**FI105 - Física da Matéria Condensada II**

**(Pós-Graduação – Prof. Luiz E. Oliveira; 30 aulas duplas, $2^0$ semestre 2017)**

**(16 aulas + 14 palestras-Nobel)**

0. **Introduction.**
1. **Electron-electron interaction (2 aulas)**
2. **The dielectric response function. Kramers-Kronig sum rules (3 aulas)**
3. **Optical properties of solids (1 aula)**
4. **Elementary excitations: plasmons, excitons, polarons, polaritons, magnons, Cooper pairs, solitons (2 aulas)**
5. **Fermi liquid theory (1 aula)**
6. **The physics of low-dimensional semiconductor nanostructures (5 aulas)**
7. **A taste of photonics (2 aulas)**
8. **Nobel 1985 - Quantum Hall effect (IQHE)**
9. **Nobel 1986 - Scanning tunnelling microscopy - atomic force microscope**
10. **Nobel 1987 - High $T_c$ superconductivity**
11. **Nobel 1991 - Polymer statistics and critical phenomena – Pierre-Giles de Gennes**
12. **Nobel 1998 - Quantum Hall effect (FQHE)**
13. **Nobel 1998 - Chemistry - Kohn and Pople - DFT and Molecular Dynamics**
14. **Nobel 2001 - Bose-Einstein condensation - E. Cornell, C. Wieman and W. Ketterle**
15. **Nobel 2007 - Giant magnetoresistance**
16. **Nobel 2010 - 2D Graphene – Andre Geim and Konstantin Novoselov**
17. **Nobel 2011 - Chemistry-quasicrystals**
18. **Nobel 2011 - Physics-accelerating expansion of the Universe**
19. **Nobel 2012 – Quantum Physics**
20. **Nobel 2014 - LED (Light-Emitting Diodes)**
21. **Nobel 2016 - Topological phase transitions and topological phases of matter, David J. Thouless, F. Duncan M. Haldane, and J. Michael Kosterlitz**

**TÓPICOS DE INTERÊSSE (SEMINÁRIOS/PAPERS pelos ESTUDANTES):**

**(no caso de # estudantes ≤ 10): manuscript 5-10 tex pages, double column, formato Phys. Rev., seminários pelos alunos – assunto escolhido dos tópicos 8 a 20 acima**