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PENS

Pathway in Enterprise Systems Engineering

Pathway in Enterprise Systems Engineering (PENS)

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http://www.pens.ps

Business Process Engineering

Course Specification

Course Specification

I. **Course details**

Course Name	Business Process Engineering
Course Code	PENS_[C4]
ECTS Credits	5.5 (140 learning hours)
Pre-requisites	Information systems, Preferably : conceptual modelling, UML
Weekly Hours • Theoretical • Practical • Total	 • 1.5 • 1.5 • 3
Course Description (provide 60-100 words describing the focus of the syllabus)	
The course covers main techniques and methods used during the Business Process (BP) lifecycle. It starts by introducing basic concepts, modelling techniques and languages. Then it reviews control-flow verification and quantitative model analysis. The course also discusses BP implementation, using workflow-like management systems and service oriented techniques. The course covers next mining techniques for discovery, conformance checking and model enrichment. It follows up with log-based BP analysis. The course reviews as well other kind of BP especially reference and declarative BP. The course finishes by applying the discussed techniques within use-case based projects.	
Course aim(s) (provide 30-50 words describing the aim of the course)	
The course aims at reviewing methods and techniques for managing a BP along its lifecycle phases. Students should be able to design and implement high quality BP. They should also be able to improve and redesign BP based on model analysis outcomes, mining and conformance checking results.	

II. Intended Learning Outcomes of Course (ILOs)

On completing the course, students should be able to

LO.1 Understand fundamentals of BPM and its role in EIS

LO.2 Create business processes models.

LO.3 Analyse BP models quantitatively and qualitatively.

LO.4 Apply automation and configuration techniques to implement BP.

LO.5 Apply relevant techniques for Business Process Intelligence: mining, conformance checking, model extension and monitoring.

LO.6 Apply model-based and log-based techniques to improve BP.

III. Course Matrix Contents

Week	Main Topics / Chapters	Learning Hours	Intended Learning Outcome (s)
1	Introduction to Process Aware Information Systems	[2]	LO.1
2	Basic concepts and notations	[6]	LO.1
3	Business Process Modelling 1	[9]	LO.2
4	Business Process Modelling 2	[12]	LO.2
5	Model based qualitative Analysis	[9]	LO.3, LO.6
6	Model based quantitative Analysis	[9]	LO.3, LO.6
7	Workflow based Business Process Automation	[12]	LO.4
8	Service-oriented Business Process Automation	[12]	LO.4
9	Business Process Mining	[12]	LO.5
10	Business Process Conformance Checking	[9]	LO.5
11	Mining of Time, Data and Organizational Perspectives	[12]	LO.5
12	Log-based BP Analysis	[12]	LO.5, LO.6
13	Declarative and Reference BP models	[9]	LO.1, LO.2
Total Learning Hours		140	

IV. Assessment Methods, Schedule and Grade Distribution

Assessment type	Used	Formative	Weight	Week	ILO(s)
Written exam (midterm)	Y	Y/N	[0%]	# 7	• N/A
Written exam (final)	Y	Y	[50% - 70%]	#14	• [LO1, LO2, LO3, LO4, LO5, LO6]
Labs (individual)	Y	Y	[15%-20%]	#2 – #13	• [LO1, LO2, LO3, LO4, LO5, LO6]
Written coursework (group)	N	N	[0%]	#N/A	• N/A
Oral presentation (individual)	N	N	[0%]	#N/A	• N/A
Use cases based projects (group)	N	N	[15%-30%]	#14	• [LO1, LO2, LO3, LO4, LO5, LO6]
Test/Quiz	N	N	[0%]	#N/A	• N/A
Other	N	N	[0%]	#N/A	• N/A

V. List of References

Essential textbook(s)	• Dumas, M, Van der Aalst, W & Ter Hostede, A, Process Aware Information Systems: Bridging People and Software Through Process Technology, Wiley, 2005. • Wil M. P. van der Aalst, Process Mining: Data Science in Action, Springer; 2016.
Recommended textbook (s)	• Dumas, M, La Rosa, M, Mendling, J & Reijers H, Fundamentals of business process management, Springer, 2013. • Freund, J & Rücker, B, Real-Life BPMN: With introductions to CMMN and DMN, CreateSpace Independent Publishing Platform, 2016.
Course notes	• Business Process Management at http://wwwis.win.tue.nl/~wvdaalst/old/courses/courses.htm • Business Process Management at https://courses.cs.ut.ee/2017/bpm/
Journal(s) / periodical(s)	• […..]
Specific article(s)	• […..]
Websites and other online resources	• […..]

VI. Facilities required for teaching and learning