CS-491 **Enterprise and service-oriented architecture**

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Cursus	Sem.	Type
Computer science	MA2, MA4	Opt.
Cybersecurity	MA2, MA4	Opt.
SC master EPFL	MA2, MA4	Opt.

Language of teaching	English
Credits	6
Session	Summer
Semester	Spring
Exam	Oral
Workload	180h
Weeks	14
Hours	**6 weekly**
Courses	6 weekly
Number of positions	

Summary

In this course, we teach how to define the requirements for an IT service that would best serve the needs of an organization. The course is taught using a non-conventional style in which the students learn mostly through the stress of a series of concrete experiences that mimic real-life situation.

Content

The goal of this course is closely related to IT, but a substantial part the material is related to business, as well as to systems thinking. Even if some visual programming is taught, the course can be taken by non IT-students. The course can be especially useful for students interested in business analysis, IT consulting and in the specification part of IT development.

Detailed contents:

1) Business Part (4 weeks): practical experimentation and theoretical understanding of the key business processes of a manufacturing company : tendering, product development, manufacturing, quality management and accounting.

2) Business / IT Part (7 weeks): specification of an IT application that provides after-sales service. We do a critical analysis of BPMN. We then teach the following techniques : interviews & contextual inquiry, analysis/design of the business services and of the IT services. The specified solution is implemented in a commercial tool (Software as a Service). The underlying theory to business and IT service design is system thinking.

3) IT Consulting and Strategy Part (3 weeks): IT strategy and its impact on technology selection, enterprise architecture to coordinate IT technology, tender process applied to IT development.
In this course, the students have to do a critical analysis of some "classics" of the IT litterature.

Keywords

Tender process, quotation, purchase order, leadtime, bill of material, development process, V process, spirale process, quality system, traceability, ISO 9000, financial statements, year-end book closing, ERP,

BPMN, business process reengineering, interview, contextual inquiry, business service, IT service, requirements engineeing, SEAM service modeling, SEAM motivation modeling.

Interpretivism, model / reality, homeostasis, appreciative systems

Learning Outcomes

By the end of the course, the student must be able to:

- Describe business domains (sales, engineering, manufacturing, quality, accounting)
- Coordinate reply to a tender

- Design quality system based on ISO 9000
- Analyze business stakeholder perceptions and motivations
- Assess / Evaluate existing business processes
- Conduct overall business/IT alignment project
- Design specifications of business services and IT services
- Implement prototype on a SaaS

Transversal skills

- Continue to work through difficulties or initial failure to find optimal solutions.
- Use both general and domain specific IT resources and tools
- Write a scientific or technical report.
- Collect data.
- Make an oral presentation.
- Summarize an article or a technical report.

Teaching methods

Experiential learning and group work

Resources

Virtual desktop infrastructure (VDI)

No

Bibliography

ISO9001:2015 - available through SAGA via EPFL library
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Markus M.L., Keil M. (1994). If We Build It, They Will Come: Designing Information Systems that People Want to use, Sloan Management Review; Summer 1994; 35, 4; ABI/INFORM Global pg. 11
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Carr, N. G. (2003). "IT Doesn't matter", Harvard Business Review
Zachman, J. A. (1987). "A framework for information systems architecture." IBM Syst. J. 26 (3): 276-292.

Ressources en bibliothèque

- Contextual design / Beyer