SELF-STUDY GUIDE

XB_40009 Systems Architecture

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Official (preferred) communication channels:

1) Email: SystemsArchitecture.beta@vu.nl

2) Canvas messaging/chat

1. Self-Study Structure

The Self-Study consists of solving exercises, in **groups of up to 6 students**. Provisions for smaller teams and, exceptionally, for students working alone, can be made after a discussion with Alexandru Uță. If you do not have a team, we will try to resolve this during the first month of the course; just contact Alexandru Uță, at the end of the weekly Tutorial or via email. Check the Course Guide for the communication protocol.

General requirement for self-study: solve the exercises in the course textbook(s) with your team, by first reading the material, checking the course slides, and learning problem-solving techniques from the book or from the Tutorial; and then by using your general analytical and problem-solving skills. In general, we expect to see you being able to resolve even the most challenging problems in the book.

The remainder of this document is structured as follows. Section 2 explains how to sign up for the Self Study. Section 3 explains the role of the Teaching Assistant and the grading process. Section 4 covers forming a team. Section 5 details the requirements. Section 6 presents the rewards. Section 7 introduces the deadlines for Self Study milestones. Section 8 discusses our anti-fraud policy (zero tolerance).

2. Signing up

Anyone can participate, starting anytime before the deadline. Students who want to participate in the

Self Study should inform the Teaching Assistant about it — you can use face-to-face, email, or Canvas messaging.

3. Assistance and Grading Process

The Teaching Assistant (TA) for the lab exercises is Alexandru Uță, who can be reached at A.Uta@vu.nl or the official course email address, with emails that **must** include in their subject "**[VU][40009]**", or **[VU][SysArch]**, or **[VU][SystemsArchitecture]**. The tasks of the TA, for Self Study, are: to help with extreme cases, to verify your results, and to grade the assignment. Solving the exercises is your task.

No rooms have been scheduled for group meetings. We expect you to work from home and be able to organize periodic meetings with your group. You can try, for example, to meet just before or just after the Tutorial. The break after the Tutorial can also be used for short face-to-face discussions with the TA. Let Alexandru Uță know how things progress, how you fit in the group, and how you experience the Self-Study.

The grading process includes intermediary milestones, and concludes at the end of the course by taking into account all your self-study work. For some of you, this will include additional (bonus-worthy) activities.

4. Forming a Team, Participating in a Team, Quitting a Team

- Teams can consist of up to 6 persons.
- Teams can be self-formed, by the students themselves, or be created by the TA.

Important: Leaving a Self Study group also hurts your colleagues!

Important: If a team member does not help enough (freeriding) or even quits, inform your TA as soon as you observe this. Complaining only at the *end* of the course will *not* help.

5. Requirements

Main requirements:

- Complete all the exercises we indicate in Canvas. The table below (Rewards) presents the relation between chapters in any of the textbooks and the achieved points (see below).
- Complete the assignments with your team, each team on its own (independently), without help from other teams or from the course instructors.
- **Turn in to the TA a booklet with the solutions to the exercises**. For example, you can turn in hand-written solutions to the exercises in a regular student notebook. You can expect the TA to ask details about the time you spent on Self Study and details about selected exercises.

About the textbook version, chapters, etc.:

- The textbooks for this year are: (please see course information on Canvas)

A. Carl Hamacher and Zvonko Vranesic, Computer Organization, 6th edition, McGraw-Hill Education, 2011. ISBN-13: 978-0073380650

B. David A. Patterson and John L. Hennessy, Computer Organization and Design: The Hardware/Software Interface, 5th edition, Morgan Kaufmann, 2013. ISBN-13: 978-0124077263

- **The 6 main chapters are** (in the order in which they are covered in the course and in the tutorial):
    1. **Logic circuits**
    2. **Arithmetic**
    3. **The basic processing unit**
    4. **I/O**
    5. **Memory**
    6. **Large-scale Computing**
- (**If you want to excel**:) The chapter on Pipelining (e.g., Chapter 6 from Book A.) is rather advanced, so completing it in addition to the main requirements leads to an additional reward (see Rewards).
- (**Not part of Self Study:**) Some chapters, for example, from Book A, the chapters about ISA (Chapter 2), Basic I/O (Chapter 3) and about x86_64 Assembly (Appendix E), are covered in the Lab and thus not part of the self-study assignment.

6. Rewards (Grading)

In general, we expect students to focus more on learning about computer organization and on thinking critically about the topics of this course, and less about how to pass the course. The grading philosophy of this course reflects this expectation: students receive points not only for regular (pre-defined) activities, but also for exceptional (bonus-worthy) work. **The bonuses for exceptional activities are only valid for the current academic year.**

Book	**Week 4**	**Week 8**	**Week 8 (bonus)**	**Week 8 (bonus)**	**Total**
A. Hamacher	2 chapters +250p	+2 chapters +750p	+ 2 chapters +250p	+ pipelining +250p	7 chapters = **1500p**
B. Patterson	2 chapters +250p	+3 chapters +500p	+ pipelining +500p	N/A	6 chapters = **1250p**

For the list of available exercises for each chapter, per book, please check Canvas.

For extra (bonus) points, combinations of books and chapters are also possible, but only up to **2000p.** To arrange this, please contact Alexandru Uță. Please note that you will not be awarded bonus points for solving corresponding chapters (i.e., with similar topic) from different books.

7. Deadlines

- (suggested) Week 2: join a team.
- (suggested) Week 3: announce to the TA your intention to participate.
- **(strict) Last day of week 5: turn in booklet with solutions to the first two chapters.**
- **(strict) Last day of week 8: turn in booklet with solutions to the remaining chapters.**

The deadlines are also announced during the first sessions of the Tutorial.

8. Zero-Tolerance Policies

We do not like having zero-tolerance policies. However, history teaches us we have to agree that some situations require clear, automated actions to either prevent or to correct. A set of zero-tolerance policies forms the former, because it makes both the student and staff members aware of important issues. The content of the zero-tolerance policies, as corrective measures, achieves the latter.

Our policies are simple and kept to a minimum: we set goals, and have zero-tolerance to breaking them, within the limits set by the policies of VU Amsterdam. We aim to prevent, and only then to discover and punish (attempts to) break the goals. However, once we discover a potential infringement, we will pursue each case and, to do so, we will use to the maximum extent the means provided by the university.

Anti-Fraud Policy. We want to prevent all academic fraud.

How to avoid becoming subject to this policy? Primarily, don't get someone else's work and say it's your own. You can learn more about how to prevent that you commit fraud via a discussion with the “studieadviseur”, from the anti-fraud policy of Vrije Universiteit Amsterdam [1], or even from international sources such as Harvard’s guidelines on avoiding plagiarism [2].

[1] Vrije Universiteit anti-fraud policy, section 10.3. in the Student Charter. [Online] Available: https://www.vu.nl/en/Images/Studentenstatuut_2018-2019_ENG_tcm270-894132.pdf

[2] Tips to Avoid Plagiarism, Harvard web site document. [Online, accessed September 2018] Available: https://www.extension.harvard.edu/resources-policies/resources/tips-avoid-plagiarism (Links to an external site.)

Anti-Discrimination Policy.
We want to prevent all situations when a student or a staff member, or groups thereof, are discriminated against or are subjected to inappropriate conduct. The VU Amsterdam regulations consider explicitly inappropriate conduct related to bullying, aggression, sexual harassment, and racism, but also other situations.

How to avoid becoming subject to this policy? Primarily, by being nice to others, by not doing to them what you would not want done to you, your family, and other people you care about. You can learn more about this from the rules about tackling inappropriate conduct of Vrije Universiteit Amsterdam [1], or even from the Dutch Law [2].

[1] Vrije Universiteit policy on inappropriate conduct, section 10.5 and other places referring to it in the Student Charter. [Online] Available: https://www.vu.nl/en/Images/Studentenstatuut_2018-2019_ENG_tcm270-894132.pdf

[2] Wetboek van Strafrecht, articles 137c-h.