T.C.
İSTANBUL TEKNİK ÜNİVERSİTESİ REKTÖRLÜĞÜ
Fen-Edebiyat Fakültesi
Fizik Mühendisliği Bölümü

# PHYSICS 476E –2019/2020 Spring

**TEXTBOOK:**

**Physics of Solar Cells,** Peter Würfel, Wiley-VCH Verlag, 2005

**SUPPLEMENTARY TEXT:**

1. **Solar Cells,** ed. Tom Markvart and Luis Castaner, Elsevier, **2005**
2. **The Physics of Solar Cells**, Jenny Nelson**,** Imperial College*, UK,* **2003**
3. **Photovoltaic Materials;** Richard H Bube, Imperial College Press , UK, **1998**

| Weeks | Topics | |
|---|---|---|
| 1 | Introduction, Photons | |
| 2 | Semiconductors | |
| 3 | Principles of solar cell operation and basic structure I | |
| 4 | Principles of solar cell operation and basic structure II | |
| 5 | Limitation of energy conversion in a solar cell | |
| 6 | Concepts of improving the solar cells | |
| 7 | Technology I: crystalline Si solar cell | |
| 8 | Technology II: thin film solar cell | |
| 9 | Technology III: amorphous Si solar cell | |
| 10 | Technology IV: Cd -Te thin film solar cell | |
| 11 | Technology V: Cu(In, Ga)(S, Se)2 thin film solar cell | |
| 12 | Technology VI: Next generation solar cells | |
| 13 | Technology VII: Multi-junction solar cells | |
| 14 | Review | |
| | | |

**Exams:**
Midterm: 29 March, 2020
Presentation: Last Week
Final Exam: May28 –June7,2020. Exact date and time will be announced by the Student Administration Office(Includes all chapters).

**Attendance:** mandatory at least 70% of the lectures

**VF condition**: at least the total 20 points over 60 from the midterm and presentation

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**Letter Grade Weights:**

**Midterm**: 20%
**Presentation**:20%
**Quiz+ Homework**: 10 %

**Final**: 50%