

# USEEW1 - Business Process Modeling

## Présentation

### Prérequis

Basic discrete mathematics, first-order logic and linear algebra. Structural induction.

### Objectifs pédagogiques

The course aims to reconcile abstraction techniques and high-level diagrammatic notations together with modular and structural approaches.

The objective is to show the impact of the analysis and verification properties of business processes on the choice of the best suited specification and modeling languages. The course presents the steps from a formally specified and analyzed process model to an implemented model as it can be executed by a process engine and process-aware information system, respectively.

## Programme

### Contenu

The content of the course covers basic concepts and methods along the business process lifecycle; the presentation of the most common business process modeling notations such as EPC and BPMN 2.0; an introduction to Process Mining principles and techniques; practice with analysis tools such as WoPeD, Woflan, ProM.

- Business process management.
- Process Architectures & Process-aware Information Systems
- Conceptual models and abstraction mechanisms.
- Workflow nets, workflow modules and workflow systems.
- Event-driven Process Chains (EPC).
- Business Process Modelling Notation 2.0 (BPMN 2.0).
- Process performance analysis.

Complementary content:

Additional content includes the analysis of most common workflow patterns; the study of a more expressive graphical and formal model for business processes (YAWL) ; the overview of process simulation tools and techniques ; and the following topics:

- Petri nets and workflow nets as formal models for business processes; Petri nets: invariants, S-systems, T-systems, Free-choice systems and their properties.
- Workflow patterns.
- YAWL (Yet Another Workflow Language).
- Process simulation.
- Business process automation & Process-aware information systems: concepts, components, architectures.
- Technical process implementation : execution languages, data & resource integration, tools.
- Flexible runtime process support (late modeling, dynamic adaptations).
- Process Mining & Analysis.
- Understanding the difference between business process modeling and technical process implementation

### Modalités de validation

- Projet(s)
- Examen final

## Description des modalités de validation

Project discussion and oral exam.

Mis à jour le 03-07-2024



**Code : USEEW1**

Unité spécifique de type cours

6 crédits

**Responsabilité nationale :**

EPN05 - Informatique / Stefano  
SECCI

# Bibliographie

Titre	Auteur(s)
Business Process Management: Concepts, Languages, Architectures ISBN 978-3-642-28615-5. Springer-Verlag Berlin Heidelberg 2012.	Weske
La Rosa, Mendling, Reijers: Fundamentals of Business Process Management	Dumas
Process Mining	van der Aalst
Free Choice Nets	Desel, Esparza