### Design of Microelectronic Systems - IVB275ANV

Lecture/Practice/Lab: 2/0/2

Credit points: 4

Requirement: Midterm grade

Semester: 2023-2024-2

Prerequisites: Microcomputers

Lecturer: Mahmoud Osman; Kisander Zsolt

Department: Department of Automation

This subject provides an introduction to computer-aided PCB design. We study how to design embedded hardware and what are the common pitfalls of the design procedure. Students can use their preferred CAD software.

#### Lecture topics

Recommended readings are the relevant chapters from the textbook AND the datasheets of the currently popular components.

1. Overview of PCB design CAD softwares
2. Overview of hardware design steps
3. Revising PCB manufacturing methods and manufacturability
4. Abstract view and common building blocks of an electronic device
5. Modular topics
   1. Power supplies
   2. Sensors
   3. ADCs
   4. Microcontroller units
   5. Communication buses
   6. User interface devices
6. PCB design recommendations
7. Manufacturing output formats

#### Practice topics

The practice follows the lecture materials. Students have to solve PCB design group projects with weekly presentations.

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#### Midterm requirements and fulfillment

Students must be present on more than 70% of contact classes and/or consultations. Having more than 30% absence results in signature refusal.

Midterm assessments:

* Four or five design homeworks depending on the exact semester schedule (holidays, spring break, etc.). Students work in groups and present their design’s progress each week. The exact schedule will be voted on by the students.

Students have to complete each assessment with a passing grade to get the signature and the midterm grade. The midterm grade is the arithmetic mean of the assessment results.

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| --- | --- | --- | --- | --- | --- |
| Mark | 5 | 4 | 3 | 2 | 1 |
| Grade | Passing | | | | Failed |
| Limits (%) | 85 | 70 | 55 | 40 | < 40 |

#### Exam requirements

Not applicable.

#### Failing the requirements

The Code of Studies and Examinations of the University of Pécs is applicable in general.

* Students without signature have one opportunity to earn a passing midterm grade and signature in the exam period.
  + Schedule: 1st week of the exam period, lecture time
  + Format: written test (lecture topics) and a new homework with oral presentation

#### Recommended literature

The Art of Electronics 3rd Edition, Horowitz and Hill, 2015, ISBN-10: 9780521809269

Official datasheets of the presented electronics components.