probability distributions. Generating numbers and random samples. Creating charts. Histograms and empirical cumulative distribution function

Syllabus content – Didactic methods and Assesment

Didactic methods	
1	Lecture with multimedia presentation
2	Laboratory exercises

Assesment methods and criteria (A)		
Assessment method code	Description of assessment method	Passing threshold
A1	Exam	51%
A2	Classes assessment	51%
A3	Project	51%

Syllabus content - Literature

Required textbooks and other course materials	
1	R. LymanOtt and Micheal T. Longnecker, AnIntroduction to Statistical Methods and Data Analysis, CENGAGE Learning, 2011
2	G. Grolemund, H. Wickham, R for Data Science, O'Reilly Media, 2017
3	Douglas C. Montgomery, George C. Runger, Applied statistics and probability for engineers, Wiley&Sons, 2003
Recommended textbooks and other course materials	
1	Montgomery D., Design and analysis of experiments, Wiley&Sons, 2005
2	Schmuller J., Statistical Analysis with R For Dummies, Wiley&Sons, 2017

Syllabus content – Student workload calculation

Student workload	
Activity	The average number of hours to complete the activity
Contact hours with the lecturer, including:	**60**
participation in lectures	30
participation in classes	30
Student's own work, including:	**40**
preparing for exam	15
preparing for classes	10
preparingproject	15
Total student worktime	**100**
Total number of ECTS points for the subject	**4**

Syllabus content – Learning outcomes matrix

Learning outcomes matrix					
Learning outcome	Reference to the outcomes defined for the masters programme	Course objective	Course content	Didactic methods	Assess-ment methods
LO 1	I2A_W07, I2A_W10, I2A_W11	C1	LE1- LE10	1,2	A1
LO 2	I2A_W07, I2A_W11	C1	LE2- LE10	1,2	A1
LO 3	I2A_U04, I2A_U05, I2A_U12	C2	CL1-CL4	1,2	A2, A3
LO 4	I2A_U04, I2A_U05, I2A_U12	C2	CL5- CL10	1,2	A2, A3
LO 5	I2A_K01	C1, C2	LE1-LE10 CL1- CL10	1,2	A1, A2

Syllabus content – Author

The author of the programme:	Dr. Edyta Łukasik
E-mail address:	e.lukasik@pollub.pl
Organisational unit:	Department of Computer Science

Pandemic time (1)

- Possibility of remote work with students (incl. exams)
- All documents electronically
- Automatic renewal of student IDs
- Prohibition of assembly ban (max. 5 people)
- Shift the „hard" labc
- Student internships - distance-based

Pandemic time (2)

- In real:
  - Moodle
  - Zoom/Google meetings/Teams….
- Many professors are not ready (lack of skills and materials)
- Technical problems at the beggining (fixed)

Questions?

THANK YOU