**Course Plan**

**Preparatory Courses: M.Sc.**

1. **Course Data**

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| --- | --- |
| **Course Title** | Advanced Semiconductor Physics Code: EMP 501 |
| **Academic Year / Semester** |  2014 / 2015 First Semester |
| **No. of Hours per week** | Lecture: 3 hours Tutorial: -- Total: 3 hours |
| **Course Coordinator** |  |
| **Course Instructor** |  |

1. **Course Contents and Lectures**

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| --- | --- |
| **Lecture / Week** | **Topic** |
| 1 | Electrons and holes in semiconductors - Generation and recombination  |
| 2 | Electrons and holes in semiconductors - Generation and recombination  |
| 3 | Electrons and holes in semiconductors - Generation and recombination |
| 4 | Analysis of pure and impure semiconductors - Concentration of charge carriers at balance |
| 5 | Analysis of pure and impure semiconductors - Concentration of charge carriers at balance |
| 6 | Analysis of pure and impure semiconductors - Concentration of charge carriers at balance |
| 7 | Position of Fermi levels - Continuity equation |
| 8 | Position of Fermi levels - Continuity equation |
| 9 | Position of Fermi levels - Continuity equation |
| 10 | Manufacturing technology and P-N junction |
| 11 | Manufacturing technology and P-N junction |
| 12 | Manufacturing technology and P-N junction |
| 13 | Manufacturing technology and P-N junction |
| 14 | Manufacturing technology and P-N junction |

1. **Assessment Details**

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| --- | --- | --- | --- |
| Methods of Assessment | Grading Mode | Weighting % | Outline Details |
| Assignments / Reports | 60 |  20% |  |
| Attendance |  |  |  |
| Oral Exam  | 60 | 20% |  |
| Final Exam  | 180 | 60% | Week 15: 3 hours |

1. **References**

**Course Notes:**

* Lecture material and training sheets.

**Recommended Books:**

* Muller, Richard S., and Theodore I. Kamins (1986). Device Electronics for Integrated Circuits. John Wiley and Sons. [ISBN](http://en.wikipedia.org/wiki/International_Standard_Book_Number) [0-471-88758-7](http://en.wikipedia.org/wiki/Special%3ABookSources/0-471-88758-7).