

Course Programme

Digital Communications, Advanced Course (ETTN01), 7.5 hp, 2020/2021

First lecture: Monday 2 November, 2020, 15.15 – 17.00

Lectures: Zoom, Meeting ID: 684 3758 3791 (<https://lu-se.zoom.us/j/68437583791> note the **lu-se** in the link). You need to be logged in (SSO) with your STIL id to access the meeting room.

Exercises: Zoom, Same link as above.

Project: More info on lecture 4. Written survey of a topic of your own choice or Matlab project.

Laboratory lesson: LAB (4 hours) starts on Friday 11 December 2020.

Application to the laboratory lesson is made on the homepage of this course where you book one available time-slot. Applications can be made one week before the lab starts, or maybe earlier, check Messages!

Messages will be distributed on the homepage of this course, <http://www.eit.lth.se/kurs/ettn01> .

Written Examination:

1:st opportunity: Wednesday 13 January 2018, 08.00-13.00, Zoom, two links (one monitored by Fredrik, one by Juan). Links to appear.

2:nd opportunity: April 2021

3:rd opportunity: August 2021

- Course Literature:**
- “Introduction to Digital Communications”, compendium August 2006.
 - Lecture notes on OFDM
 - Manual for the laboratory lesson.

The lecture notes on OFDM, and the manual for the laboratory lesson will be available on the homepage of this course, (they are not available yet).

You are allowed to use the compendium and the lecture notes on OFDM during the written examination.

This course is defined by the pages and problems given in the course outline given below in this course program, and by the laboratory lesson.

Lecturer: Fredrik Rusek, Room E:2377, mail: Fredrik.Rusek@eit.lth.se

Teaching assistant: Juan Vidal Alegría, Room E:2364, mail: juan.vidal_alegria@eit.lth.se

Lectures: Mondays 15.15 – 17.00

Wednesdays 15.15 – 17.00

Exercise class : Tuesdays 13.15 – 15.00

Thursdays 10.15 – 12.00

Important: All mails should start with “ETTN01” as subject. We have configured the mailboxes accordingly. Due to a large number of incoming emails, the response time may be prolonged if you do not follow this.

Time plan for the project and lab:

Study week 1: Study period starts. Try to find a project partner as soon as possible. **Send me an email this week containing names and email to the two persons in the project group!**

Study week 2: Lecture Wednesday 11 November: **Project info & start-up procedure.**

Study weeks 3+4+5: **Project work.**

Study week 4: Send me an email and describe in short the status of your project work.

Study week 5: **Deadline for the project report** (pdf-format, Email) Thursday 3 December 2020, 23.59.

Study week 6: LAB starts.

Study weeks 6+7: **Project presentations and opponents.**

Study week 7: Last study week with planned course activities.

Preliminary Course Outline for the course Digital Communications, Advanced Course (ETTN01), 2020:

<u>Week</u>	<u>Contents</u>
45	<p><u>Lecture (2/11)</u>: Introduction. 5.1 – 5.1.2 (pages 329-341). <u>Exercise (3/11)</u>: Cancelled <u>Lecture (4/11)</u>: 5.1.2 – 5.1.7 (pages 336 – 360). <u>Exercise (5/11)</u>: Problems 5.1, 5.11, Example 5.2 on page 334, 5.6i, 5.9.</p>
46	<p><u>Lecture (9/11)</u>: Project info and start-up procedure , 5.2 (pages 360 – 377). <u>Exercise (10/11)</u>: 5.15a, 5.19, 5.16b, Example 5.4 on page 343, 5.13a, 5.14. <u>Lecture (11/11)</u>: 5.4.1 (pages 380 – 392), Example 5.34, Figure 5.26 on page 393, 5.4.4 – 5.4.6 (pages 396 – 405). <u>Exercise (12/11)</u>: 5.20, 5.18a, 5.21, 5.23, Example 5.20 on page 373, 5.30.</p>
47	<p><u>Lecture (16/11)</u>: 3.4.1 (pages 161 – 163), Problem 5.34, 3.4.3 (pages 167-170). <u>Exercise (17/11)</u>: Example 5.23 on page 384, 4.34i), 5.34, 5.33 <u>Lecture (18/11)</u>: 8.1 – 8.2.1(pages 501– 512). OFDM introduction. <u>Exercise (19/11)</u>: 3.16, Example 5.4 on page 343. 5.34 ((5.133) – (5.138).</p>
48	<p><u>Lecture (23/11)</u>: OFDM lecture notes pages 1-45. <u>Exercise (24/11)</u>: 8.1, 8.4, 8.6a,b,c,e, 8.7a,b,c,e, 2.32a,b, 8.8a, Example 8.4 on page 512., <u>Lecture (25/11)</u>: 9.1 – 9.2 (pages 581 – 596). <u>Exercise (26/11)</u>: OFDM problems X1, X2, X3, X4, X5</p>
49	<p>Deadline for project report this week on <u>Thursday 3 December, 23.59!</u> <u>Lecture (30/11)</u>: 9.2 (591 – 596), Problem 5.34, 7.3(pages 480 – 486). <u>Exercise (1/12)</u>: OFDM problems X6, X7, X8, X9, X10, X11. <u>Lecture (2/12)</u>: 7.3.21-7.3.2 (pages 484 - 490). <u>Exercise (3/12)</u>: 9.2, 9.3, 9.4, 9.5</p>
50	<p>Lab starts this week! <u>Lecture (7/12)</u>: Summary of the course. <u>Exercise (8/12)</u>: 9.6, 9.7, 9.8, 9.10. <u>Lecture (9/12)</u>: Project presentations <u>Exercise (10/12)</u>: 7.7, 7.9, 7.10a.</p>
51	<p><u>Lecture (14/12)</u>: Project presentations <u>Exercise (15/12)</u>: Problem solving/Question time <u>Lecture (16/12)</u>: Project presentations <u>Exercise (17/12)</u>: Problem solving/Question time Friday 18 December 2020: Study week 7 ends.</p>
2	<p>Written examination Wednesday 13 January 2020, 08.00 – 13.00, Zoom.</p>