Lecture
Empirical Model Building and Methods
(Empirische Modellbildung und Methoden)

Dr. Andreas Jedlitschka

SS 2017

Administrative Information
Core Competences of Fraunhofer IESE

SCALABLE SYSTEM ENGINEERING
we support system engineering

SOFTWARE-ENABLED INNOVATIONS
for innovative Systems

GUARANTEED QUALITY
focusing on guaranteed qualities
Core Competences of Fraunhofer IESE
Fraunhofer IESE supports …

… Engineering of Innovative Systems focusing on Guaranteed Qualities

Process Management is key for obtaining this goal

Quality Modeling, Assessment, and Visualization
Technology Evaluation
Big Data Analysis
Needs Analysis
Defect Prediction
Effort Prediction
Best-Practice Process Check
Process Compliance
Experience Factory
Product Quality
Process Quality
Business Value
Business Alignment
Process Management = Evidence-based Process Improvement based on Data and Best Practices
Goal of the Lecture

- Increase the awareness of the importance of an empirical approach in SE
- Providing an overview of the empirical process and how it is used
  - plan, design, implement, and execute an empirical study
  - analyze and report empirical findings
  - appraise the quality of an empirical study
- Understand the environment for empirical research
- Understand the meaning of empirical models

This lecture provides the basic knowledge that a researcher, a practitioner working on software process improvement, or a quality manager needs today.
SWS: 2
Schedule: Wednesdays, 13:45-15:15
Room 48-453

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<th>Date</th>
<th>Topic</th>
<th>Instructor</th>
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<tr>
<td>26.04</td>
<td>Administrative information &amp; Introduction</td>
<td>A. Jedlitschka</td>
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<tr>
<td>03.05</td>
<td>Measurement process &amp; Model building</td>
<td>S. Martinez</td>
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<td>10.05</td>
<td>Empirical process: Concepts and definitions</td>
<td>A. Jedlitschka</td>
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<td>17.05</td>
<td>Empirical process: Definition</td>
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<td>31.05</td>
<td>Empirical process: Implementation</td>
<td>A. Jedlitschka</td>
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<td>Empirical process: Execution</td>
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<td>07.06</td>
<td>Empirical process: Data analysis</td>
<td>A. Jedlitschka</td>
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<td>Empirical process: Reporting</td>
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<td>14.06</td>
<td>Empirical process: Org Learning</td>
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<td>21.06</td>
<td>Analysis Details</td>
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<td>28.06</td>
<td>Empirical process: Non-experimental design</td>
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<td>05.07</td>
<td>Systematic Literature Review</td>
<td>L. Guzman</td>
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<td>12.07</td>
<td>Recap (and Q&amp;A)</td>
<td>S. Martinez</td>
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Website: [http://wwwagse.informatik.uni-kl.de/teaching/ese/ss2017](http://wwwagse.informatik.uni-kl.de/teaching/ese/ss2017)
Prerequisites for Lecture

- Vordiplom (or BS)
- Lecture „Foundations of Software Engineering“ (GSE)
- Programming Experience (e.g., 4th Semester Project Course)
- Interest in (empirical) research in SE
  - E.g., evaluation of Software Engineering technologies, methods, and tools
Background Literature


Additional Resources:


Specific Resources will be announced in the lectures
Electronic Version of lecture slides will be available as PDF files:

http://wwwagse.informatik.uni-kl.de/teaching/ese/ss2017
Active Participation in Exercise Classes:

- At the beginning of the semester, students will build teams of 2 – 3 members.
- During the semester, each team will be responsible for:
  - Planning and designing an empirical evaluation of a software technology
  - Presenting their study design
  - Taking part in an empirical evaluation of a software technology and analyzing empirical data
- The planning and design of an empirical evaluation (along with the submission of the corresponding reports) during the semester time is mandatory for being admitted to take the exam and will count as semester accompanying deliveries (in German: semesterbegleitende Leistungen).

The final examination will be announced

- written examination
- Prerequisites for the final examination are a successful presentation as mentioned above and a regular active participation in exercise class.
Examination

- The duration of the **written examination** will be **80 minutes** (according to the credit points)
- **No material** to be used (just pen)
- **No mobile devices** etc. allowed

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<td>(Klausur)</td>
<td>25.07.2017 – 9:30</td>
<td>46 - 210</td>
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<td>(Nachklausur)</td>
<td>4.10.2017 – 9:00</td>
<td>46 - 110</td>
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Questions?

- **Meet Andreas Jedlitschka:**
  before/after class or by appointment
  email: andreas.jedlitschka@iese.fraunhofer.de

- **Meet Silverio Martínez-Fernández:**
  before/after exercise or by appointment
  email: Silverio.Martinez@iese.fraunhofer.de