Intensive Course Software Engineering at Tirana:
News from the 4th delivery in 2010

Klaus Bothe
Zoran Putnik

Main building of Polytechnic University Tirana

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Overview: 80 students in 4 years

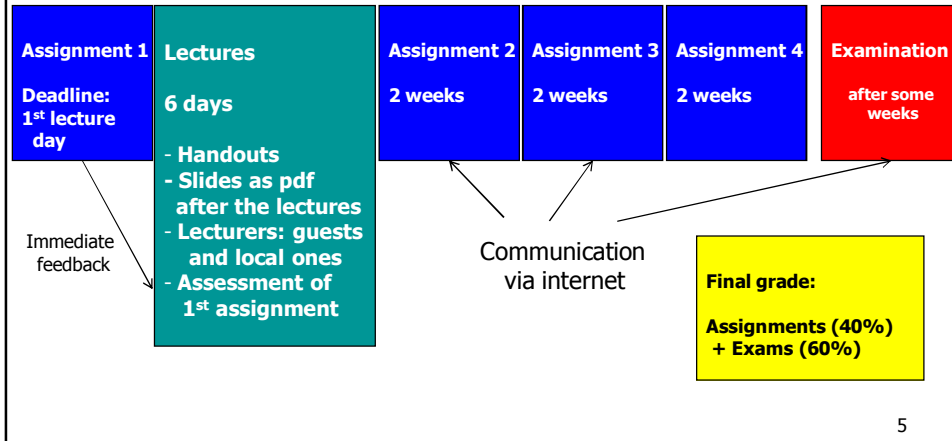**Presentation of selected topics of the JCSE as an intensive course in Tirana**

2007	2008	2009	2010
19 – 24 March 2007	21 – 26 April 2008	22 – 27 June 2009	31 May – 5 June 2010
17 students	32 students	17 students	14 students
4th semester	1st semester (15)	2nd semester (11)	2nd semester Master Tirana
Master	3rd semester (17)	Master Tirana	
	Master	6th semester (6) Bachelor Struga	

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Schedule of the whole course

Assignment 1	Lectures		Assignment 2	Assignment 3	Assignment 4	Examination
Deadline: 1st lecture day	6 days		2 weeks	2 weeks	2 weeks	after some weeks

- Handouts
- Slides as pdf after the lectures
- Lecturers: guests and local ones
- Assessment of 1st assignment

Immediate feedback

Communication via internet

Final grade:

Assignments (40%) + Exams (60%)

Schedule of the whole course in 2010

2010
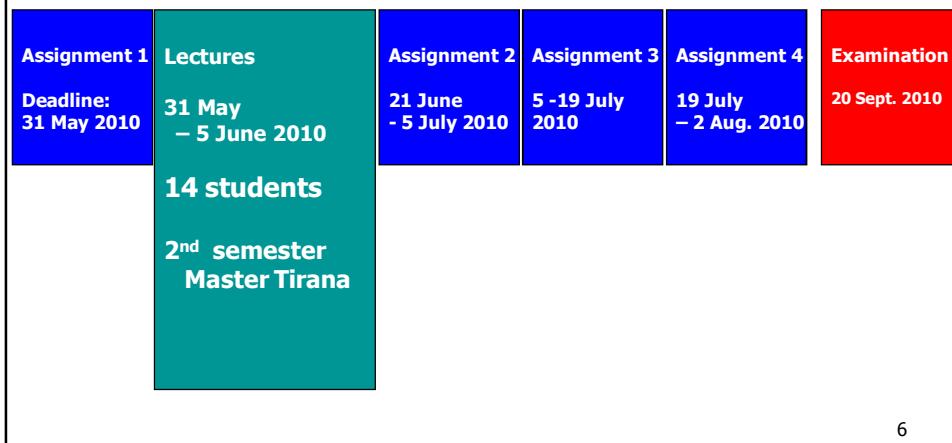
Assignment 1	Lectures	Assignment 2	Assignment 3	Assignment 4	Examination
Deadline: 31 May 2010	31 May – 5 June 2010	21 June - 5 July 2010	5 -19 July 2010	19 July – 2 Aug. 2010	20 Sept. 2010

14 students

2nd semester Master Tirana

News from the 4th delivery in 2010 …

- Slides
- Lecturers
- Tools
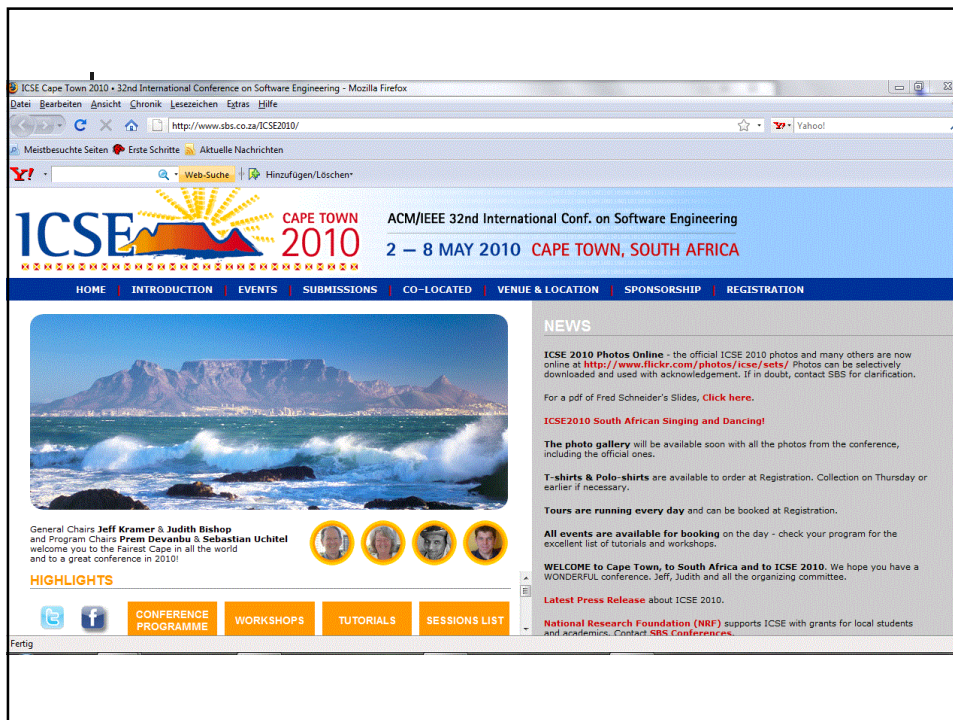- Assignments tasks
- Grading of assignments
- Students feedback

7

Development of teaching materials from 2007 - 2010

- Slides: some extensions and improvements, but no general revision

- A lot of "time-sensitive" slides left: see Zoran Putnik
  Students feedback: "Advertisement, statistics and other slides are sometimes 'a bit old' "

- New recent slide:
  ICSE June 2010 → next slide

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News from the 4th delivery in 2010 …

- Slides
- Lecturers →
  - 4 Lecturers
  - Increasing inclusion of local teachers
- Tools
- Assignments tasks
- Grading of assignments
- Students feedback

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Selected 19 topics for Tirana: Lecturers in 2010

in minutes	Z.B. (W 02)	K.B. (S 03)	
Part I: Introduction			
1. What is software engineering	80	120	K
2. Quality criteria ...	40	45	Z
3. Software process models	120	90	H
4. Basic concepts ...	60	40	K
Part II: Requirements engineering			
5. Results of the … phase	(70)	100	K
6. Cost estimation	60	100	Z
7. Function-oriented view	60	50	M
8. Data-oriented view	50	35	
9. Rule-oriented view	50	40	
10. Structured analysis	80	65	K
11. State-oriented view	(45)	80	M
12. Scenario-oriented view	30	25	M
13. Object-oriented analysis	(60)	210	K
14. Formal software specification …	--	190	K

Part III: Software Design			
15. Overview of design activities	--	90	Z
16. Structured design	--	15	K
17. Object-oriented design	--	45	M
Part IV: Implementation and testing			
18. Implementation	--	90	
19. Systematic testing	--	180	K
20. Functional testing	--	150	Z
Part V: Advanced problems			
21. Software metrics	--	180	Z
22. Maintenance	--	-	
23. Reverse engineering	--	90	
24. Quality of software development …	--	90	
25. Software ergonomics	--	180	
26. User manuals	-	-	
27. Project management	?	90	
28. Configuration … management	-	45	

Z Zoran Putnik (5)   H Hergys Rexha (1)

K Klaus Bothe (8)   M Mihal Brumbulli (4, 2011: 6)

Selected topics

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News from the 4th delivery in 2010 …

- Slides
- Lecturers
- → Tools
- → Assignments tasks
- Grading of assignments
- Students feedback

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Evaluation in 2009:
What really would be useful to be improved

- More recent material:
  newspaper advertisement (1996, 1997, 2004, 2005),
  statistics from GI (1993), EU (1994)
- New topics, e.g. extreme programming
- Tool demonstration:
  CTE, ATOS, UML tool, metrics tool
- Not only 6 days of lectures, but more …
- Longer breaks
- Not the same assignments

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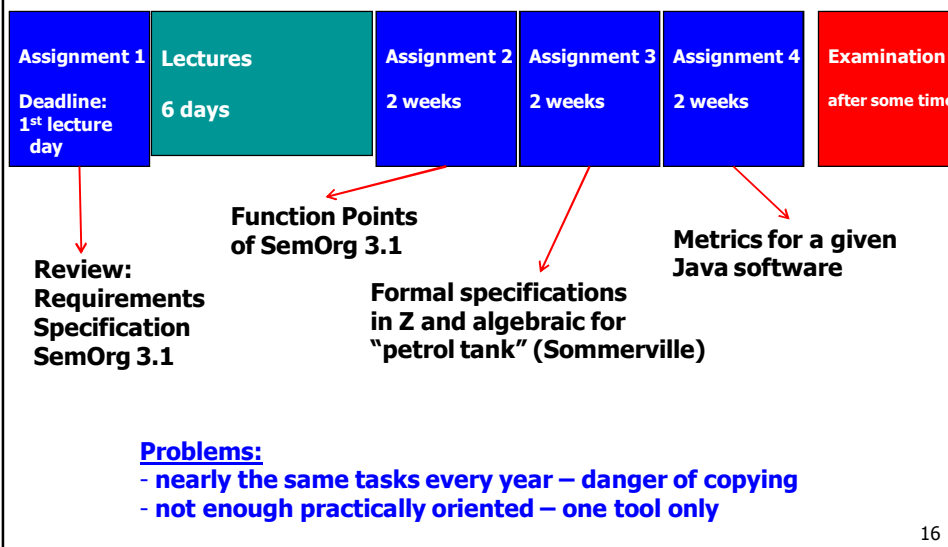- Not the same assignments

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Assignments 2007 - 2009

Assignment 1 Deadline: 1st lecture day	Lectures 6 days	Assignment 2 2 weeks	Assignment 3 2 weeks	Assignment 4 2 weeks	Examination after some time

Function Points
of SemOrg 3.1

Review:
Requirements
Specification
SemOrg 3.1

Formal specifications
in Z and algebraic for
"petrol tank" (Sommerville)

Metrics for a given
Java software

Problems:
- **nearly the same tasks every year – danger of copying**
- **not enough practically oriented – one tool only**

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Assignments **2010**

Assignment 1 Deadline: 1st lecture day	Lectures 6 days	Assignment 2 2 weeks	Assignment 3 2 weeks	Assignment 4 2 weeks	Examination 20 Sept. 2010

Structured testing:
Test coverage for different
strategies using SOTA tool

Metrics for a given
Java software using
SOTA tool

Review:
Requirements
Specification
SemOrg 1.3 (not 3.1),
compare with IEEE standard
for software reviews

Functional testing:
Test case determination
using CTE tool supporting
classification tree method

New situation:
- new tasks – copying no more possible
- tool usage in 3 out of 4 assignments

Marin Aranitasi, Reinaldo Dado,
Edit Kapcari, Griselda Kuzumi:
Experience with the assignments at the intensive course
"Software engineering" at Tirana 2010
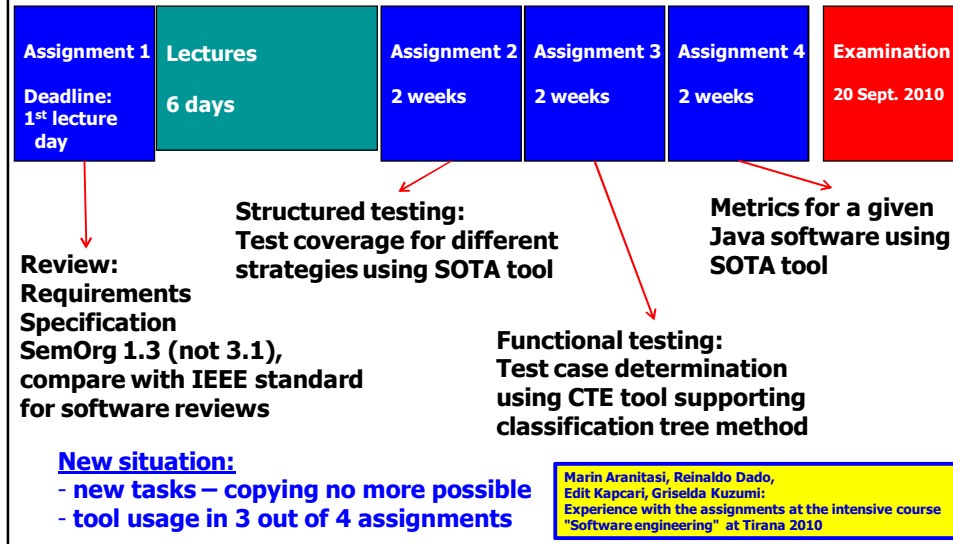

Assignments in 2010:

- Structured
- Generic → Link

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Schedule (agenda) of the lectures

DAY 1 — 7 lecture hours a 45 minutes

Introduction: DAAD, JCSE, Tempus, concept of the course — 45

PART I Introduction to Software engineering — 6 lh

		Duration normal	planned	
1 *	What is Software engineering? Motivation, Areas, Definition, History	100 90	90	
2 *	Quality criteria for software products Classifications, definitions, ISO 9126	45 45	45	Z
3 *	Software process models - introduction Activities of software development, overview of models, Waterfall model, Prototyping (other models are introduced in various topics)	90 120	90	H
4 *	Basic concepts and software development documents Overview and cross analysis	40 60	45	

DAY 2 — 6 lh

Introduction of University of Novi Sad — Z

		Duration normal	planned	
5 *	Results of the „Analysis and Definition" phase Feasibility study, Product model, Requirement document	90 70	60	
6 *	Cost estimation Costs, factors, function point analysis	90 60	60	Z
7 *	Basic concepts of the function-oriented view Function trees, Data flow diagrams	60 60	60	M
8 -	Basic concepts of data-oriented view data dictionary, Entity relationship	35 45	-	
9 -	Basic concepts of rule-oriented view Rules, Decision tables and trees	45 50	-	
10*	Structured analysis Context diagram, DFD-Hierarchy, Mini-specification, Implicit function tree	90 90	90	

DAY 3 — Introduction of Humboldt University K

11*	Basic concepts of state-oriented view Petri-Nets, State automata, Activity diagrams	90	60	M
12*	Basic concepts of scenario-based view Collaboration diagrams, Sequence diagrams	30	30	Z

Evaluation of 1st assignment — 90 Z

DAY 4 — 5 1/2 lh

14*	Formal software specifications and program verification Z, Algebraic, Hoare	130	130	

PART III Design

15*	Overview of design activities Software architecture, Specification of components, Quality assurance, Overview of some software architectures		60	Z
16*	Structured design Structure charts		15	M
17*	Object-oriented design Architecture design, user-interface, performances, implementation design		45	M

DAY 5 — 5 lh

PART IV Implementation and Testing

18 -	Implementation Principles, methods, guidelines	60	-	
19*	Systematic testing Classification, review/audit, control-flow, data-flow oriented	130	130	
20*	Functional testing incl. testing tools	90	90	Z

Demonstration of tools SOTA Z and CTE K

DAY 6 — 5 lh

PART V Advanced problems — 22 lh

21*	Software metrics McCabe, Halstead, LOC, OO, CAME-Tools, Demo of MC-Tools	180	130 Z	
22-	Maintenance Types, requests, costs, planning			
23*	Reverse engineering Software repair, Reengineering, Restructuring, CARE-Tools	90	90	
24	Quality of software development process and its standardization ISO 9000, Capability assessment models			
25	Introduction to software ergonomics Graphical user interfaces, Standards, Guidelines			
26	User manuals Principles and guidelines for writing user-manuals			
27	Project management Planning, organization, people management, control			
28	Configuration management Motivation, activities, CVS			

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News from the 4th delivery in 2010 …

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Grading of assignments in 2010 …

RBr	Name	Team	Practice					Exams			Total	Mark
			I	II	III	IV	Total	I	II	Total		
			10	10	10	10	40	30	30	60	Total	Mark
1	Paci Anida	1	6	13	8	8	35			0,0	35,00	-
2	Mosku Dorina	1	6	13	8	8	35			0,0	35,00	-
3	Keco Elvi	1	6	13	8	8	35			0,0	35,00	-
4	Çarçani Elisa	2	7	15	8	10	40			0,0	40,00	-
5	Kapcari Edit	2	7	15	8	10	40			0,0	40,00	-
6	Tafka Dajena	3	4	13	10	8	35			0,0	35,00	-
7	Mino Elton	3	4	13	10	8	35			0,0	35,00	-
8	Hasani Kreshnik	3	4	13	10	8	35			0,0	35,00	-
9	Aranitasi Marin	4	9	14	8	8	39			0,0	39,00	-
10	Sllogu Nertil	4	9	14	8	8	39			0,0	39,00	-
11	Qirici Ridi	4	9	14	8	8	39			0,0	39,00	-
12	Cano Erion	5	8	15	10	10	43			0,0	43,00	5
13	Kuzumi Griselda	5	8	15	10	10	43			0,0	43,00	5
14	Dado Reinaldo	5	8	15	10	10	43			0,0	43,00	5

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Grading of assignments in 2010 …

Assg. 1: Review

Assg. 2: Sophisticated task as an optional part (additional points)

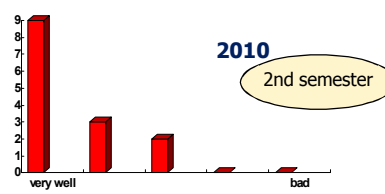| RBr	Name	Team	Practice					Exams			Total	Mark
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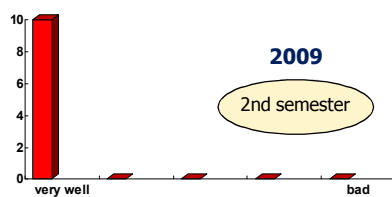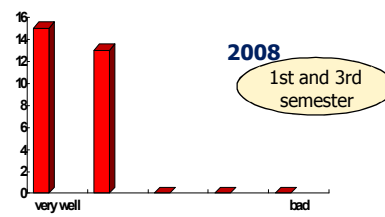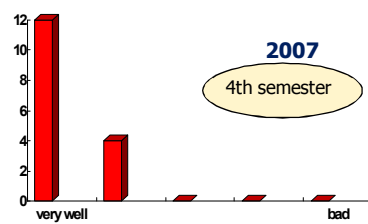
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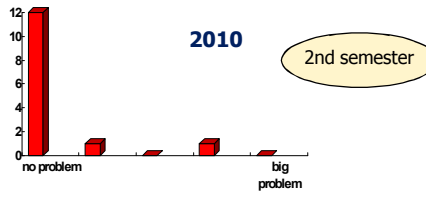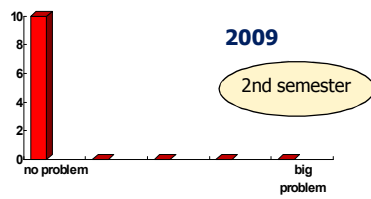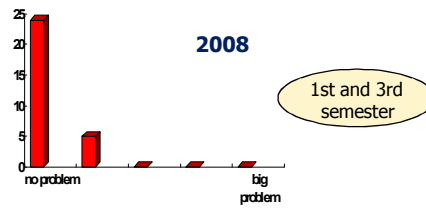- Grading of assignments
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Only 3 questions

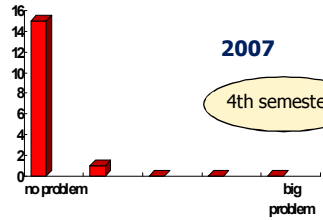## What is your overall ranking of the lecture?

2007

4th semester

2008

1st and 3rd semester
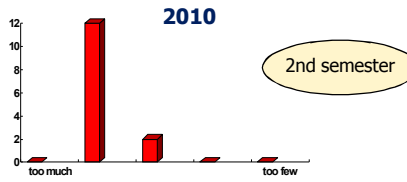
2009

2nd semester

2010

2nd semester

Tendency: ???

Was it a problem that slides and presentation were in English language?

2007

4th semester

2008

1st and 3rd semester

2009

2nd semester

2010

2nd semester

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How do you consider the amount of knowledge offered in the lectures?

2007

4th semester

2008

1st and 3rd semester

2009

2nd semester
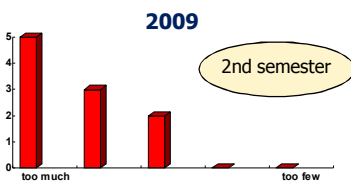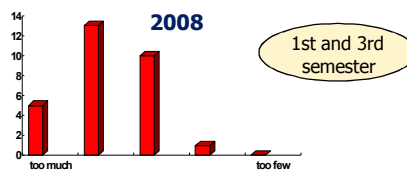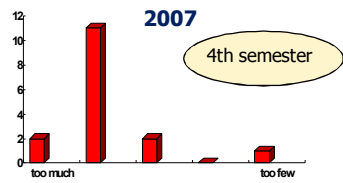
2010

2nd semester

Tendency 2009:
For higher semesters ok,
for lower semesters a challenge ☺

Tendency 2010: ????

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At the end:
Group photo, café   ☺...

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After the hard work: Group photo ☺ ...

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After the hard work: Café in Sheraton hotel ...

Tirana in June is very hot ☺

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Thank you

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