Software Systems Verification and Validation

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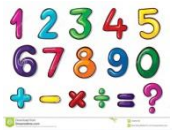
Software Systems Verification and Validation

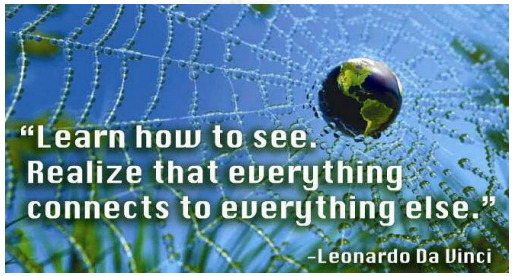
"Tell me and I forget, teach me and I may remember, involve me and I learn."

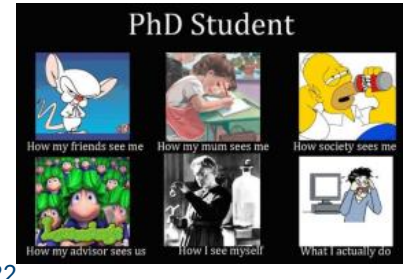
(Benjamin Franklin)

Outline

- **Class Management**
- Teachers
- Class schedule
- Grading
  - Overall activity
  - Seminar activity
  - Laboratory activity







The End is a New Beginning


Once UPON a TIME


Q
A


SHARE
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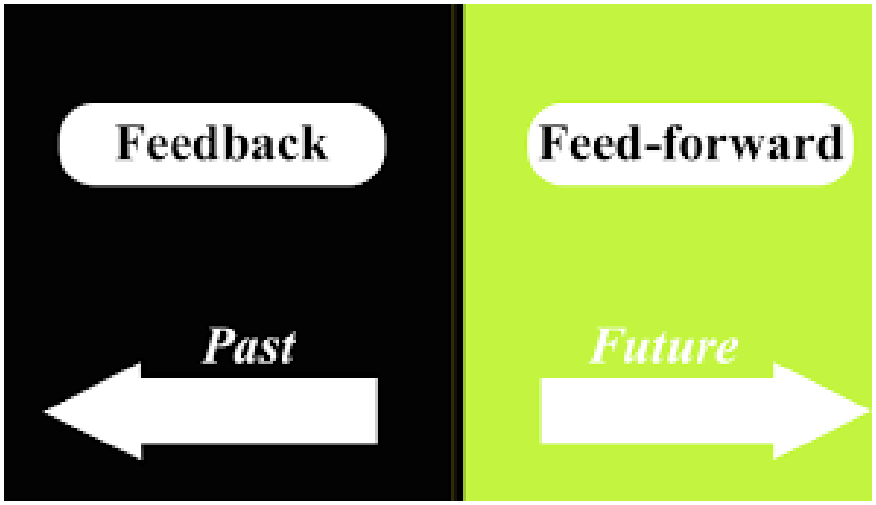

Mentimeter

Go to www.menti.com and use the code 94 89 18

Class Management

- Microsoft Teams
- Join
  - Microsoft Team: InformaticaEngleza_3_SSVV
  - Code: **jaq62yy**

- **2021-2022 – SSVV – hybrid**
  - Lectures – online
  - Seminars – face to face
  - Laboratories – face to face

  - The seminar and laboratory activities are carried out in a hybrid way. Those students who for medical reasons cannot physically attend classes and who have submitted the necessary documents will enter online the activities of the group they belong to (so there are no special groups for online activities). Calls will be initiated for each seminar / laboratory so that these students can participate in activities.

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Teachers

- Lecture: Assoc. Prof. Vescan Andreea
- Laboratory:
  - Assistant Prof. Lazar-Lorincz Beata
    - beata.lorincz[at]ubbcluj.ro
  - Endava Associate Teacher Iudean Bogdan
    - iudeanb[at]scs.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	21-25 feb	Inspection	Inspection	Inspection
2	28 -4 mar	Testing. BBT		
3	7-11 mar	WBT	BBT	BBT
4	14-18 mar	Levels of testing		
5	21-25 mar	Invited Lecture EVOZON (pending)	WBT	WBT
6	28-1 apr	Agile		
7	4-8 apr	Invited Lecture Altom (pending)	Levels	Levels
8	11-15 apr	Symbolic exe.; Model checking		
9	18-22 apr	Correctness	Web?	Web
Vacation	22 apr – 1 may			
10	2-6 may	Invited Lecture Endava	Web?	Web
11	9-13 may	Invited Lecture Garmin (pending)		Bachelor Thesis testing
12	16-20 may	?		

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Grading

- F = 20% L +20% S +10% Q + 50% E
  - L=lab; S=Seminar; Q=Quizzes; E=Written;
  - Bonus points!
- Conditions to participate at the final exam
  - There is no restriction regarding the participation at the written examination regarding obtained marks at L, S, Q.
  - 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.
    - The procedure announced in September 2021 for students requesting participation in online activities will also continue (for objective reasons for a long time or only temporarily, in case of quarantine / isolation). http://www.cs.ubbcluj.ro/cereri-de-participare-online-la-activitati-didactice-din-motive-medicale/
- L/S/Q work may not be redone in the retake session.
- Students from Previous Years to 2021-2022 - 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/2021/syllabus/IE_sem6_MLE5014_en_avescan_2021_6105.pdf

Grading - Gamifying Education

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

	Heroic Quests (quizzes)	Side Quests (Lab Assignments)	Social Quests (Sem Assignments)	Epic Quests (Final Exam)
Normal session	300 XP	600 XP (in-class 25 XP + take-home 75 XP for each lab)	600 XP (300XP SLR+Video presentation + 50 XP for each sem activity)	Up to 1500 XP
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

XP intervals	Grade
[1400,1500]	5
[1501,1800]	6
[1801,2100]	7
[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 = 200 XP (1p)
- **Participating in Education related Research study: collaboration between University of Namur and Babes-Bolyai University**
- **Responses to the questionnaires will be anonymized at the end of the collection.**
- **Study 1 (50XP):**
  - **2 questionnaires (first in week 1, second in the last week)**
  - **Your professor also participate in the study and will not have access to the data collected before they are anonymized.**
- **Study 2 (150XP)**
  - **6 questionnaires (week 1, lecture 2, lecture 3, lecture 7, lecture 9, lecture 12)**

Bonus points = 600 XP
- Research paper (See available topics in Teams)
- Topic by teacher + 2 members/team + deliverables (info available in the week 2)
- Paper submitted to journal for review (before 20 May 2022)
- Remark: If you are interested in this activity, the deadline for enrollment (send email) is 18 March 2022 (week 4).

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	Web	All
50XP	50XP	50XP	50XP	50XP	50XP 300 XP – SLR Report +video+peer review

Grading – Seminar (cont)

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 (cont)

- **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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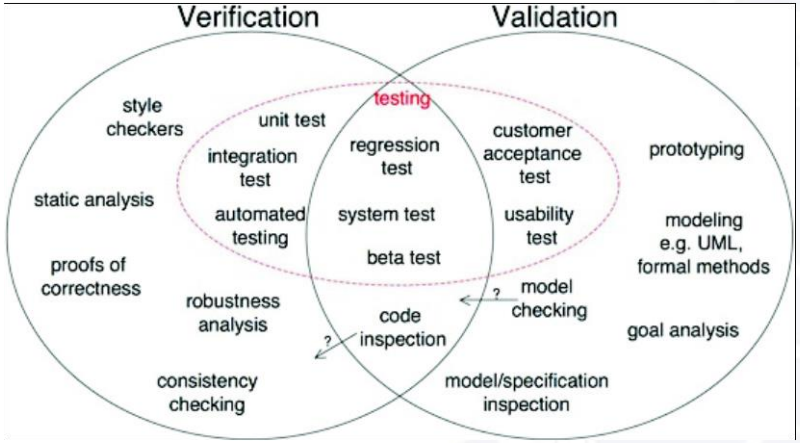
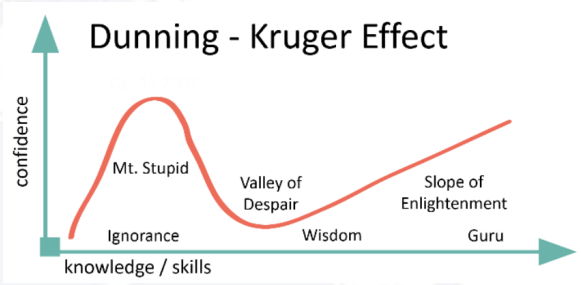
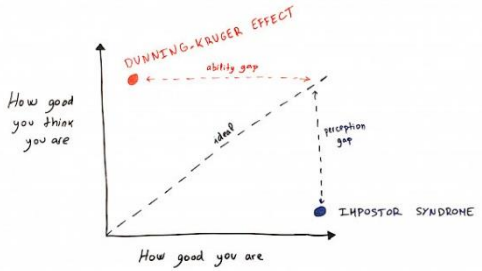
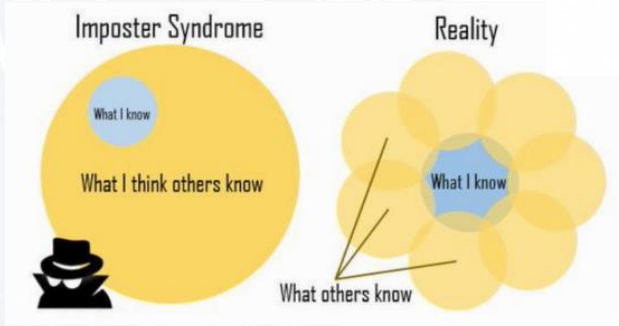
What we will learn!







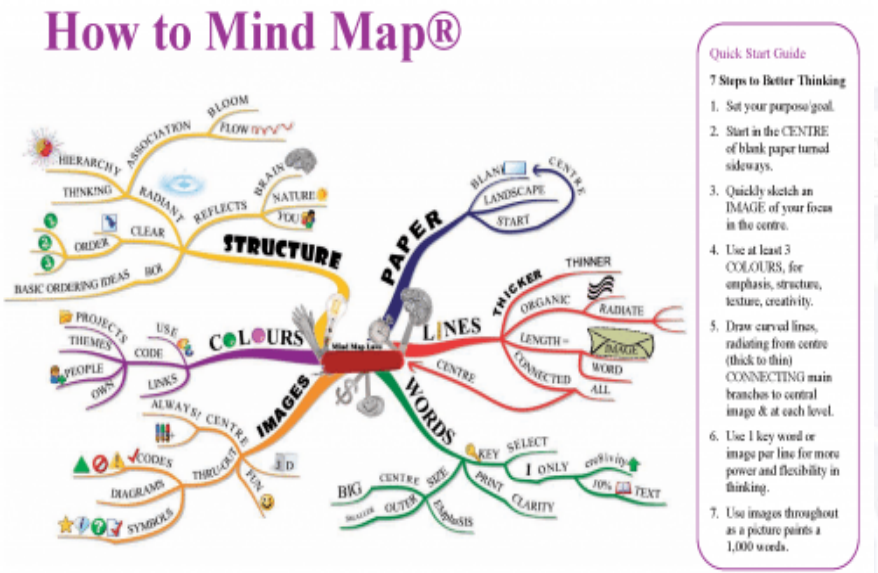


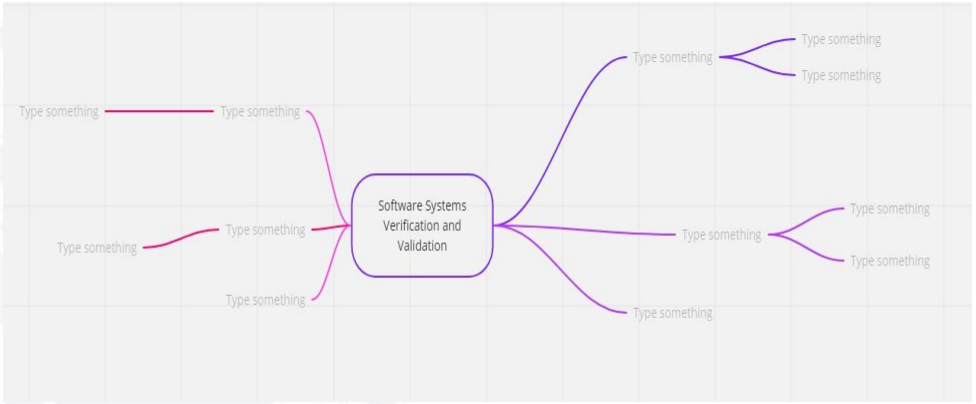
- http://www.easterbrook.ca/steve/2010/11/the-difference-between-verification-and-validation/

- 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/

Working together!





https://miro.com/app/board/uXjVOLiBfS8=/?invite_link_id=292156677874

Overcome STUDENTS's objections

skills

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