

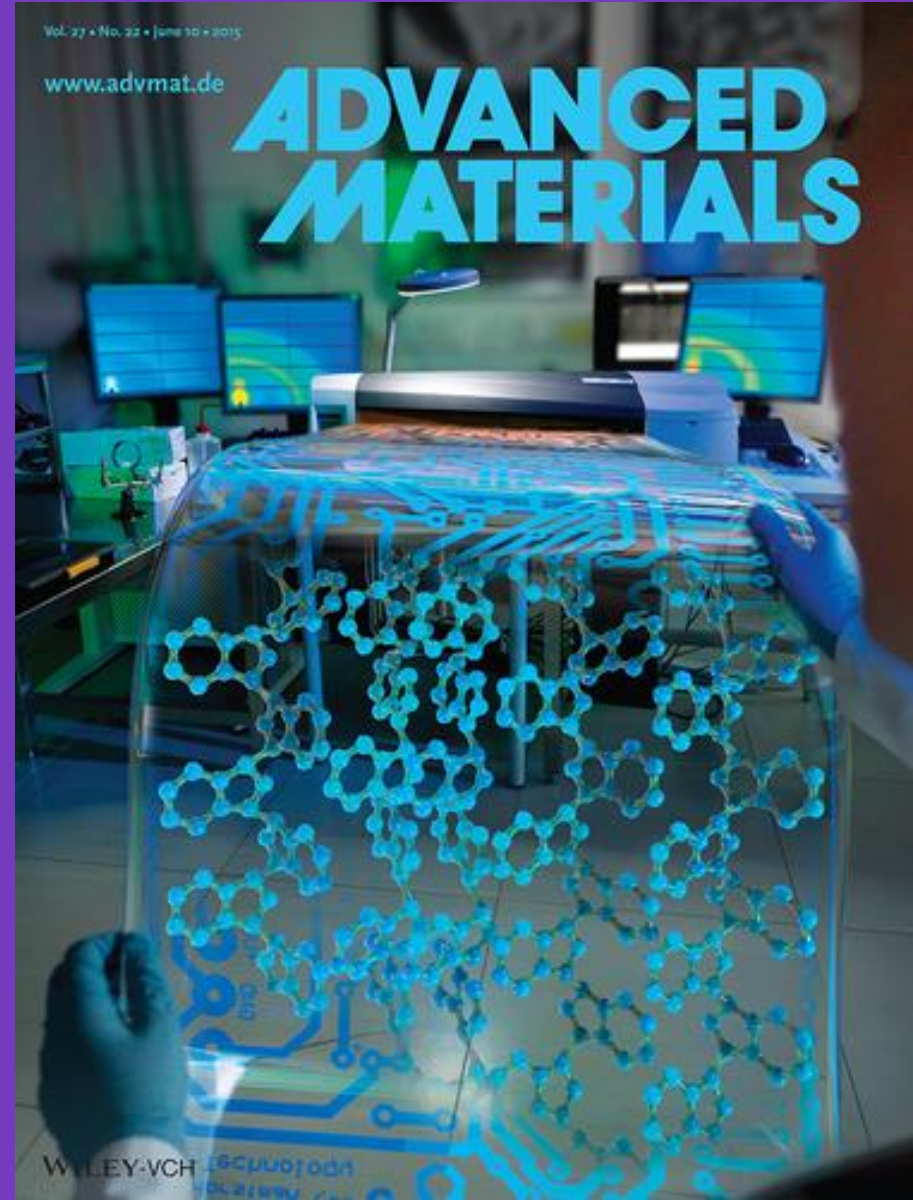
ELEC-E9210 Organic Electronics: Materials,
Devices & Applications

Course Information



Aalto University
School of Electrical
Engineering

<https://organicelectronics.aalto.fi>



ELEC-E9210: Learning Outcomes

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By the end of this course:

- You will learn about structure and properties of organic materials and devices, their functioning and properties, and field of applications.
 - Principle of organic materials (OMs)
 - Properties of OMs, including electronic and optical properties
 - Organic devices and working principles (*i.e.* transistors, diodes, sensors, solar cells)
 - Applications of organic materials and devices
- You will be capable of critically reading and understanding a scientific text, extrapolating main ideas, summarizing your readings and presenting your findings.
- You will be able to write a scientific document
- You will be capable of delivering and assess clear scientific communication, including your own and your peers.



(Online) Class Rules

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Video ON

(if you wish so and if this does not interfere with communication quality)



Mute ON

feel free to interrupt the class anytime for questions and comments



Introduce Yourself

whether you are asking a question or making a comments during class, please introduce yourself



Breaks

break(s) and different activities during the class

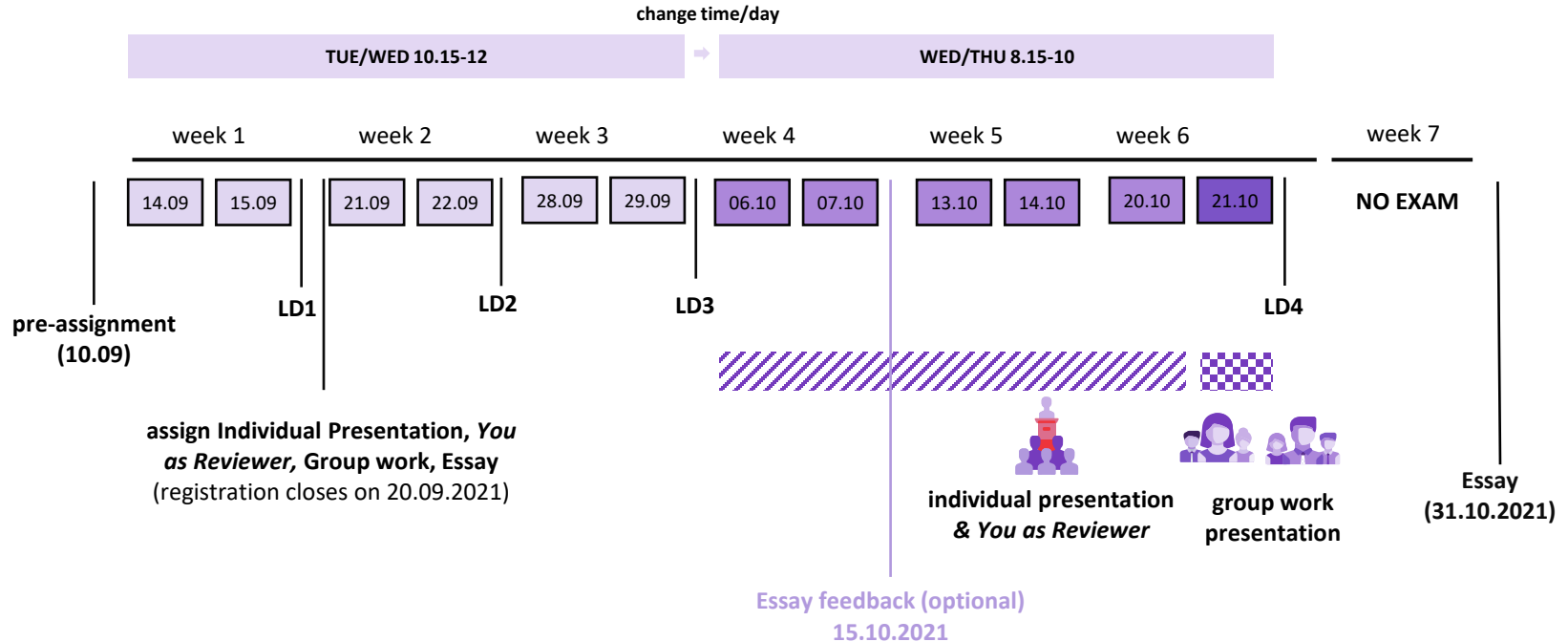


Office Hours

one hour after each class or you can contact me at caterina.soldano@aalto.fi (office in Micronva)

ELEC-E9210: (Tentative) Timeline & Activity DLs

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Information & instructions will be available on MC
All DLs are h18.00 (MyCourses)

ELEC-E9210: Description of Assignments (I)

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- **Learning Diary** Each student will write a Learning Diary on a weekly basis for the first 3 weeks and at the end of the course. **DL is ALWAYS on FRIDAYS, h18.00.**
- **Individual Presentation:** each student will be assigned with a scientific publication in the field of Organic Electronics and will have to present the paper to his/her colleague. Maximum time for the presentation is **20-25 minutes** (including Q&A, reviewer questions). **DL: h18.00, day of your presentation**
- **You as Reviewer:** each student will act as reviewer for one of his/her colleagues for their individual presentation. This assignment includes critical reading of the assigned paper, questions/comments during the presentation and a review form to be submitted. **DL: h18.00, day of “You as Reviewer”**



ELEC-E9210: Description of Assignments

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- **Group Work:** students will be divided in groups (3-4) and each group will choose a “molecule”. The group is expected to the class about relevant aspects of the molecule (*i.e.* chemical structure, electronic and optical properties, use in devices, applications). Each student can retrieve as many scientific publication as needed. Each group will present its work to other groups on **21.10.2021** (presentations, posters, videos are examples of acceptable workgroup output. If you have other ideas, please do not hesitate to discuss with me, but please note that everyone is expected to be present on this day). Maximum time available for each group is **30 minutes** (including Q&A, comments). **DL: h18.00, 21.10.2021 (day of group presentation, one submission/group)**
- **Essay** The essay focuses on one molecule (very similar to the group work). You can choose a molecule (but different from the molecule assigned to your group). Instructions to follow. **DL is h18.00 on 31.10.2021.**

*If you wish to receive some feedback on your draft (e.g. preliminary draft, list of ideas, general outline, full draft or whatever you have written so far), you can submit it **before 10.20.2021** and you will receive some feedback from me. Please note that **THIS IS NOT MANDATORY.***

ELEC-E9210: Description of Assignments (II)

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Assignment*	Assigned on	Workload	DL (ALWAYS h18.00)
Pre-Assignment	before class	2h	10.09
Learning Diary	Weekly (w1, w2, w3 & w6)	8h	on Fridays: 17.09/24.09/ 01.10/22.10
Individual Presentation	21.09	25h	Day of YOUR presentation
<i>You as Reviewer</i>	21.09	8h	Day of YOUR COLLEAGUE presentation
Group work	21.09	25h	21.10 (day of group work)
Essay	21.09	45h	31.10
Total		113h	

*Please report how much time you have spent on preparing each assignment. This will help me assessing the real workload. Thanks!

ELEC-E9210: Grading

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Assignment	Points (max)
Pre-Assignment	+2 (extra points)
Learning Diary	10 (2.5/each)
Presentation	25
<i>You as Reviewer</i>	10
Group Work	25
Essay	30
Total	100 (102)

Extra point

Oral Discussion*	20
Experimental Activity*	20

* needs to be agreed with Caterina in advanced

Final grade scale:

- <50 = FAIL
- 50-60 = grade 1
- 61-71 = grade 2
- 72-81 = grade 3
- 82-92 = grade 4
- ≥ 93 = grade 5

EXTRA POINTS (on request/upon agreement)

- **Oral Conversation** about topics from the course. This will be tentatively during **exam week** (at the latest **before 31.10.2021**). Estimated workload 30h. **Max 20 points.**
- **Experimental Activity:** opportunity to carry on research activity in the field of organic electronics. This will consist tentatively of two full-days of experimental activity (fabrication of simple device and measurements of opto-electronic properties) and a final report on the measurement carried on in the lab. If you are interested, let's discuss ASAP (agreement before the **01.10.2021**). DL for report submission is **31.10.2021**. Estimated workload 30h. **Limited number of activities available. Max 20 points.**

ELEC-E9210 Resources

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Recorded Lectures will be published on MyCourses on the Friday before class. These lectures focus mainly on theoretical aspects and they should be viewed and studied prior to class. Part of the online classes will also be recorded and made available on MC.

Slides (will be uploaded on MC before the class, so you can take notes during sessions)

- many slides contain reference to peer-reviewed scientific papers. All materials is referenced so you can retrieve the paper if looking forward for more detailed readings.

Books

- *Organic Field Effect Transistors - Theory, Fabrication and Characterization* I. Kysmissis, Springer (2009)
- *Physics of Organic Semiconductors* Wiley-VCH, edited by W. Brütting (2005)
- *Organic Electronics, Materials, Processing, Devices and Applications* ed. by F. So, CRC Press (2010)



Some More Info...

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- **ELEC-E9210 MC space** if you encounter any problem when submitting materials, or incorrect information on MyCourses, please let me know ASAP.
- Presence is not mandatory for this course, but it is expected the day of your presentation, peer review and group work

