12-1-2005

PHYS 3003 Course Proposal 12/01/2005

Curriculum Committee

Electronic Course Authorization System (ECAS)
PHYS 3003 - VIEW FULLY-APPROVED COURSE

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Effective Status:	Active
Effective Term:	1063 - Spring 2006
Course:	PHYS 3003
Institution:	UMNMO - Morris
Career:	UGRD
College:	MDSM - Division of Science and Mathematics
Department:	242 - UMM-Sci & Math, Div of-Adm

General

Course Title Short:	Computer Modeling of Materials
Course Title Long:	Computer Modeling of Materials
Max-Min Credits for Course:	4.0 to 4.0 credit(s)
Catalog Description:	The description of materials as assemblies of microscopic particles. The various approximations for interparticular forces and their use in order to gain insight into the behavior of the macroscopic system. Aspects of molecular dynamics simulations and Monte Carlo simulations in various statistical ensembles. Projects include questions from experimental research.
Additional Course Information (for catalog production):	offered when feasible
Grading Basis:	Stdnt Opt
Honors Course:	No
Delivery Mode(s):	Classroom
Years most frequently offered:	Other frequency
Term(s) most frequently offered:	Spring
Component 1:	LEC (with final exam)
Auto-Enroll Course:	No
Graded Component:	LEC

Academic Progress Units:	Not allowed to bypass limits. 4.0 credit(s)
Financial Aid Progress Units:	Not allowed to bypass limits. 4.0 credit(s)
Repetition of Course:	Repetition not allowed.
Course Prerequisites for Catalog:	1101, 1102
Course Equivalency:	No course equivalencies
Consent Requirement:	No required consent
Enforced Prerequisites: (course-based or non-course-based)	No prerequisites
Editor Comments:	Jeri edited for PSoft. NEH edited for catalog 10.7.05.
Proposal Changes:	<no text provided>
History Information:	
Assessment and Goals:	Goals: The course is designed for physics, computer science, chemistry and mathematics majors. Students will develop skills in programming, numerical methods and statistical physics. Aside from becoming familiar with specific algorithms of materials modeling, students will have to consolidate knowledge from a wide variety of areas. Assessment: Students will complete various projects throughout the semester, mostly consisting in the development of code.
Rationale for Changes or Exceptions:	THE FIELD OF COMPUTATIONAL PHYSICS REPRESENTS A GROWING SEGMENT FOR PROFESSIONAL SCIENTISTS. NEARLY EVERY SCIENTIST WILL FACE THE PROSPECT OF COMPUTATIONAL MODELING, WHETHER IT WILL BE IN CONJUNCTION WITH AN EXPERIMENT, OR WHETHER IT WILL BE BASIC RESEARCH. THIS COURSE PROVIDES STUDENTS WITH AN OPPORTUNITY TO BECOME FAMILIAR WITH PROGRAMMING ALGORITHMS, SOFTWARE TOOLS AND COMPUTER TECHNOLOGY IN CONJUNCTION WITH GAINING A BETTER UNDERSTANDING OF THE PHYSICS OF MATERIALS. STUDENTS WILL APPLY KNOWLEDGE FROM A VARIETY OF PREVIOUS COURSES TOWARD SPECIALIZED QUESTIONS OF MATERIALS SCIENCE. SKILLS ACQUIRED IN NUMERICAL MATHEMATICS, COMPUTER SCIENCE AND PHYSICS WILL BE UTILIZED AND DEVELOPED.

General Education

Faculty Sponsor Name:	Sylke Boyd
Requirement	SCI - SCI Physical & Biological Sciences without Lab

this course fulfills:	

Provisional Approval:	Received on Dec 1, 2005
Regular Approval:	Received on Dec 1, 2005

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