EMA 3011 Section **9765**

Fundamental Principles of Materials Science

Spring 2018 Syllabus

1. Catalogue Description: The fundamental principles of structure, reactivity and energies describing materials systems will be covered, directly relating individual principles to specific materials properties or functions. (3 credit hours)
2. Course Objectives: In this course, the student is introduced to the way in which the fundamentals of organic materials and the physical laws of quantum mechanics influence materials properties and reactions. Specific objectives include:
   - Become familiar with the fundamentals of organic chemistry and be able to apply them to the chemical and physical properties and processing of polymer materials
   - Learn the laws of quantum mechanics and understand the way in which they influence materials properties
3. Prerequisite: CHM 2046 or CHM 2096
4. Contribution of course to meeting the professional component: This course provides 3 credits towards Engineering Sciences. It is required of all MSE students.
5. Relationship of course to program outcomes: No student outcomes listed in Criterion are specifically addressed by the course.
6. Instructors:
   a. Prof. Scott Perry
   b. Office: Rhines 206
   c. Phn: 846-3333
   d. E-Mail: ssp@ufl.edu
   e. Course website: https://lss.at.ufl.edu/; CANVAS; (login with student id)
   f. Office Hours: TBD.
7. Teaching Asst.: Dylan Anstine
   Office Hour: TBD
   Contact: via CANVAS
8. Meeting Time: T: Period 2, 8:30-9:20 am; Th: Period 2,3 8:30-9:20 and 9:35-10:25
9. Class schedule: 50 minute lectures, three times weekly; Location: CSE E222
10. Material and Supply Fee: N/A
11. Texts:
    1a. Title: ***Introduction to Organic Chemistry***
    1b. Author: **William Brown and Thomas Poon**
    1c. Edition: **Fifth Edition (John Wiley & Sons, Inc.)**
    1d. ISBN: **978-0-470-12923-4**

    2a. Title: ***Elements of Physical Chemistry***
    2b. Author: **Peter Atkins and Julio de Paula**
    2c. Edition: **Sixth Edition (Freeman)**
    2d. ISBN: **9781429287326**

12. Important Dates

February 1	Exam 1	
March 5-9	No Class	Spring Break
March 15	Exam 2	
April 19	Exam 3	

Below is the tentative schedule of topics, activities, reading assignments, and exams.

Week of	**Topic**	**Reading Assignments**
Jan. 8	Introduction, Covalent Bonding	B&P Ch. 1
Jan. 15	Alkanes, Cycloalkanes	B&P 3.1-3.5
Jan. 22	Chirality, Alkenes & Alkynes	B&P 3.6, 3.7, 3.9, 6.1-6.5
		B&P 4.1-4.3
Jan. 30	Exam Review	
EXAM 1	**Thurs. Feb. 1**	
Feb. 5	Reactions of Alkenes	B&P 5.3-5.6
Feb. 12	Reactions of Alkenes (cont.), Alkyne Reactions	B&P 5.7-5.8
Feb. 19	Haloalkanes	B&P 7.1-7.9
Feb. 26	Alcohols & Ethers, Benzene & its Derivatives	B&P 8.1-8.6, 9.1-9.8
Mar. 5	*Spring Break*	
Mar. 13	Exam Review	
EXAM 2	**Thurs. March 15**	
Mar. 19	Introduction to Quantum Mechanics	A & de P Ch. 12.1-12.6
Mar. 26	Applications of Quantum Mechanics, Quantum Dots	A & de P Ch. 12.7, Supp.
Apr. 2	Rotational Motion, Hydrogenic Atom	A & de P Ch. 12.8, Ch. 13
Apr. 9	Hydrogenic Atom, Quantum Numbers	A & de P Ch. 13
		A & de P Ch. 13
Apr. 17	Exam Review	
EXAM 3	**Thurs. April 19**	

13. Attendance and Expectations:
    - Lecture attendance is recommended. While attendance is not mandatory, experience has shown that those who attend lectures earn higher grades in the course; arrival on time is expected.
    - Please turn off all cell phones upon entering class.
14. Grading:
    - The class grading system will be based upon three exams (25% each) and your quiz average (25%)
    - Exams will be administered on the dates listed above and administered during class.
    - Quizzes will be administered each Thursday. The top 8 of the 11 available quiz scores will be used to calculate the average.
    - Students have two weeks after results are posted to resolve questions about scores. No changes after that.
15. Grading Scale: Final grades will be assigned according to the following scale:

Percentage	≥ 92	≥ 88	≥ 84	≥ 80	≥ 76	≥ 72	≥ 68	≥ 65	≥ 62	≥59	≥ 56	<56
Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E

16. Make-up Exam Policy
    Make-up exams will be provided only with the ***prior approval of the instructor or excused absence.*** In general, acceptable reasons for excused absence include illness, serious family emergencies, special curricular requirements, military obligation, court-imposed legal obligations, religious holidays and participation in official university activities such as music performances, athletic competition or debate.
17. Honesty Policy – All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others.

18. Accommodation for Students with Disabilities – Students Requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.
19. UF Counseling Services –Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:
20. UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, psychological and psychiatric services.
21. Career Resource Center, Reitz Union, 392-1601, career and job search services.
22. Software Use – All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.