# ELEC-E3140
# Semiconductor physics

**Autumn 2020**

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# Course information

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| Lecturer | Professor Markku Sopanen, room 4188, Micronova<br>markku.sopanen[at]aalto.fi |
| Assistant | N. N. |
| Lectures | Wed 14:15-16, Zoom, start from Sep 9 |
| Exercises | Tue 14:15-16, Zoom, start from Sep 15 |

Required background

Young, Freedman: University Physics (or similar book including basics of quantum mechanics)

# Assessment

Mid-term exams (2x30%) + exercises (30%) + lecture quizzes (10%)

**OR**

Exam (60%) + exercises (30%) + lecture quizzes (10%)

**OR**

Exam/Mid-terms only

- Mid-term has 4 and full exam 5 questions: 1 explanation of terms and phenomena, 3-4 essay questions.
- Probably exams through MyCourses.
- The best grade is calculated automatically, you do not need to choose.

# Exercises

Ten (10) exercise sessions.

Problems available on the webpage on Friday (previous week).

The problems can be solved until 10 pm on Wednesday. Please start thinking and solving the problems already before exercise session to maximize learning. Exercise session gives hints and answers questions. Last opportunity to ask is after the next lecture.

Return of the solutions through MyCourses, scan or photograph handwritten solutions. You might have to reduce quality in photos.

The problems count for 30% of the points for the mid-term exams or the exam. The extra points are valid for one year from the start of the course.

Table of constants will be available on the course webpage.

Note that the grade will be counted as direct average. If your score from exercises is lower than from exams, they won't improve the grade.

Typical grading: grade 1 ca. 45% of the maximum, grade 5 ca. 85% of the maximum.

# Reading material

- **Book** NO specific course book
- **Most closely follows the following books (first half)**
  - Pallab Bhattacharya, Semiconductor Optoelectronic Devices
  - Jasprit Singh, Semiconductor Optoelectronics
- **Online book**
  - C. C. Hu, Modern Semiconductor Devices for Integrated Circuits
  - http://www.eecs.berkeley.edu/~hu/Book-Chapters-and-Lecture-Slides-download.html