

| | | | |
|--------------|-----|-----|---------------------|
| Course Title | () | () | Solid State Physics |
|--------------|-----|-----|---------------------|

| | | | |
|----------------------------|---------------------------------|--------------------------------------|---------------|
| () Lecturer | () | / / (Course No. /) | 005650/ /3 |
| (/HP) Contact No. | | / (Class Hour/Venue) | |
| (Course Prerequisite) | General physics, Modern physics | (Target Student) | 3 |
| E-mail (E-mail Address) | | /Office Hour (Office/Office Hour) | |

| | |
|--|--|
| (Objectives) | This course covers basic theory of Solid State Physics for engineering students. It will provide a valuable theoretical introduction and an overview of the fundamental applications of the physics of solids. Specifically, this course includes theoretical description of crystal and electronic structure, phonon (lattice dynamics), electronic behaviors, and optical properties of different materials (metals, semi conductors, dielectrics, magnetic materials), based on the classical and quantum physics principles. Some advanced experimental data of X-ray diffraction, Raman Scattering, etc., will be analyzed. |
| CQI (Continuous Quality Improvement Plan) | 가 . |
| (Text book & References) | Main textbook, "solid state physics" Kittel |
| (Assignment book) | M. Omar, Elementary Solid State Physics A. Dekker, Solid State Physics |
| (Lecture Methods) | Power point presentation and explanations in English. Lecture note will be presented through on-line class room, in advance. |
| (Assignment) | Homework at the end of chapters with 3-4 questions. |
| (Reading Materials) | None |
| 가 (Course Grading) | [가] (%) : 30, (%) : 40, 가 (%) : 20, (%) : 10, Mid term exam 30%, final exam 40%, homework and in-class exams 20%, attendance: 10% |
| (Etc.) | |

(:)

| (Week) | (Course Contents) | (Etc.) | |
|--------|--------------------------------|--------------------------|--|
| 1 | Crystal structure | Projector and tablet pen | |
| 2 | reciprocal lattice | Projector and tablet pen | |
| 3 | crystal binding | Projector and tablet pen | |
| 4 | phonons I 1 | Projector and tablet pen | |
| 5 | phonons I 2 | Projector and tablet pen | |
| 6 | phonons II(thermal properties) | Projector and tablet pen | |
| 7 | Free electron Fermi Gas | Projector and tablet pen | |
| 8 | Mid term exam | | |

(:)

| (Week) | (Course Contents) | (Etc.) | |
|--------|-----------------------------------|--------------------------|--|
| 9 | Energy bands | Projector and tablet pen | |
| 10 | Semiconductor crystals | Projector and tablet pen | |
| 11 | Semiconductor band theory1 | Projector and tablet pen | |
| 12 | Semiconductor band theory2 | Projector and tablet pen | |
| 13 | Free electron theory of metals | Projector and tablet pen | |
| 14 | Magnetic field effects | Projector and tablet pen | |
| 15 | Plasmons, Polaritons and Polarons | Projector and tablet pen | |
| 16 | Final exam | | |

| | |
|--|---|
| <p style="text-align: center;">가 1 (Additional Guide1)</p> | <p style="text-align: center;">()</p> <p>Students who require special assistance (including special needs students) may contact their professors during the first week of the semester to discuss issues related to attendance, lectures, assignments and exams and request learning assistance.</p> |
| <p style="text-align: center;">가 2 (Additional Guide2)</p> | |