COURSE DESCRIPTION CARD - SYLLABUS

Course name
Performance evaluation of Computer Systems [N2Inf1-ZTI>OESK]

Course

Field of study
Computing

Year/Semester
1/1

Area of study (specialization)
Advanced Internet Technologies

Profile of study
general academic

Level of study
second-cycle

Course offered in
polish

Form of study
part-time

Requirements
compulsory

Number of hours

Lecture
16

Laboratory classes
16

Other (e.g. online)
0

Tutorials
0

Projects/seminars
0

Number of credit points

4,00

Coordinators

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Lecturers

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Prerequisites

A student starting this subject should have basic knowledge of: equipment and organization computer systems, operating systems, computer networks, databases. Student should have the ability to create simple web applications and solve them basic problems in the field of statistical data analysis and acquisition skills information from the indicated sources. He should also understand the need to expand his skills competences and be ready to cooperate within a team. Moreover, in terms of social competences, the student must present attitudes such as honesty, responsibility, perseverance, cognitive curiosity, creativity, personal culture, respect for other people

Course objective

Providing students with basic knowledge about the methodology for assessing system performance computers, in the field of typical applications in the field of electronics. Developing u students the ability to detect, analyze and solve performance problems computer systems.

Course-related learning outcomes

Knowledge:
The student has structured, theoretically based general knowledge in the field of computer science; has

advanced and detailed knowledge of the processes occurring in the systems life cycle
IT hardware or software; knows advanced methods, techniques and tools
used in solving complex engineering tasks in the field of system efficiency assessment
computer.

Skills:
The student is able to use simple methods to formulate and solve engineering tasks
analytical estimation of computer systems efficiency parameters, simulation
checking the behavior of the modeled computer system and experimentally
involving measuring the effectiveness of computer systems; is able to solve tasks
integrate knowledge from various areas of IT and apply a systems approach,
taking into account non-technical aspects in the implementation of efficiency assessment projects; can
assess the usefulness and possibility of using new IT products for evaluation
efficiency; can assess the usefulness of methods and software for assessing effectiveness;

Social competence:
The student understands the importance of using the latest knowledge in the field of computer science to implement
contemporary problems, assessment of the effectiveness of computer systems.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Formative assessment:
a) in terms of lectures based on answers to questions about the material covered in
previous lectures,
b) in the scope of laboratories/workshops based on the assessment of the current progress in the implementation of tasks,
Summary rating:
number of points obtained during the laboratory: 18-21=db, 14-17=dst.plus; 8-13=st., x-7=ndst.
Additional 5 points if the student takes the optional project: 25-26=b.db, 22-24=db.plus,
18-21=db, 14-17=dst.plus; 8-13=st., x-7=ndst.
You can earn up to 6 points in lectures based on activity.
Written/oral exam: 6 questions (if written, 3 open questions and 3 multiple-choice).
Each question up to 5 points. Final rating:
35-36=b.db, 32-34=db.plus, 28-31=db, 24-27=dst.plus; 18-23=st., x-17=ndst

Programme content

Definition, tasks and objectives of computer systems effectiveness assessment (OESK). Assessment techniques
efficiency. Criteria for selecting the technique and methodology of the OESK procedure. OESK measures.
Analysis techniques
reliability: FTA, ETA, FMEA Load types for OESK. Benchmarks in OESK. Planning
research experiments at OESK. Analytical performance modeling.

Teaching methods

1. lecture: slides, multimedia presentation, presentation illustrated with examples, discussion with
using a whiteboard, solving process analysis and optimization tasks and programming tasks,
multimedia show in the form of videos, e.g. on the rules of using a given IT tool
supporting modeling, demonstration of process modeling projects performed in previous years.
2. laboratory exercises (obligatory): solving tasks, problem exercises,
performing parameterization experiments and measuring indicators of a given process, discussion with
online research in the form of computer system simulation, individual and team work,
design workshops (optional) as a key element of learning creative creativity, study
cases when examining specific systems, demonstration of sample issues.

Bibliography

Basic
1. R.Jain, The Art of Systems Performance Analysis: Techniques for Experimental Design, Measurement, Simulation, and Modeling, Wiely, 1991
2. R.Hockney, The Science of Computer Benchmarking, SIAM Press, Philadelphia, 1996
3. G-P.Musumeci,M.Loukides, Optymalizacja systemów komputerowych,Wydawnictwo RM,Warszawa, 2002
4. B.Gregg, Wydajne systemy komputerowe. Przewodnik dla administratorów systemów lokalnych i w chmurze, Helion, Gliwice, 2014
5. K.Kanoun, L.Spainhower, Dependability Benchmarking for Computer Systems, J.Wiley and Sons, IEEE Computer, 2008
6. J.Błażewicz, W.Cellary, R.Słowiński, J.Węglarz, Badania operacyjne dla informatyków, WNT, Warszawa, 1983
7. NIST/SEMATECH e-Handbook of Statistical Methods, 2003. http://www.itl.nist.gov/div898/handbook/
8. D.G.Feitelson, Workload Modeling for Computer Systems Performance Evaluation, Cambridge University Press, 2015 http://www.cs.huji.ac.il/~feit/wlmod/
Supplementary
Internet sources of companies dealing with testing the effectiveness of computer systems, e.g.: www.tpc.org, www.spec.org

Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,00
Classes requiring direct contact with the teacher	34	1,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	66	2,50