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NB! New deadlines for the assignment (see dates below).

EDA035/Part 2: Research Methods (2019/2020)

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Overview

This part corresponds to 1.5 hp, and has *pre-meeting homework*, a *meeting*, and *post-meeting homework*. (Sign-up link)

Important Dates

- **Dec 17, 2019**: Meeting
  - Do the pre-meeting homework before meeting.
- ~~**Jan 14, 2020**~~ **Jan 22, 2020**: Deadline for post-meeting essay.
- ~~**Jan 28, 2020**~~ **Feb 5, 2020**: Deadline for peer review of 2 essays.
- ~~**Feb 4, 2020**~~ **Feb 12, 2020**: Deadline for update of your essay.

Pre-meeting Homework

Before the meeting, you should read the material below according to the instructions.

***Note**: The literature below is written by authors from many different backgrounds, and does not necessarily reflect the traditions in your specific field.*

Task 1: Read the following general texts:

G1	Matti **Tedre** and Erkki Sutinen. "Three traditions of computing: What educators should know." Computer Science Education 18.3 (2008): 153-170. http://www.tandfonline.com/doi/abs/10.1080/08993400802332332
G2	What Wikipedia says on the **Scientific Method**. https://en.wikipedia.org/wiki/Scientific_method
G3	Solomon **Goulomb.** "Mathematical Models: Uses and Limitations." IEEE Transactions on Reliability R-20(3):130-131, September 1971. http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=5216113
G4	José Nelson **Amaral** et al.: "About Computing Science Research Methodology" https://webdocs.cs.ualberta.ca/~c603/readings/research-methods.pdf

Task 2: Read all the abstracts and introductions of the following articles on **specific** research methodologies. Select and **read two** of the articles:

S1	**Per Runeson, Martin Höst**, "Guidelines for Conducting and Reporting Case Study Research in Software Engineering." Empirical Software Engineering, Vol. 14, Issue 2, pp. 131-164, 2009.
S2	Robert L. **Glass**, V. Ramesh. Iris Vessey. "An Analysis of Research in Computing Disciplines." CACM 2004.
S3	A **Georges**, D Buytaert, L Eeckhout. "Statistically Rigorous Java Performance Evaluation." OOPSLA 2007.
S4	**Moody**, Daniel L. "The 'Physics' of Notations: Toward a Scientific Basis for Constructing Visual Notations in Software Engineering." Software Engineering, IEEE Transactions on 35.6 (2009): 756-779.
S5	**Krishnamurthi**, Shriram, and Jan Vitek. "The Real Software Crisis: Repeatability As a Core Value." Communications of the ACM 58.3 (2015): 34-36.
S6	**Nielsen**, Jakob, and Rolf Molich. "Heuristic Evaluation of User Interfaces." Proceedings of the SIGCHI conference on Human factors in computing systems. ACM, 1990.
S7	George E. P. **Box**: "Science and Statistics." Journal of the American Statistical Association, Vol. 71, No. 356., Dec. 1976, pp. 791-799.
S8	Lennart **Ljung**. "Perspectives on System Identification." Annual Reviews in Control, Volume 34, Issue 1, April 2010, Pages 1-12.
S9	Emmanuel **Caillaud**, Bertrand Rose, Virginie Goepp. "Research Methodology for Systems Engineering: Some Recommendations." 8th IFAC Conference on Manufacturing Modelling, Management and Control, 2016.
S10	Edward **Lee**. "Fundamental Limits of Cyber-Physical Systems Modeling." ACM Transactions on Cyber-Physical Systems Vol. 1 No. 1, February 2017.

Task 3: Find two articles related to **your own field**, but which use **different** research approaches or methodology. Read through the articles, **print them and bring them** to the meeting.

Meeting

Date and Time: **December 17, 09:15-15:30**
Location: E:1144

09:15-10:00	Invited lecture by Öivind Andersson, Combustion Engines LTH
10:00-11:30	Coffee and group work
11:30-12:30	Lunch
12:30-13:00	On specific research methods
13:00-14:30	Group work
14:30-15:00	Coffee
15:00-15:30	Introduction to home work

Post-meeting Homework

- **Write** a 2 page essay, reflecting on what research methods you currently use, which ones you might consider using in the future, and contrast the methods in your specific research area to the broader landscape of research methods discussed during the meeting.
- **Deadline: Jan 14, 2020.**
- **Peer review** of 2 other essays. **Deadline: Jan 28, 2020.**
- **Update** your essay, taking the review comments into account. **Deadline: Feb 4, 2020.**

Register yourself as a user at **http://moodle.cs.lth.se/**:

- Register for the following course: **PhD Course: Methodology, Ethics, Innovation** using the following course key: **PhD2019**
- Enter your essay, peer review, and update in this system.
- Any problems with moodle: contact Martin Höst (046-222 90 16).