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|---|-----------------|--|
| <b>CHEM 3242, 5242 Physical Chemistry II</b>  |                 | <b>Spring Semester, 2012</b>   |
| Instructor: <u>Dr. R. S. Strange</u><br>973-443-8786 (machine on duty)<br>e-mail: strange@fdu.edu | <b>Syllabus</b> | Office: S-26 (Science Bldg, 2nd floor)<br>www: <a href="http://alpha.fdu.edu/~strange/">http://alpha.fdu.edu/~strange/</a><br>facs: 973-443-8795 |

text: Physical Chemistry, 9th Edition, by Atkins & de Paula (Freeman; 2010). [The publisher has provided a link - <http://www.whfreeman.com/pchem9e/> - to several physical chemistry web sites related to material in the Atkins text:

classes meet: Mondays and Thursdays, 2:10-3:35 PM, Room S-11

| #    | date                            | chapter | lecture topic                             | 9th Edit. readings |
|------|---------------------------------|---------|---|--------------------|
| 1    | Mon Jan 23                      | 7       | principles of quantum mechanics           | 7.1-7.2            |
| 2    | Thu Jan 26                      | 7       | "   | 7.3-7.6            |
| 3    | Mon Jan 30                      | 8       | Part-in-box                               | 8.1                |
| 4    | Thu Feb 02                      | 8       | "   | 8.1                |
| 5    | Mon Feb 6                       | 8       | 2-D Part-in-box                           | 8.2                |
| 6    | Thu Feb 9                       | 8       | harmonic oscillator                       | 8.4, 8.5           |
| 7    | Mon Feb 13                      | 8       | part-on-a-ring, sphere                    | 8.6, 8.7           |
| 8    | Thu Feb 16                      | 9       | H-atom; orbitals; term symbols            | 9.1-9.4            |
| 9    | Mon Feb 20                      | 10      | molecular structure; VB and MO; diatomics | 10.1-10.5          |
| 10   | Thu Feb 23                      | 10      | Huckel method                             | 10.6               |
| 11   | Mon Feb 27                      | 10,11   | finish Huckel; symmetry ops               | 10.6, 11.1         |
| 12   | Thu Mar 01                      | --      | <u>Test 1</u>                             | Chapters 7 - 9     |
| 13   | Mon Mar 05                      | 11      | symmetry                                  | 11.1               |
| 14   | Thu Mar 08                      | 11      | point groups                              | 11.2               |
| ---- | March 12-17                     | ----    | Spring Break                              | ----               |
| 15   | Mon Mar 19                      | 11, 12  | finish symmetry; spectroscopy (rot)       | 12.9-12.11         |
| 16   | Thu Mar 22                      | 12      | spectroscopy (rot)                        | 12.12,12.14        |
| 17   | Mon Mar 26                      | 12      | spectroscopy (vibr, and vibr-rot)         | 12.1-12.3          |
| 18   | Thu Mar 29                      | 13      | spectroscopy (elec.)                      | 13.1-13.6          |
| 19   | Mon Apr 02                      | ----    | <u>Test 2</u> (Move to Apr 9)             | Chapters 10 - 13   |
| 20   | Thu Apr 05                      | 21      | basic kinetics                            | 21.1-21.3          |
| 21   | Mon Apr 09                      | 21      | isolation method, initial rates           | 21.4a              |
| 22   | Thu Apr 12                      | 21      | integrated rate eqns                      | 21.5               |
| 23   | Mon Apr 16                      | 21      | "   | 21.6-21.8          |
| 24   | Thu Apr 19                      | 22      | dynamics                                  | 21.1               |
| 25   | Mon Apr 23                      | 22      | "   | 22.4               |
| 26   | Thu Apr 26                      | 23      | Catalysis                                 | 23.2               |
| 27   | Mon Apr 30                      | ----    | Test 3                                    | Chapters 21 - 23   |
| 28   | Thu May 03                      | open    | review                                    | ----               |
| ---- | Mon, May 7-11<br>3:00 - 5:00 PM | ----    | Final Exam                                | cumulative         |

|                                       |            |                       |
|---------------------------------------|------------|-----------------------|
| CHEM 3242, 5242 Physical Chemistry II |            | Spring Semester, 2012 |
|                                       | Prospectus |                       |

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Problem assignments in Atkins will be made from time to time. These should be completed along with chapter readings in order to prepare for the tests and final exam. They will not be collected for grading.

An electronic calculator which has 1/x, log, 10<sup>x</sup>, SQRT and scientific notation (at least these five features) will be needed for tests and homework.

An FDU Webmail account, which provides access to FDU WebCampus, is also required. Students can register for a Webmail account on-line; use the link at the RSS website (see Quick Links).

Grading and tests: [NOTE different grading schemes for undergrad (CHEM3242) and for grad (CHEM 5242)! ]

|                                  |     |                        |                                  |     |                        |
|----------------------------------|-----|------------------------|----------------------------------|-----|------------------------|
| (undergrad) CHEM3242 attendance  | 5   | required (sign-in)     | (grad) CHEM5242 attendance       | 10  |                        |
| (undergrad) CHEM3242 quiz        | 15  | 9 or 10, weekly        | -----                            | --- | -----                  |
| CHEM 3242 three tests @ 20,20,20 | 60  | see Syllabus for dates | CHEM 5242 three tests @ 20,20,25 | 65  | see Syllabus for dates |
| CHEM 3242 final exam             | 20  | cumulative             | CHEM 5242 final exam             | 25  | cumulative             |
| total                            | 100 | -----                  | total                            | 100 | -----                  |

Test and final exam scores will be graded separately and scaled - "curved" - to approximately the same mean and standard deviation in order to obtain the overall grade. No make-up tests will be given.