COURSE OUTLINE

1. Data about the study programme

1.1 Higher education institution	Transilvania University of Brasov
1.2 Faculty	Mathematics and computer science
1.3 Department	Mathematics and computer science
1.4 Field of study[1)]	Computer science
1.5 Study level[2)]	MA
1.6 Study programme/ Qualification	Internet Technologies

2. Data about the course

2.1 Name of course				**Process Control at Distance**				
2.2 Course convenor				**VIZITIU Cristian**				
2.3 Seminar/ laboratory/ project convenor				**VIZITIU Cristian**				
2.4 Study year	2	2.5 Semester	1	2.6 Evaluation type	E	2.7 Course status	Content[3)]	PC
							Attendance type[4)]	CPC

3. Total estimated time (hours of teaching activities per semester)

3.1 Number of hours per week	**3**	out of which: 3.2 lecture	**1**	3.3 seminar/ laboratory/ project	**0/2/0**
3.4 Total number of hours in the curriculum	42	out of which: 3.5 lecture	14	3.6 seminar/ laboratory/ project	0/28/0

Time allocation	hours
Study of textbooks, course support, bibliography and notes	39
Additional documentation in libraries, specialised electronic platforms, and field research	38
Preparation of seminars/ laboratories/ projects, homework, papers, portfolios, and essays	38
Tutorial	10
Examinations	8
Other activities.....	-

3.7 Total number of hours of student activity	133
3.8 Total number per semester	175
3.9 Number of credits[5)]	7

4. Prerequisites (if applicable)

4.1 curriculum-related	• Bases in computer networks communication • Computer programming for distributed systems
4.2 competences-related	• General and specific competences following the graduated bachelor study program • Research competences at the bachelor level

5. Conditions (if applicable)

5.1 for course development	• Overhead projector, hand-outs, laptop/notebook
5.2 for seminar/ laboratory/ project development	• Laboratory class with educational and ICT resources: a computer network, network interconnection equipment, internet services

6. Specific competences

Professional competences	• Extending students' *knowledge* based on recent methodologies and technologies, already applied in software development domain or ready to be used in the near future; • Correct using of *specific language* for the internet context, *to describe* the hardware and/or software support of a given distributed system; • Developing *specialised problem-solving skills* for recognising the particular internet context and being ready to develop modern applications for practical problems *from different fields* • Encouraging the development of professional and/or *research projects* using the recent remote solutions for the internet computing

Transversal competences	• Undertaking professional tasks under partial autonomy and total responsibility; • Having suitable learning skills to continue to study and to develop a reflective, analytical attitude upon the professional profile.

7. Course objectives (resulting from the specific competences to be acquired)

7.1 General course objective	This course presents the specific topics about the Process Control at Distance. After this module, the master-student will be able to understand a comprehensive definition of process control, and the context to the study of Process Control at Distance.
7.2 Specific objectives	• Formation of knowledge in the field of Process Control at Distance, considered as a system and viewed in terms of specific components; • Formation of skills and values necessary for constructivist approaches to the problems specific to the Process Control at Distance.

8. Content

8.1 Course	Teaching methods	Number of hours	Remarks
1. Methods for function and form identification (i.e., processes, operands, objects, structure) within complex process-based systems (HW, SW).	problematizing lecturing design and develop in teams group working conversation case studies	2	
2. Object Process Methodology, language documentation for complex process-based systems modelling considering functional, structural and behavioural aspects.		2	
3. Modelling with OPCAT (Object-Process CASE Tool) software.		4	
4. Design of Complex Process-based System architectures.		2	
5. Frameworks of Complex Process based System architectures.		2	
6. Architectures Modelling for supporting integration of multitude processes based on SysML Diagrams.		2	

Bibliography

[1]. Vizitiu, C.; Bîră, C.; Dinculescu, A.; Nistorescu, A.; Marin, M. Exhaustive Description of the System Architecture and Prototype Implementation of an IoT-Based eHealth Biometric Monitoring System for Elders in Independent Living. *Sensors* 2021, *21*, 1837. https://doi.org/10.3390/s21051837

[2]. Vizitiu, C. (2019). Systems Engineering and Organizational Assessment Solutions ensuring Sustainability within Telemedicine Context. Book published in Springer Verlag (Springer Nature), Germany, ISBN 9783658235383 (online) 9783658235376 (print), DOI 10.1007/978-3-658-23538-3.

[3]. Crawley, E., Cameron, B., Selva, D. (2015). System Architecture: Strategy and Product Development for Complex Systems, Global Edition, Publisher Pearson, ISBN: 9780136462989.

[4]. Văleanu, V., Vasiliu, V., Vizitiu, C., Marin, M., Nistorescu, A., Dinculescu, A., Vizitiu, A., Ion, T. (2015). Portable Telemedicine Workstation Full Prototype for Technological Transfer in Critical Interventions Services. Published in ISI Proceedings of the 5th IEEE International Conference on E-Health and Bioengineering EHB 2015, Iaşi, Romania, November 19-21.

[5]. Dov Dori (2002). Object-Process Methodology – A Holistic Systems Paradigm. Springer 2002, ISBN 3-540-65471.

[6]. Automation Systems and Integration: Object-Process Methodology — ISO/PAS 19450:2015(en): https://www.iso.org/obp/ui/#iso:std:iso:pas:19450:ed-1:v1:en

[7]. Hein, A.M., Karban, R., Weilkiens, T., Zamparelli, M., Hauber, R. (2011). Cookbook for MBSE with SysML. INCOSE - SE2 MBSE Telescop Challenge Team. DOI: 10.13140/2.1.4291.2324. https://www.researchgate.net/publication/268977905.

8.2 Seminar/ laboratory/ project	Teaching-learning methods	Number of hours	Remarks
1. Function and form identification (i.e., processes, operands, objects, structure) within specific complex process-based systems (HW, SW).	problematizing design and develop in teams group working conversation case studies	4	
2. Process representation and Object Process Diagrams (OPD) Definition on complex process-based systems.		4	
3. Types of processes and structures in OPCAT (Object-Process CASE Tool) software.		4	
4. Developing Object Process Diagrams (OPD) in OPCAT (Object-Process CASE Tool) software.		8	

5. Documentation and Implementations based on complex process-based System architectures Frameworks.		4	
6. Architectures Modelling for supporting integration of multitude processes based on SysML Diagrams.		4	

Bibliography

[1]. Vizitiu, C.; Bîră, C.; Dinculescu, A.; Nistorescu, A.; Marin, M. Exhaustive Description of the System Architecture and Prototype Implementation of an IoT-Based eHealth Biometric Monitoring System for Elders in Independent Living. Sensors 2021, 21, 1837. https://doi.org/10.3390/s21051837

[2]. Vizitiu, C. (2019). Systems Engineering and Organizational Assessment Solutions ensuring Sustainability within Telemedicine Context. Book published in Springer Verlag (Springer Nature), Germany, ISBN 9783658235383 (online) 9783658235376 (print), DOI 10.1007/978-3-658-23538-3.

[3]. Crawley, E., Cameron, B., Selva, D. (2015). System Architecture: Strategy and Product Development for Complex Systems, Global Edition, Publisher Pearson, ISBN: 9780136462989.

[4]. Văleanu, V., Vasiliu, V., Vizitiu, C., Marin, M., Nistorescu, A., Dinculescu, A., Vizitiu, A., Ion, T. (2015). Portable Telemedicine Workstation Full Prototype for Technological Transfer in Critical Interventions Services. Published in ISI Proceedings of the 5th IEEE International Conference on E-Health and Bioengineering EHB 2015, Iaşi, Romania, November 19-21.

[5]. Dov Dori (2002). Object-Process Methodology – A Holistic Systems Paradigm. Springer 2002, ISBN 3-540-65471.

[6]. Automation Systems and Integration: Object-Process Methodology — ISO/PAS 19450:2015(en): https://www.iso.org/obp/ui/#iso:std:iso:pas:19450:ed-1:v1:en

[7]. Hein, A.M., Karban, R., Weilkiens, T., Zamparelli, M., Hauber, R. (2011). Cookbook for MBSE with SysML. INCOSE - SE2 MBSE Telescop Challenge Team. DOI: 10.13140/2.1.4291.2324. https://www.researchgate.net/publication/268977905.

9. Correlation of course content with the demands of the labour market (epistemic communities, professional associations, potential employers in the field of study)

- the course follows the ACM and IEEE Curricula Recommendations for Computer Science studies (Computer Science 2013, Computer Engineering 2016, Information Systems 2010, Software Engineering 2014);
- the content of the course is treated accordingly with the national and European directives regarding the professional and transversal competences (NQFHE, Nov. 2011)

10. Evaluation

Activity type	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Percentage of the final grade
10.4 Course	• Achieving the discipline objectives • Proving the specific discipline competences • Accurate and fluent use of specific terms	Final evaluation by oral examination	40%
10.5 Seminar/ laboratory/ project		Active participation during the semester in the course / seminar / laboratory activities	40%
		Final evaluation by laboratory theme	20%
10.6 Minimal performance standard			
Base knowledge and skills about wireless systems management			

This course outline was certified in the Department Board meeting on 26/09/2024 and approved in the Faculty Board meeting on 26/09/2024.

Conf.dr Ion Gabriel Stan Dean	Conf. Dr. Nicușor Minculete Head of Department .....
Dr. Eng. **Cristian VIZITIU** (Faculty IESC) ..... Course holders	Dr. Eng. **Cristian VIZITIU** (Faculty IESC) ..... Holders of laboratory

Note:

1) Field of study – select one of the following options: BA/MA/PhD. (to be filled in according to the forceful classification list for study programmes);

[2] Study level – choose from among: BA/MA/PhD;

[3] Course status (content) – for the BA level, select one of the following options: FC (fundamental course) / DC (course in the study domain)/ SC (speciality course)/ CC (complementary course); for the MA level, select one of the following options: PC (proficiency course)/ SC (synthesis course)/ AC (advanced course);

[4] Course status (attendance type) – select one of the following options: CPC (compulsory course)/ EC (elective course)/ NCPC (non-compulsory course);

[5] One credit is the equivalent of 25 – 30 study hours (teaching activities and individual study).