



T-509-RAFT

RAFEINDATÆKNI

6 ECTS

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|---------------------------------|---|
| <b>Ár:</b>                      | 3. – 4. ár.   |
| <b>Önn:</b>                     | Haustönn. <i>Kennt í fyrsta sinn á haustönn 2022.</i>   |
| <b>Stig námskeiðs:</b>          | 3. Grunnám, sérhæft námskeið / 4. Framhaldsnám, inngangsnámskeið.   |
| <b>Tegund námskeiðs:</b>        | Skyldunámskeið RAV. <i>Ráðlagt val HÁV, HEV.</i>  |
| <b>Nauðsynlegir undanfarar:</b> | Greining rása (T-306-RAS1), Hönnun rása (T-406-RAS2).   |
| <b>Skipulag:</b>                | Kennt í 12 vikur – 6 kennslustundir í viku (3 fyrirlestrar og 3 dæmatímar), auk tveggja verklegra æfinga á önninni. |
| <b>Umsjónarkennari:</b>         | Slawomir Koziel.  |
| <b>Kennari:</b>                 | Slawomir Koziel.  |

**Lærdómsviðmið:** On completion of the course, students should:

- Become familiar with general properties and performance parameters of amplifier circuits and their basic network representations;
- Understand the operation of basic electronic devices, including diodes, MOSFET and BJT transistors;
- Be able to analyze and design elementary transistor stages;
- Be familiar with the concept, parameters and design of basic types of analog circuits including amplifiers, filters, and oscillators;
- Be familiar with a classification and the properties of output stages and power amplifiers;
- Gain capability of design, build, simulate, and measure simple circuits involving semiconductor devices (rectifiers, transistor amplifiers, op-amp filters).

**Lýsing:**

- Review of signal-processing basics;
- Introduction to electronic devices;
- Operation, electrical characteristics, large- and small-signal models of diodes and transistors (MOSFET and BJT);
- Ideal and non-ideal operational amplifier;
- Elementary transistor stages: biasing, operation point, small signal analysis;
- Design techniques of small-signal amplifiers and their uses in multistage amplifiers;
- Design with operational amplifier;
- Fundamentals of filter design;
- Output stages and power amplifiers;
- Oscillators.

**Lesefni:** A.S Sedra, K.C Smith, *Microelectronics Circuits*. Laboratory manuals and assignment manuals.

**Kennsluaðferðir:** Lectures for the presentation of the fundamentals and theory; Exercises (problem solving); Computer simulations exercises (NI Multisim); Group assignments; Individual homework assignments.

**Námsmat:** Quizzes (short tests); Midterm exam; Assignments; homework problems and lab exercises; Final exam. In order to pass the course, the students need 50% or higher of the final exam grade and 50% or higher of the total grade.

**Tungumál:** Enska.

**Birt með fyrirvara um breytingar.**

Uppfærðar upplýsingar um námsmat og kennsluaðferðir eru birtar í kennslukerfinu Canvas í upphafi hvorrar annar.