Course Syllabus

Course Information

Course Number/Section	Nano 3301
Course Title	Introduction to Nanoscience and Nanotechnology
Term	Spring 2017
Days & Times	Tuesday Thursday 10:00 – 11.15 am
Location	CB3 1.314

Professor Contact Information

Professor	Amy Walker
Office Phone	972 883 5780
Other Phone	
Email Address	amy.walker@utdallas.edu
Office Location	NSERL 3.714
Office Hours	TBA
Other Information	

Course Pre-requisites, Co-requisites, and/or Other Restrictions
Same as ECS 3301 (Introduction to Nanotechnology)
CHEM 1311 General Chemistry I
MATH 2419/2415 Calculus II
PHYS 2326/3342 Electromagnetism & Waves/Physics for Bio Science II

Course Description
Introduction to the underlying principles and applications of the emerging field of Nanotechnology and Nanoscience. Intended for a multidisciplinary audience with a variety of backgrounds. Introduces tools and principles relevant at the nanoscale dimension. Discusses current and future nanotechnology applications in engineering, materials, physics, chemistry, biology, electronics, and energy.

Student Learning Objectives/Outcomes

1 Demonstrate a working knowledge of nanoscience/nanotechnology principles and applications
2 Explain the nanoscale paradigm in terms of properties at the nanoscale dimension.
3 Apply key concepts in materials science, chemistry, physics, biology, and engineering to the field of nanotechnology.
4 Explain the history of nanotechnology, identify current nanotechnology solutions in design, engineering, and manufacturing, and where the field may evolve over the next 10 to 15 years.
5 Identify societal and technology issues that may impede the adoption of nanotechnology.

You will be expected to demonstrate what you have learned by problem solving in homework/exams and by giving a presentation to the class.

Required Textbooks and Materials
Required Texts
"Introduction to Nanoscience", G.L. Hornyak, J. Dutta, H.F. Tibbals, A.K. Rao, CRC Press, ISBN: 978-1-4200-4805-6.

Suggested Course Materials
Suggested Readings/Texts

"Introduction to Nanoscience", S.M.Lindsay, Oxford ISBN 978-019-954421-9 (2010). Available on-line from the library.

Information will also be provided on the e-learning web site and in class handouts.

Assignments & Academic Calendar
(Topics, Reading Assignments, Due Dates, Exam Dates)

Week of	Material	Reading
January		
10	Introduction	Chapter 1
17	Characterization Methods	Chapter 3
24	Fabrication Methods	Chapter 4
31	Materials, Structure and the Nanosurface	Chapter 5
February		
7	Energy at the Nanoscale	Chapter 6
14	The Material Continuum	Chapter 7
21	Nanothermodynamics	Chapter 8
28	**Exam 1**	
March		
2	Chemical Interactions at the Nanoscale	Chapter 10
7	Carbon-Based Nanomaterials	Chapter 9
13-17	**Spring Break**	
21	Chemical Synthesis and Modification of Nanomaterials	Chapter 12
28	Natural Nanomaterials	Chapter 13
April		
4	Modeling Nanomaterials	
11	Biomolecular Nanoscience	Chapter 14
18	**Presentations**	
25	Societal Implications of Nanoscience and Nanotechnology	Chapter 2
30	**Exam 2**	

Homework and quizzes will be regularly assigned and solutions posted on the e-Learning web site one week later.

Note: This is a tentative schedule and may be changed at the discretion of the faculty.

Grading Policy

Quizzes 15%; Homework 25 %; Exam 1 20 %; presentation 20%; Exam 2 20 %

Course & Instructor Policies

Homework Assignments
These are due no later than THE START OF CLASS. No exceptions.
Assignments will be posted on the e-learning site for this course.
Homework must be presented in a professional, legible manner to be graded.

Exams
Students may return exams having significant grading errors for reconsideration by the professor. A significant error constitutes a ≥ 3 point error on the grading of a single question. The professor will not view favorably regrade requests involving 1 or 2 points or minor errors in a series of several questions. *Students must submit concise, clear explanations along with the exam to be re-graded within 1 week after return of the exam.* No markings or other alterations should be made to the exam. Acceptable explanations are 1) the answer key is incorrect or incomplete, 2) the student solution is equivalent or equally valid to that given on the key, and 3) the student gave the same answer on the key but was not recognized to have done so. To ensure fair and equal treatment to all students, all changes to the exam score must be made via this process. The professor will not meet with students to discuss the exam score changes.

Course Policies
Make-up exams
No make up exams will be given except under extreme circumstances.
Extra Credit
Not offered.
Late Work
Not Accepted.
Special Assignments
None.
Class Attendance
Not required but is highly advised.
Classroom Citizenship
The Student Conduct and Discipline policy of the University of Texas at Dallas will be followed.

Comet Creed
This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to http://go.utdallas.edu/syllabus-policies for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.