

PHYS 782
(Call # 56898)

Solid State Physics II
“Physics of Soft Matter”

Spring 2005
(3 credits)

Instructor/Coordinator:

Dr. Alan R. Denton
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Lecturers: Dr. Thomas Ihle
Dr. Daniel Kroll
Dr. Sylvio May
Dr. Alexander Wagner
Dr. Emmanuel Mbamala
Dr. Guoai Pan
Dr. Hao Wang

Meetings: MW 10:00-11:15 a.m.
South Engineering 212C

Office Hours: MW 11:15 a.m.-12:30 p.m.
South Engineering 214B

Theme: An introduction to the expanding field of soft condensed matter, focusing on colloids, polymers, liquid crystals, surfactants, membranes, and other biological systems. Topics will include characterization of soft materials, interparticle interactions, structure, equilibrium phase behavior, nonequilibrium properties, and practical applications.

Preparation: Advanced knowledge of mechanics, electrostatics, thermodynamics, and statistical mechanics. Experience with programming and numerical methods.

Student Responsibilities: Attend all lectures. Read assigned material in advance. Come prepared for discussion. Be curious; ask questions. Complete assignments on time.

Objectives:

- Gain a conceptual overview of the soft matter research field and of the remarkable physical properties of soft materials.
- Acquire knowledge of industrial applications of soft matter.
- Develop expertise in modern theoretical and computational methods.

Topics: See attached course outline for tentative list.

References: See the list of books on reserve in the library for three-day loan.

Evaluation:	Assignments	30%	All assignments and the research project must be completed to pass the course.
	Research Project	30%	
	Final Exam	40%	

All work in this course must be completed in a manner consistent with NDSU University Senate Policy, section 335: Code of Academic Responsibility and Conduct (<http://www.ndsu.nodak.edu/policy/335.htm>).

Any students with special needs are encouraged to contact the instructor promptly to make appropriate arrangements.