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| **Course Name** | Semiconductor Materials and Devices | | | | | |
| **Course Code** | MatE 6212 | | | | | |
| **ECTS** | 6 | | | | | |
| **Status** | Elective | | | | | |
| **Weekly workload** | Lecture | Tutorial | Laboratory | | Project work | Home study |
| 3 | 3 | 2 | | 1 | 5 |
| **Course Objective** | The purpose of this course is to discuss the basic structural elements of the modern complex electronic systems. | | | | | |
| **Course description:** | 1. Introduction (the microelectronic revolution, More’s law...) 2.Material Properties, 3.Density of state, 4.Equilibrium Carrier Concentrations, 5. Carrier Transport, Recombination, and Generation, 6. The Semiconductor Equations, 7. PN junction diode, 8. BJTs, 9. FET, 10. photovoltaic cell structure | | | | | |
| **Semester:** | Year I Semester II | | | | | |
| **Prerequisite:** | None | | | | | |
| **Reference:** | 1. Pierret, R. F. (1996). *Semiconductor device fundamentals*. Pearson Education India. 2. Pierret, R. F., & Neudeck, G. W. (1987). *Advanced semiconductor fundamentals* (Vol. 6, pp. 100-117). Reading, MA: Addison-Wesley. 3. Howe, Roger, and Charles Sodini. Microelectronics: An Integrated Approach. Upper Saddle River, NJ: Prentice Hall, 1996. ISBN: 9780135885185. 4. Handbook of Photovoltaic Science and Engineering Hardcover – January 31, 2011 by [Antonio Luque](http://www.amazon.com/s/ref=dp_byline_sr_book_1?ie=UTF8&field-author=Antonio+Luque&search-alias=books&text=Antonio+Luque&sort=relevancerank) (Editor), [Steven Hegedus](http://www.amazon.com/s/ref=dp_byline_sr_book_2?ie=UTF8&field-author=Steven+Hegedus&search-alias=books&text=Steven+Hegedus&sort=relevancerank) (Editor) ISBN-13: 978-0470721698 ISBN-10: 0470721693 Edition: 2nd | | | | | |
| **Teaching Methodology and assessment strategy** | Lecture / Tutorial | | | | | |
| Exercise / Assignment | | | | | |
| Laboratory | | | | | |
| **Assessment / Evaluation** | Individual assignment / exercise | | | 30% | | |
| Mid-term examination | | | 30% | | |
| Final examination | | | 40% | | |
| **Attendance requirement** | Minimum of 75% of lecture | | | | | |