Software Systems Verification and Validation

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2022-2023

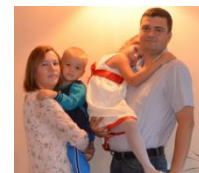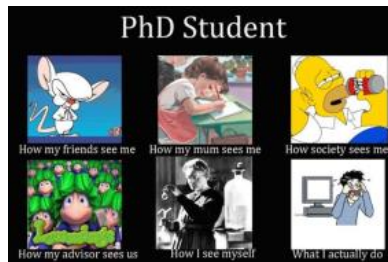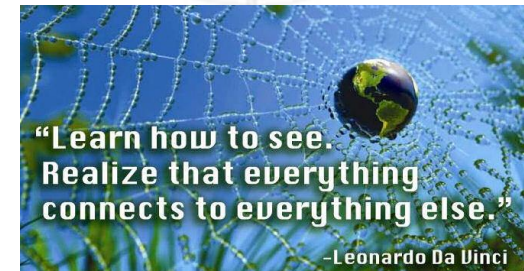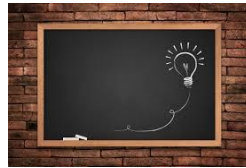# Software Systems Verification and Validation

"Tell me and I forget, teach me and I may remember, involve me and I learn."

(Benjamin Franklin)

Outline

- **Class Management**

- Teachers

- Class schedule

- Grading
  - Overall activity
  - Seminar activity
  - Laboratory activity

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LICEUL DE INFORMATICĂ "TIBERIU POPOVICIU"

UNIVERSITATEA BABEȘ-BOLYAI
DEPARTAMENTUL PENTRU PREGĂTIREA
PERSONALULUI DIDACTIC
CLUJ-NAPOCA

PhD Student

How my friends see me   How my mum sees me   How society sees me
How my advisor sees us   How I see myself   What I actually do

KEEP
CALM
I'M A
TEACHING
ASSISTANT

"Learn how to see.
Realize that everything
connects to everything else."
–Leonardo Da Vinci

happily ever after

The End is a New Beginning

3/3/2023

Class Management

- Microsoft Teams
- Join
  - Microsoft Team: SSVV_2022_2023
  - Code: `p1wm40c`

- **2022-2023 – SSVV – face to face**
  - Lectures
  - Seminars
  - Laboratories

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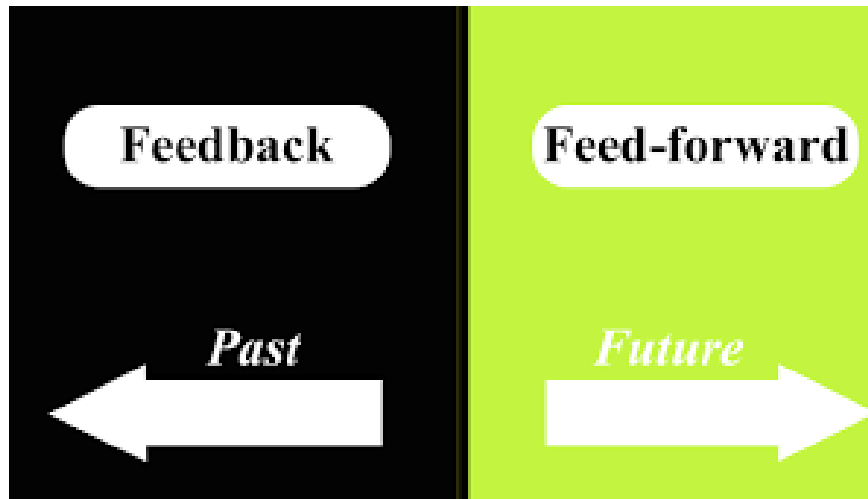 - Overall activity
  - Seminar activity
  - Laboratory activity

Teachers

- Lecture: Assoc. Prof. Vescan Andreea

- Laboratory:
  - Associate Teacher Iudean Bogdan
    - bogdan.iudean[at]ubbcluj.ro
  - Associate Teacher Tiutin Cristina
    - cristina.tiutin[at]ubbcluj.ro
  - Associate Teacher Galbîn-Năsui Andreea
    - andreea.galbin@yahoo.com, ????[at]ubbcluj.ro
  - Assoc. Prof. Vescan Andreea
    - andreea.vescan[at]ubbcluj.ro

- Seminar:
  - Assoc. Prof. Vescan Andreea

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Class schedule

Software Systems Verification and Validation (tentative schedule)				
Week	Date	Lecture	Seminar	Laboratory
1	27 feb – 3 mar	Inspection	Inspection	Inspection
2	6 -10 mar	Testing. BBT		
3	13-17 mar	WBT	BBT	BBT
4	20-24 mar	Levels of testing, Pipeline Bogdan Iudean		
5	27-31 mar	Invited Lecture EVOZON	WBT	WBT
6	3-7 apr	Invited Lecture Altom (pending)		
7	10-14 apr	Agile	Levels	Levels
Vacation	14 -23 apr			
8	24-28 apr	Symbolic exe.; Model checking		
9	1-5 may	Correctness		
10	8-12 may	Invited Lecture Connatix	Web?	Web
11	15-19 may	Soft skills	All	Bachelor Thesis testing
12	22-26 may	Exam preparation		

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Grading

- F = 20% L +20% S + 50% E (+ 1p)
  - L=Laboratory; S=Seminar; E=Written;
  - Bonus points! See the homepage of the course!
- Conditions to participate at the final exam
  - There is no restriction regarding the participation at the written examination regarding obtained marks at L, S.
  - Attendance lab (5 out of 6) -90%
  - Attendance sem (4 out of 6) – 75%
  - Council of the Faculty of Mathematics and Computer Science
    - 28 September 2016
    - http://www.cs.ubbcluj.ro/hotararea-1893-28-09-2016-a-consiliului-facultatii-privind-modificarea-regulamentului-de-functionare-al-fmi/
    - Motivation of absences
    - 11 October 2016
      - Decision regarding the motivation of the absences of the students
    - http://www.cs.ubbcluj.ro/hotarare-privind-motivarea-absentelor-studentilor-nivel-licenta/
    - Students will present the documents to motivate absences from the seminar/laboratory within one week from the date of absence.
    - If the motivation comes after more than a week, then apply to the dean's office.

- L/S work may not be redone in the retake session.
- Students from Previous Years to 2022-2023 - All the above rules apply to students from previous years (except attendances).
- Conditions to pass/complete the SSVV discipline:
  - F >= 5 final grade.

https://www.cs.ubbcluj.ro/files/curricula/2022/syllabus/IE_sem6_MLE5014_en_avescan_2022_6911.pdf

Grading - Gamifying Education

https://ieeexplore.ieee.org/document/8166715
https://ieeexplore.ieee.org/document/8658524

	Given points	Side Quests (Lab Assignments)	Social Quests (Sem Assignments)	Epic Quests (Final Exam)	XP intervals	Grade
Normal session	300 XP Feedback	600 XP (in-class 25 XP + take-home 75 XP for each lab)	600 XP (300XP SLR+Video presentation + 100 XP for each Portofolio activity)	Up to 1500 XP	[1400,1500]	5
					[1501,1800]	6
					[1801,2100]	7
Retake session	Points obtained in the didactic activity period (labs and seminar and bonus activity cannot be redone in the normal/retake session).			Up to 1500 XP	[2101,2400]	8
					[2401,2700]	9
					Over 2700	10

Final exam – you must come (be present) to final exam in order to compute the grade!

Bonus points = 300 XP (1p)
   Participating in Education related Research study
   Information to be provided after the first lecture

Bonus points = 600 XP
   Research paper (See available topics in Teams – after the first lecture)
   Maximum 3 teams.
   Topic by teacher + 2 members/team + deliverables
   Paper submitted to journal for review (before 26 May 2023)
   Remark: If you are interested in this activity, the deadline for enrollment (send email) is 10 March 2023 (week 2).

Grading - Seminar

- Attendance: 4 out of 6 required
  - 20% of the final grade
  - You can change the date of your scheduled seminar if you exchange your "place" with another student.

Seminar structure

Assignment 1 – 10 minutes – discussion on a given topic (the teacher is an observer)

Assignment 2 – 60-70 minutes – assignments on a given topic

Assignment 3 – 10 minutes – quiz about required reading and seminar discussions.

Sem 1	Sem 2	Sem 3	Sem 4	Sem 5	Sem 6
Inspection	BBT	WBT	Levels Exploratory T.	Web RIMGEN	All
		100XP Portofolio About Inspection	100XP Portofolio About Test Case Design	100XP Portofolio About Exploratory T.	300 XP – SLR Report +video+peer review

Grading – Seminar (2)

Portofolio activities

- **1. Portofolio about Inspection**
  - **Details provided in Lecture 1**
  - **To be submitted in Seminar 3**
  - **Team: 3 persons/team**

- **2. Portofolio about Test Case Design**
  - **Details provided in Lecture 3**
  - **To be submitted in Seminar 4**
  - **Team: 3 persons/team**

- **3. Portofolio about Exploratory Testing**
  - **Details provided in Lecture 7**
  - **To be submitted in Seminar 5**
  - **Team: 3 persons/team**

Grading – Seminar (3)

Conduct a Systematic Literature Review on a provided research topic.

- SLR (Systematic Literature Review) – Report pdf – 150 XP

- Video presentation + Peer review – 150 XP

- References
  - Barbara Kitchenham, Procedures for Performing Systematic Reviews, 2004
  - Barbara Kitchenham, **Guidelines for performing Systematic Literature Reviews in Software Engineering, 2007**

- **Team: 3 persons/team**

- **Tasks (48h:12=4h/week for the team)**

- **Task a) Report pdf**
  - **01. Search and save the title (doi) of the articles (minimum 30 articles) (6h)**
  - **02. Read abstracts and reduce from 30 to 10 articles (6h). The papers will be provided by the teacher after you send your list of 10 articles.**
  - **03. Read each of the 10 papers and produce 1 paragraph/paper (approach, used method, dataset, obtained results) (3h*10articles=30h)**
  - **04. Summarizing table with the 10 articles (6h)**
  - **05. Report containing**
    - **Explain the methodology applied (all the steps and findings regarding various characteristics of the selected articles).**
    - **The 10 paragraphs, one for each paper.**
    - **Summarizing table.**

- **Task b) Pecha Kucha type Presentation**
  - **Time for the Recorded presentation - 5 minutes**
  - **Presentations will be played during the last seminar.**
  - **Peer review minimum 3 presentations during the last seminar.**

Grading - Laboratory

- Attendance: 5 out of 6 required
  - 20% of the final grade
    - You can change the date of your scheduled laboratory if you exchange your "place" with another student.

Laboratory structure

Assignment 1 – 10 minutes – current lab discussion, problem assignment

Assignment 2 – 40 minutes – in-class problem solving and delivery

Assignment 3 – 40 minutes – delivery of the previous lab (exception first lab)

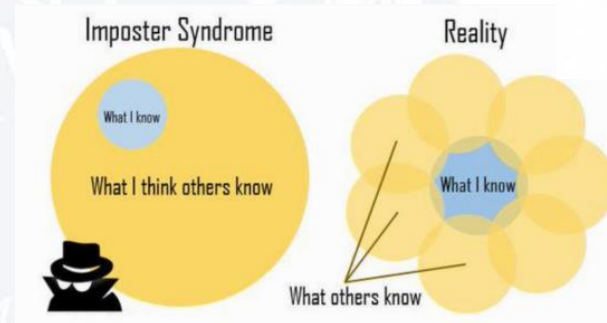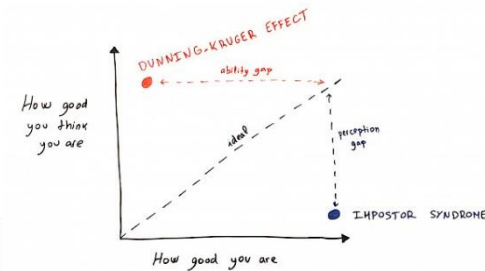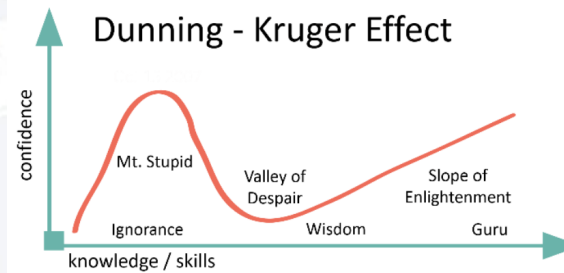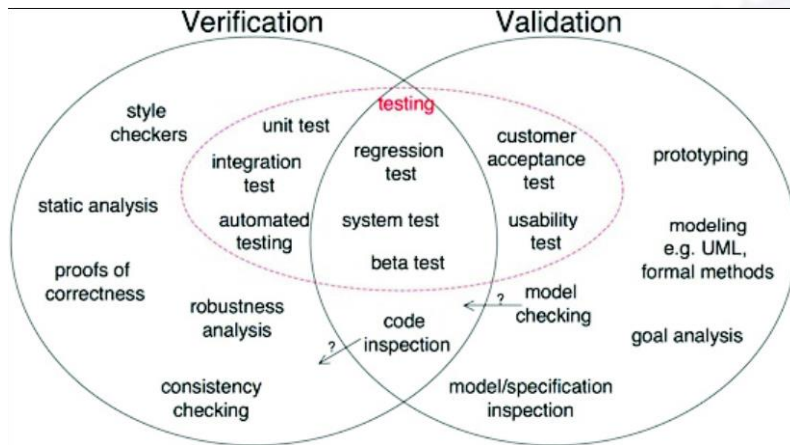| Lab 1	Lab 2	Lab 3	Lab 4	Lab 5	Lab 6
Inspection	BBT	WBT	Levels	Web	All (Bachelor Thesis)
Assignment 1 (L1)	Assignment 2 (L2)	Assignment 3 (L3)	Assignment 4 (L4)	Assignment 5 (L5)	Assignment 6 (L6)
	L1_Delivery1	L1_Delivery2 L2_Delivery1	L2_Delivery2 L3_Delivery1	L3_Delivery2 L4_Delivery1	L4_Delivery2 L5_Delivery1 L6_Delivery1 (in-class only)

Grading – Laboratory (2)

- **Each Lab Assignment**
  - **In-class assignment**
    - **25 XP**
  - **Take-home assignment**
    - **75 XP**
- Work in teams – Recommended: 2 members per team (maximum 3 allowed (one team in a semigroup) if one students does not have a partner in his/her own semi-group).
- No more than two lab problems will be delivered in one lab meeting. An extra lab problem is delivered **only if time allowed.**
- Delay in lab submissions (take-home only) – One third points from that lab grade.
- Maximum 2 weeks delay in submission of the homework assignment.
- Each time you deliver a laboratory - the Deliverables of the in-class and take-home assignments must be uploaded in Teams.
- 3 or 4 maximum retake students per semigroup

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- What we will learn!

What we will learn!

- http://www.easterbrook.ca/steve/2010/11/the-difference-between-verification-and-validation/

  - SSVV
    - starting 2009-2010
  - BBST - Black-Box Software Testing series
    - https://bbst.courses/
    - Foundations (2016), Bug Advocacy (2016), Test design (2017), Domain testing (2019)

- https://ricardo-vargas.com/podcasts/cognitive-bias-the-dunning-kruger-effect-and-impostor-syndrome-part-3-of-3/

Overcome STUDENTS's objections

Working together!