ISSSR 2017- 2018

9 Credits

Software Systems Engineering & Networked Services Engineering

00. Introduction to the course

THE 2016-2017 TEACHING EXPERIMENT

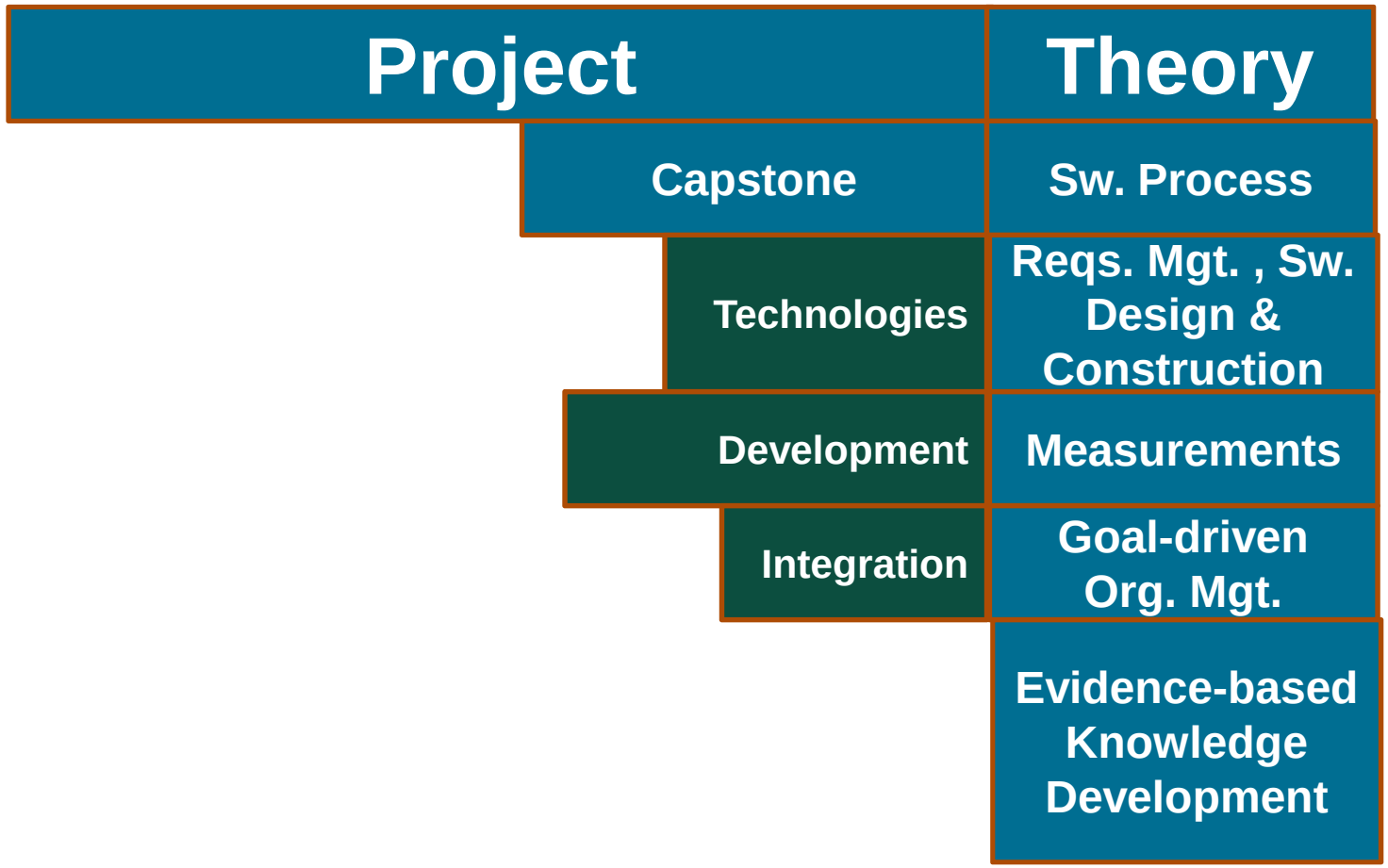
Project	Theory

Why?

- Goal

Past ISSSR's students evaluated high the quality but quite high also the involved effort (rate Hours of work due/Num. of credits obtained). Consequently, the optional weekly lab. meeting, which was run in the last academic years, is cancelled.

CONTENTS



CONTENTS AND RELATIVE DURATIONS 2017-2018

AREA	Sub-AREA	Lessons
EXPERIMENTAL SOFTWARE ENGINEERING		**6**
ORGANIZATIONS & SOFTWARE ORGANIZATIONS MANAGEMENT FOR QUALITY		**4**
SOFTWARE CONSTRUCTION		**12**
SOFTWARE DESIGN		**1**
SOFTWARE DESIGN	BACK-END	**5**
SOFTWARE DESIGN	FRONT-END	**2**
SOFTWARE DESIGN	SERVICE ORIENTATION	**1**
SOFTWARE MAINTENANCE		**1**
SOFTWARE MEASUREMENTS		**8**
SOFTWARE PROCESS		**3**
SOFTWARE PROCESS MANAGEMENT		**1**
SOFTWARE REQUIREMENTS FOR MAINTENANCE & DEVELOPMENT		**2**
		46

STRUCTURE - OUTLINE

There are three common tracks planned, plus some capstone project alternative tracks:

1. C — Conceptual track
2. PMM — Sw. Eng. Models and Sw. Project Mgt. track
3. D — Design track, both Back-end and Front-end
4. CP — Capstone (Project) tracks (some alternatives)
5. T — Technological track
6. R — Reuse track
7. DIT — Development & Integration & Test Track

STRUCTURE (1/6)

C, Conceptual track

- **Software Metrics**: Theory and practice of the Measurement in Software Engineering.
- **Goal Question Metrics + Strategies**
  - Describes the approach in a nutshell focusing on the ***basic model*** that is created and the ***process*** of how to create and make use of this model.
- **Experimental Software Engineering**: describes the concept related to (evidence-based) science development in the domain of software engineering, and a related process model, its phases, and recommended steps.

STRUCTURE (2/6)

PPM, Process & Project Management (1 CFU)

- **Agile**
- **Sw. Eng. Essence**
- **Requirements management**
- **Stories & Use-case Modeling**
- **Project Mgt.: Use-case based Iterative Process.**

STRUCTURE (3/6)

CP, Capstone (Projects) track

Two Balanced (eventually Randomly assigned) Options:

- **Goal-driven Quantitative-based Organization Strategies Alignment for Improvement**
- **Applying GQM + Strategies to Data & ICT Resources Analysis for IS Diagnosis & Alarm Notification, and Improvement of Critical-states Detection Capability and Crisis Avoidance.**

STRUCTURE (4/6)

T, Technological Track

- The question to answer here is what technology we could/should use for the two projects, and what for their front-end and back-end, respectively. Additionally, some technologies will be provided to support development, including working in group, information storing, and the execution of an Agile approach to sw. development.

STRUCTURE (5/6)

R, Reuse track.

- What artifacts we can reuse for free. In particular:
  - For the *Data & ICT Resources Analysis for IS Diagnosis & Alarm Notification, and Improvement of Critical-states Detection Capability and Crisis Avoidance,* project: artifacts collected from the net;
  - For the *Goal-driven Quantitative-based Organization Strategies Alignment for Improvement* project: artifacts as developed by students of the past ISSSR courses. Question: why those artifacts did not work in full, what we plan to do.

STRUCTURE (6/6)

DIT, Development & Integration & Test track.

- We put all together, extend the requirements, develop the extensions, and integrate the parts of, the specific project.

PROJECT

- The goal
- The team
- Range of the admitted results
- How we evaluate the development

SUPPORTING MATERIALS & TOOLS FOR BOTH PROJECTS

- Service providing platforms & infrastructures (free usage for UoRomaTorVergata ISSSR students)
- Requirements Engineering and Software Architecture Development supporting tools (free usage for UoRomaTorVergata ISSSR students)
- Seminars concerning their usage

SUPPORTING MATERIALS & TOOLS FOR THE PROJECT *Goal-driven Quantitative-based Organization Strategies Alignment for Improvement*

- Books on:
  - GQM+Strategies®
- Related slides
- Open source software development and documentation tools.

Metriche del software. Esperienze e ricerche

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Collana	Informatica & organizzazioni
Argomenti	Information Technology: testi introduttivi - Sistemi, linguaggi, programmazione
Livello	Testi per professional
Dati	pp. 512, 1ª edizione 2006 (Codice editore 724.36)

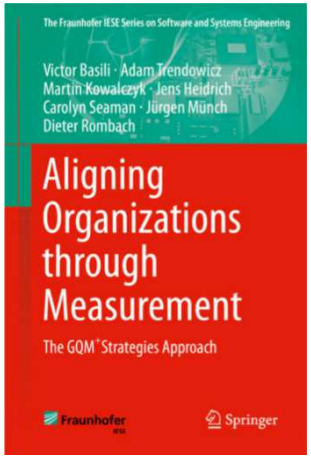
FrancoAngeli

Tipologia: Edizione a stampa
Prezzo: € 45,00
Disponibilità: Discreta

Codice ISBN: 9788846471390

Presente presso la Biblioteca dell'Informazione

The book on



Aligning Organizations Through Measurements. The Goal Question Metric + Strategies Approach

Book authored by Victor Basili, Adam Trendowicz, Martin Kowalczik, Jens Heidrich, Carolyn Seaman, Jurghen Munch,and Dieter Rombach.

Fraunhofer IESE Series on Software and Systems Engineering

29.02.2016

https://www.researchgate.net/publication/258568262_Aligning_Organizations_Through_Measurement_The_GQMStrategies_Approach

The book on

Experimentation in Software Engineering: An Introduction.

Book authored by Claes Wohlin, Per Runeson, Martin Höst, Björn Regnell, Anders Wesslén

Springer

INSTRUCTOR & INVITES SPEAKERS

- Giovanni Cantone, Full Professor
- Manuel Mastrofini, Sw. designer
- Giuseppe Calavaro, IBM

- L. Buglione, Engineering SpA & University of Toronto: Function Points and non-Functional Measurements.
- S. Corrieri, Whitehall Reply SpA: Using Angular for front-end development in service oriented applications.
- L. Fanelli, Reply SpA: Connecting Heterogeneous Sw. Subsystems by an Enterprise Service Bus.
- Others TBD

LESSONS & LAB

LESSONS

- Monday, from 16:30 – 17.00, room C2 or Lab. Info
- Tuesday, from 16:30 – 17.00, room B1
- Wednesday, from 11.30 – 13.00, room C3

SEMINARS

- Monday, from 16:00 – 19.00, room C2 or Lab. Info.

OPEN LAB & TUTORAGE

- Wednesday, from 16.00 – 19.00, Lab. Info.

PREREQUISITES

- Fundamentals of:
  - Software engineering.
  - OO Software Analysis and Design.
  - Laptop & Web Application Design.
  - OO Programming.
  - Concurrent Programming.
  - Internet & Web Engineering.
  - Data-bases.
- Design Patterns.
- Elements of Software Process.
- Elements of Requirements Engineering.
- Elements of Verification & Validation, and Testing.

COURSE LIST

- You may want to register to isssr@lists.uniroma2.it to receive info by e-mail from the instructors. Include your given name, family name and the last available university matriculation code. Anonymous registrations will be removed.
- The registration deadline is March 31st of this Academic Year.

COURSE OFFICIAL REGISTRATION

- In order to access to registrations for exams of the academic year 2017-2018, an official pre-registration to the ISSSR course, 2017-2018 issue, is indicated through http://delphi.uniroma2.it/totem/jsp/homeStudenti.jsp.