Experience with new course "Fundamentals of Software Engineering"

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Outline

o Fundamentals of Software Engineering Course
o Syllabus
o Tutorials
o Student results
o Experience and conclusion

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Fundamentals od Software Engineering

o The course was introduced in the new curricula of the new Faculty

o The curricula had only specified its outline as:

"Description of Software Engineering, Software architectures, Structured design, Object oriented design, Sofware reusability, Definition of software development process and management of software development process, …"

o It is, more or less, an overview of what Software engineering is.

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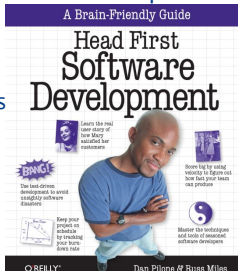И КОМПЈУТЕРСКО ИНЖЕНЕРСТВО www.finki.ukim.mk   www.facebook.com/FINKI.ukim.mk   www.twitter.com/FINKIedu

Fundamentals of Software Engineering

o Main problem
  • The course is in the **1st semester (450 students, 3 professors)**

o The course was definitely too early
  • Some students learnt how to program in parallel with the course
  • No background of any object oriented concept

o The main focus of the teachers was to explain to the students that
  • Software development is an important process
  • This process has several steps and why every step is important
  • Be aware that the process involves many actors, especially non-IT customers that do not know what they want
  • Main goal – high quality software

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Syllabus

o We preferred the students to use a book and materials in Macedonian and to shape the course in that direction

o We had very little time to survey the literature
- Standard SE textbooks are too complex for freshmen
- We decided to use one book (translated in Macedonian), plus additional chapters written in Macedonian.

o We choose a book from Head First edition:
- Head First Software Development, Dan Pilone and Russ Miles
- Problem is that the book only talks about Agile process models and the examples are OO

A Brain-Friendly Guide

Head First
Software Development

O'REILLY®   Dan Pilone & Russ Miles

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Syllabus

1. What is software engineering?
2. Quality criteria of software products
3. Software process models

— Derived from JCSE (PPT)

4. Great Software Development (Pleasing the customer)
5. Gathering Requirements (Knowing what the customer wants)
6. Project Planning (Planning for success)
7. User stories and tasks (Getting to the real work)
8. Good enough design (Getting it done with great design)
9. Version control (SVN)

From the book (Prezi)

10. Software testing
11. Software evolution

Derived from JCSE and other courses (PPT)

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Tutorials

o The tutorials followed the lectures with practical examples and exercises
1. MS Project
2. Collecting user stories with an example
3. Use case diagrams
4. Activity and collaboration diagrams (high level overview)
5. SVN
6. White box testing
7. Black box testing
8. Software metrics
9. Debugging

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Student results

o After the course finished (results from the coursework, midterm and final exam):
- 57% passed the course (9% - 6, 15% - 7, 14% - 8, 11% - 9, 8% - 10)

o After the examination sessions
- 64% passed (1st session)
- 70% passed (2nd session)
- 73% passed (3rd session and last)

o Students were better on the
- Problems related to project management and task scheduling
- Problems related to testing

o Use case related problems were most difficult

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Student feedback

o Was the course difficult (1-5, 5 being hardest)
- Average 2.42 (only 20% saying 4 and 5)

o Was the course interesting (1-5, 5 begin most interesting)
- Average 4.02 (only 3% saying 1 and 5% saying 2)

o Were the presentation clear and well presented (1-5, 5 being better)
- Average 4.3

o Students that filled the feedback (30% of 450) had average score of 8
- 10% of them have not passed the course at the time of the feedback.

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Experience and conclusion

o The course is definitely too early
- The students found it either too abstract or too simple
- Cannot introduce good examples
- Cannot use a good text book since all of them introduce OOA/OOD and UML

o We tried to push an initiative to swap the course with different course from the second semester but with no luck

o The course will be revised this year
- The SE part will be minimised and a more overview course of Computer and Software Engineering will be introduced

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THANK YOU

o Questions?

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