

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

Language	English
Credits	6
Session	Summer
Semester	Spring
Exam	Oral
Workload	180h
Weeks	14
Hours	6 weekly
Lecture	6 weekly

SUMMARY

The student learns business and IT alignment through: 1) experiencing business operations in a serious game; 2) analyzing business requirements and designing business & IT services; 3) implementing a workflow prototype (BPMN). The student is exposed to standards (ISO 9K, ITIL) & frameworks (SOA, EA).

CONTENT

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

2) Business / IT Part (6 weeks): specification of an IT system that provides after-sales service. We teach the following techniques : interviews, root cause analysis, analysis/design of the business services and of the IT services. The underlying theory is system thinking (Weinberg, Vickers) and the ISO/IEC standard RM-ODP.

3) IT Part (2 weeks): implementation - using BPMN visual programming - of an IT system prototype. Overview of the technological aspects of service-oriented architecture (wsdl, bpel, soap).

4) Enterprise Architecture & Conclusions (2 weeks): Overview of the enterprise architecture frameworks (Zachman, TOGAF, Urba-EA). Synthesis and key learning points of the course.

KEYWORDS

RFQ, quotation, purchase order, leadtime, bill of material, development process, V process, spirale process, manufacturing planning, quality system, traceability, ISO 9000, financial statements, year-end book closing, ERP, interview, contextual inquiry, root-cause analysis, ITIL, business service, IT service, requirements engineering, SEAM system modeling, SEAM goal-belief modeling, SEAM behavior modeling, Vickers appreciative system, behavioral refinement, information modeling, service-oriented architecture (SOA), BPMN, BPEL, WSDL, SOAP, enterprise architecture (EA), Zachman, TOGAF, Urba-EA. Systemic paradigm, epistemology, ontology, axiology, ethics.

LEARNING OUTCOMES

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

- Describe business processes (sales, engineering, manufacturing, accounting)
- Assess / Evaluate business processes using ISO9000
- Coordinate business operations (role play)
- Analyze business needs for an IT system design
- Assess / Evaluate the IT processes using ITIL
- Conduct interviews with business stakeholders
- Formalize business requirements for an IT system design
- Design BPMN / BPEL workflow

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

Problem-based teaching

ASSESSMENT METHODS

With continuous control

RESOURCES

Bibliography

Beyer, H. and K. Holtzblatt (1999). "Contextual design." *interactions* **6**(1): 32-42.
<http://dl.acm.org/citation.cfm?id=291229>

Beyer, H. R. and K. Holtzblatt (1995). "Apprenticing with the customer." *Commun. ACM* **38**(5): 45-52.
<http://dl.acm.org/citation.cfm?id=203365>

Carr, N. G. (2003). "IT Doesn't matter", *Harvard Business Review*
<https://hbr.org/2003/05/it-doesnt-matter>

OMG (2004), Introduction to BPMN
http://www.omg.org/bpmn/Documents/Introduction_to_BPMN.pdf

Regev, G., H. Olivier, et al. (2011). *Service Systems and Value Modeling from an Appreciative System Perspective*. Second International Conference on Exploring Services Sciences. Geneva Switzerland, Springer-Verlag New York, Ms Ingrid Cunningham, 175 Fifth Ave, New York, Ny 10010 Usa. **82**: 146-157.
<http://infoscience.epfl.ch/record/163961>

Regev, G. and A. Wegmann (2004). *Defining Early IT System Requirements with Regulation Principles: The Lightswitch Approach*. Proceedings of the 12th IEEE International Requirements Engineering Conference (REI04). Kyoto, Japan: 144-153.
<http://infoscience.epfl.ch/record/112299>

Regev, G. and A. Wegmann (2005). *Where do Goals Come from: the Underlying Principles of Goal-Oriented Requirements Engineering*. Proceedings of the 13th IEEE International Conference on Requirements Engineering, IEEE Computer Society: 253-362.
<http://infoscience.epfl.ch/record/112298>

Rychkova, I., G. Regev, et al. *Declarative Specification and Alignment Verification of Services in ITIL*. First International Workshop on Dynamic and Declarative Business Processes (DDBP 2008). Munich, Germany.
<http://infoscience.epfl.ch/record/129324>

ITSMF (2007). *An Introductory Overview of ITIL v3*
http://www.best-management-practice.com/gempdf/itSMF_An_Introductory_Overview_of_ITIL_V3.pdf

Wegmann, A. (2003). *On the Systemic Enterprise Architecture Methodology (SEAM)*: 483-490.
<http://infoscience.epfl.ch/record/89690>

Wegmann, A., A. Kotsalainen, et al. (2008). *Augmenting the Zachman Enterprise Architecture Framework with a Systemic Conceptualization*. Proceedings of the 2008 12th International IEEE Enterprise Distributed Object Computing Conference, IEEE Computer Society: 3-13.

<http://infoscience.epfl.ch/record/126293>

Zachman, J. A. (1987). "A framework for information systems architecture." IBM Syst. J. **26**(3): 276-292.
<http://ieeexplore.ieee.org/xpl/articleDetails.jsp?arnumber=5387107>

Tools:

Alloy <http://alloy.mit.edu/alloy/>

Intalio <http://www.intalio.com/>

SeamCAD <http://lams.epfl.ch/seamcad/>

Ressources en bibliothèque

- [Declarative Specification and Alignment Verification of Services in ITIL / Rychkova](#)
- [Service Systems and Value Modeling from an Appreciative System Perspective / Regev](#)
- [Where do Goals Come from: the Underlying Principles of Goal-Oriented Requirements Engineering / Regev](#)
- [Contextual design / Beyer](#)
- [Quality Management Systems / ISO](#)
- [Introduction to BPMN / White](#)
- [Intalio](#)
- [On the Systemic Enterprise Architecture Methodology / Wegmann](#)
- [Defining Early IT System Requirements with Regulation Principles / Regev](#)
- [A Language and Tool for relational models](#)
- [Augmenting the Zachman Enterprise Architecture Framework with a Systemic Conceptualization / Wegmann](#)
- [A framework for information systems architecture / Zachman](#)
- [An Introductory Overview of ITIL v3 / ITSMF](#)

Références suggérées par la bibliothèque