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**PENS**

Pathway in Enterprise Systems Engineering

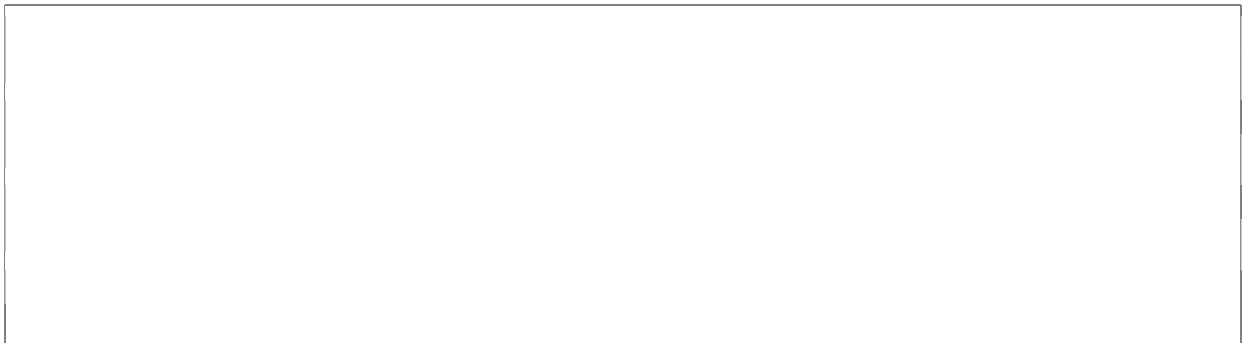
## **Pathway in Enterprise Systems Engineering (PENS)**

Project Ref. No.: 586301-EPP-1-2017-1-PS-EPPKA2-CBHE-JP

<http://www.pens.ps>

# *Digital Business Transformation*

## **Course Specification**



# Course Specification

## I. Course details

Course Name	<b>Digital Business Transformation</b>
Course Code	PENS DBT
Number of Credit Hours	3
ECTS Credits	5.5 (140 learning hours)
Course type (core / elective)	Core
Pre-requisites	None
<u>Weekly Hours</u>	
<ul style="list-style-type: none"> <li>• Theoretical</li> <li>• Practical</li> <li>• Total</li> </ul>	<ul style="list-style-type: none"> <li>• 1,5 to 3</li> <li>• 1,5 to 3</li> <li>• 3 to 6</li> </ul>
<u>Course Description (provide 60-100 words describing the focus of the syllabus)</u>	
<p>In this course, we talk about digital transformation in two ways. First we discuss the pace of this transformation and the imperative it creates for businesses. Next we provide the context for this transformation and what it takes to win in the digital age.</p> <p>This course would prepare students to contribute to digital transformation in companies. First, they should be able to introduce new technologies and manage disruption. Next, they should be able to establish new practices and raise peers awareness of these practices.</p> <p>It would initiate students to many technological and practical aspects that will be more deeply developed in subsequent modules.</p>	
<u>Course aim(s) (provide 30-50 words describing the aim of the course)</u>	
<p>This preliminary course involves theoretical and project-based aspects, initiating students to the rest of the pathway.</p> <p>It prepares students to:</p> <ul style="list-style-type: none"> <li>- Respond to the industry-wide need for graduates who have digital technological skills, advanced business acumen and can tackle problem-solving with appropriate approaches.</li> <li>- Support business leaders in undertaking transformation by disruptive technologies.</li> </ul>	

## II. Intended Learning Outcomes of Course (ILOs)

On completing the course, students should be able to (provide 4-6 learning outcomes):

- LO.1 Identify and Investigate recent trends in business management
- LO.2 Identify recent technological trends and Discuss how they affect business digitalization
- LO.3 Value and Implement ethical aspects within enterprises' digital environment.
- LO.4 Select and Execute a procedure for dealing with novelties and market disruption
- LO.5 Design and Develop business strategies driving advancement and innovation
- LO.6 Appraise an enterprise digital state and maturity level (highlight strengths and weaknesses)

LO.7 Design and Implement processes for the whole coherence of the digital transformation.

### III. Course Matrix Contents

Week	Main Topics / Chapters	Learning Hours	Intended Learning Outcome (s)
1	Ch1 : Introduction <ul style="list-style-type: none"> <li>• What is DBT? [1][8][10]</li> <li>• Why DBT? [1][8][10]</li> </ul>	3	N/A
2	Ch 2: How Technology Changes Business: <ul style="list-style-type: none"> <li>• In industry [1][19]</li> <li>• In service (SCM, e-commerce, etc.), [5]</li> <li>• In the implementation of e-government, [11][12]</li> <li>• In the Bank, [1]</li> </ul>	6	LO.#-1,2
3	Ch 3: Strategy & Challenges of DBT: <ul style="list-style-type: none"> <li>• The Mechanics of Disruption [8][10][19]</li> <li>• Effects of DBT on collaborative work [15]</li> <li>• Bi-Modal IT [9]</li> </ul>	12	LO.#-2,3,4
4			
5	Ch 4: Agility and DevOps <ul style="list-style-type: none"> <li>• Introduction to Agility [4]</li> <li>• SCRUM [4]</li> <li>• XP [4]</li> <li>• DevOps [17][18]</li> </ul>	6	LO.#-4,5
6	Ch 5: Knowledge management and AI <ul style="list-style-type: none"> <li>• Knowledge management [2][21]</li> <li>• Artificial Intelligence [22]</li> </ul>	12	LO.#4,5
7			
8	Ch 6: Cloud computing, IoT and API <ul style="list-style-type: none"> <li>• Cloud Computing [7][16]</li> <li>• Introduction to IoT [13][14]</li> <li>• API</li> </ul>	15	LO.#-4,5
9			
10			
11	Ch 7: Data analytics overview & Big data <ul style="list-style-type: none"> <li>• Data analytics overview [6][23]</li> <li>• Big Data [6][23]</li> </ul>	15	LO.#-4,5
12	Ch 8: Platforms in a Digital Economy [20][25]	9	LO.#-4,5
13	Ch 9: Cybersecurity, privacy and ethics. [3][13][24]	6	LO.#-3,5,8
14	Projects* fulfillment and presentation	50 for fulfillment along the semester 12 for presentations	LO.#-6,7,8
Total Learning Hours		140	

\* Projects to be started in week 2 and could be more deeply realized through other modules.

#### IV. Assessment Methods, Schedule and Grade Distribution

Assessment type	Used	Formative	Weight	Week	ILO(s)
Written exam (midterm)	N				
Written exam (final)	Y	Y	40%	#16	• 1..7
Written coursework (individual)	N				
Written coursework (group)	N				
Oral presentation (individual)	N				
Oral presentation (group)	Y	Y	10%	#14,15	• 6..7
Test/Quiz	Y	Y	20%	#8	• 1..5
Other (Group Project)	Y	Y	30%	#2..13	• 6..7

#### V. List of References

Essential textbook(s)	<p>[1] Oswald, Gerhard, and Michael Kleinemeier. Shaping the Digital Enterprise. Springer International Publishing, 2017.</p> <p>[2] Kimiz Dalkir. Knowledge Management in Theory and Practice. 2005, Elsevier Inc. 2005</p> <p>[3] Milan ětkovic and Williem Jonker. Security, Privacy and Trust in Modern Data Management. Springer. 2007</p> <p>[4] Abrahamsson P, Salo O, Ronkainen J, Warsta J. Agile software development methods: Review and analysis. arXiv preprint arXiv:1709.08439. 2017 Sep 25.</p>
Recommended textbook (s)	<p>[5] Chaffey, Dave. Digital business and e-commerce management. Pearson Education Limited, 2015.</p> <p>[6] Robert Keane. Data Analytics: Master the Techniques for Data Science, Big Data and Data Analytics. CreateSpace Independent Publishing Platform, 2017</p> <p>[7] Velte AT, Velte TJ, Elsenpeter RC, Elsenpeter RC. Cloud computing: a practical approach. New York: McGraw-Hill; 2010.</p>
Course notes	
Journal(s) / periodical(s)	
Specific article(s)	<p>[8] Boneva, Miroslava. "Challenges Related to the Digital Transformation of Business Companies." Innovation Management, Entrepreneurship and Sustainability (IMES 2018). Vysokáškolaekonomická v Praze, 2018. 101-114.</p> <p>[9] Horlach, Bettina, Paul Drews, and Ingrid Schirmer. "Bimodal IT: Business-IT alignment in the age of digital transformation." MultikonferenzWirtschaftsinformatik (MKWI) (2016): 1417-1428.</p> <p>[10] MIT Sloan Management Review and Deloitte University Press, "Strategy, not Technology Drives Digital Transformation: Becoming a digitally mature enterprise", Summer 2015.</p> <p>[11] JANOWSKI, Tomasz. Digital government evolution: From transformation to contextualization. 2015.</p> <p>[12] BARNES, Sarah, COSGRAVE, Ellie, ACUTO, Michele, et al. Digital infrastructures and urban governance. Urban Policy and research, 2017, vol. 35, no 1, p. 20-31.</p> <p>[13] Jing Q, Vasilakos A.V, Wan.J, Lu J and Qiu D. "Security of the Internet of Things: perspectives and challenges." Wireless Netw. 2014</p> <p>[14] Fleisch Elgar. « What is the Internet of Things ? An Economic Perspective. Auto-ID Labs white paper. 2010</p> <p>[15] Uhl A, Gollenia LA. Digital enterprise transformation: A business-driven approach to leveraging innovative IT. Routledge; 2016 Apr 22. (week 1)</p> <p>[16] Armbrust M, Fox A, Griffith R, Joseph AD, Katz R, Konwinski A, Lee G, Patterson D, Rabkin A, Stoica I, Zaharia M. A view of cloud computing.</p>

	<p>Communications of the ACM. 2010 Apr 1;53(4):50-8.</p> <p>[17] Dyck A, Penners R, Lichter H. Towards definitions for release engineering and devops. InRelease Engineering (RELENG), 2015 IEEE/ACM 3rd International Workshop on 2015 May 19 (pp. 3-3). IEEE.</p> <p>[18] Ebert C, Gallardo G, Hernantes J, Serrano N. DevOps. IEEE Software. 2016 May; 33(3):94-100.</p>
Websites and other online resources	<p>[19] Global Center for Digital Business Transformation, IMD and Cisco, “Digital Vortex: How Digital Disruption is Redefining Industries,” June 2015.</p> <p>[20] <a href="http://www.cisco.com/c/dam/en/us/solutions/collateral/industry-solutions/digital-vortex-report.pdf">http://www.cisco.com/c/dam/en/us/solutions/collateral/industry-solutions/digital-vortex-report.pdf</a></p> <p>[21] <a href="http://www.knowledge-management-tools.net/">http://www.knowledge-management-tools.net/</a></p> <p>[22] <a href="https://artint.info/2e/html/ArtInt2e.html">https://artint.info/2e/html/ArtInt2e.html</a></p> <p>[23] <a href="https://www.simplilearn.com/data-science-vs-big-data-vs-data-analytics-article">https://www.simplilearn.com/data-science-vs-big-data-vs-data-analytics-article</a></p> <p>[24] <a href="https://seop.illc.uva.nl/entries/it-privacy/">https://seop.illc.uva.nl/entries/it-privacy/</a></p> <p>[25] <a href="https://www.gartner.com/binaries/content/assets/events/keywords/symposium/esc28/esc28_digitalbusiness.pdf">https://www.gartner.com/binaries/content/assets/events/keywords/symposium/esc28/esc28_digitalbusiness.pdf</a></p>

## VI. Facilities required for teaching and learning

- Use License of a Digital Platform
- Computer Lab
- Video projector