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Fall 9-2004

### RES 118T.01: Integrated Science

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**THE UNIVERSITY OF MONTANA-MISSOULA  
COLLEGE OF TECHNOLOGY  
APPLIED ARTS AND SCIENCES  
COURSE SYLLABUS**

**COURSE NUMBER AND TITLE:** RES 118T, Integrated Science

**DATE REVISED:** Fall 2004

**CONTACT HOURS PER SEMESTER:** 45

Lecture hours per week: 3

Lab hours per week: 0

Clinical/Internship hours per week: 0

**PREREQUISITE:** None.

**FACULTY:**

Bob Wafstet

[Robert.Wafstet@umontana.edu](mailto:Robert.Wafstet@umontana.edu)

243-7821 (Office)

Office: Health and Business Building

Office Hours: To be announced.

**COURSE DESCRIPTION:**

An introduction to microbiology, chemistry and physics for those desiring an applied approach to these sciences. Fundamental principles are applied to pathology, anatomy, physiology, pathophysiology.

## STUDENT PERFORMANCE OUTCOMES:

### Upon completion of the course the student will be able to:

1. Relate the following principles to aspects of human physiology:
  - a. atomic structure and electron configuration
  - b. molarity and normality
2. Discuss the functional chemistry of living cells.
3. Explain the basic principles of organic chemistry.
4. Discuss biochemical structure and roles of:
  - a. carbohydrates
  - b. proteins
  - c. lipids
  - d. nucleic acids
5. Classify microbes.
6. Describe various staining techniques and growth requirements.
7. Discuss and list the three regions of a prototype bacterium.
8. Discuss the normal flora and host-parasite relationships.
9. Describe characteristics of fungi, viruses, rickettsia and protozoa.
10. Have a basic understanding of problem solving techniques with use of scientific notation and the metric system.
11. Convert from one measurement system to another.
12. Understand various physical laws, principles, and theories associates with:
  - a. pressure
  - b. kinetic theory of matter

## METHODS OF INSTRUCTION:

Lecture, demonstrations, reading, and group discussion.

## STUDENT ASSESSMENT METHODS AND GRADING PROCEDURES:

5 Unit Exams	=	50%
Homework	=	25%
Mid-unit exams (pop quizzes)	=	25%

## GRADING SCALE: \*\*

A = 90 – 100
B = 80 – 89
C = 70 – 79
D = 60 – 69
F = < 60

\*\* Respiratory Care students need a grade of “B” in this course in order to meet prerequisite requirements for second semester Respiratory Care Program classes.

**ATTENDANCE:**

This course offers exposure to the material from a theoretical approach, as well as its clinical application. Therefore, regular attendance is required to successfully complete this course. The test schedule will be handed out on the first day of class. Pop quizzes will be given randomly throughout the semester. Failure to be present for the quizzes will result in a zero being recorded and used in computing your average. No points will be added for attending class. Attendance is a strong indicator of an individual's commitment to the health care profession; absences may result in not passing this course.

**OTHER POLICIES:****CELL PHONES/PAGERS:**

Due to an increasing number of students who own and use cell phones and pagers, it has become necessary to institute a policy regarding these tools during class times. However, some students require them for business which allows them to further their education. Please follow these guidelines:

- A. If the cell phone/pager is not business or emergency related, please turn it off.
- B. Use the vibrating option on your pager.
- C. Do not listen to the message in class. Leave class quietly.
- D. **CELL PHONES AND PAGERS MUST BE TURNED OFF DURING EXAM AND CLASS PRESENTATIONS.**

**SEATING:**

Many classrooms have chairs to accommodate persons with disabilities. These chairs will display the international disability symbol and are assigned to a particular student. Please refrain from using these chairs or making adjustments to them unless the chair is assigned to you. If you think you may have the need for a special chair, please contact Disability Student Services. Thank you for your cooperation.

**TEST/QUIZ MAKEUP:**

Make-up exams and lab experiences will only be given under extreme circumstances and then only if:

- A. Permission is granted *in advance*:
  - 1. By the course instructor, or;
  - 2. A written excuse is provided by a medical doctor.

The burden of proof is on the student, so you must document and prove a justifiable absence. Not following this procedure prior to the exam will automatically result in a zero score being recorded. Missed tests need to be made up within one week of the original date given. You are responsible for contacting the Academic Support Center to schedule the make-up. Failure to do so will result in a **ZERO** grade for the missed test.

The faculty senate guidelines concerning the issuance of incomplete grades will be followed. Attention to critical dates such as P/NP, drop, etc. is the responsibility of the

student. Students wishing to drop the class after the drop deadline will need a documented justifiable reason for doing so. Dropping the class for fear of bad grade or to protect a GPA are *not* justifiable reasons. The principles embodied in the **Student Handbook Code** will be adhered to in this course.

- B. Pop quizzes (mid-unit quizzes) will be given randomly throughout the semester. Failure to be present for the quizzes will result in a zero being recorded and used in computing your average.
- C. It is the expectation that homework will be turned in when due. If you are not present, it is your responsibility to see that it is in my mailbox by 4:00 p.m. on the due date or a zero will be recorded and used in computing your average.

### **REQUIRED TEXTS:**

Respiratory Care Sciences: An Integrated Approach, 3<sup>rd</sup> ed., Wojciechowski. Delmar Publishers.  
Essentials of Human Anatomy and Physiology, 7<sup>th</sup> ed., Mareib, Benjamin, Cummings Publishers, 2003

**THEORY:** Lecture 3 hours a week (45 per semester)  
Tuesday and Thursday, 10:10 – 11:30.

### **COURSE OUTLINE:**

- I. Chemistry
  - A. Atomic Structure and Electron Configuration
  - B. Molarity and Normality
  - C. The Functional Chemistry of the Living Cell
  - D. Basic Principles of Organic Chemistry
  - E. Carbohydrates
  - F. Proteins
  - G. Lipids
  - H. Nucleic Acids
- II. Microbiology
  - A. Classification of Microbes
  - B. Bacterial Morphology and Staining Characteristics
  - C. Bacterial Ultra Structure
  - D. Bacterial Growth Requirements
  - E. Bacterial Growth and Cell Division
  - F. Control of Microorganism Growth
  - G. Normal Flora and Host-Parasite Relationships
  - H. Fungi
  - I. Viruses
  - J. Infection Control
- III. Physics
  - A. The Metric System
  - B. Scientific Notation
  - C. Kinetic Theory of Matter
  - D. Pressure

**WEEKLY PLAN:**

Refer to course syllabus. Class schedule is subject to change as necessary but revolves around the test schedule.

**EXAM SCHEDULE\***

<u>UNIT</u>	<u>DAY</u>	<u>DATE</u>
Unit I	Tuesday	September 21
Unit II	Thursday	October 14
Unit III	Tuesday	November 16
Unit IV	Tuesday	December 14 (1010-1200)

\* Exam schedule subject to changes as necessary.

**STUDENT LEARNING ACTIVITIES:**

1. Read assigned material prior to attending class.
2. Attend class and take notes.
3. Do worksheets/exercises in text and student packet.
4. View film strips and videos as offered.
5. Take and review unit test.

**INSTRUCTOR EXPECTATIONS:**

Because the course has a great deal of new material, it is very important to study consistently. Some suggestions for better study are:

1. Read the unit objectives at the beginning of each chapter – find out what you are expected to learn.
2. Read the material before class – will help you understand the lecture.
3. Look up definitions to words you do not understand.
4. Attend every class and take notes – but do not try to write down everything. Concentrate on concepts.
5. Review your notes as soon after class as possible – make sure you can read them!
6. Study notes/material and compare with objectives.
7. Write workbook answers in *your own words*. This makes the material “yours.”
8. Study no more than one hour before taking a short break.
9. Relate information to prior learning/examples to develop a “picture” in your mind.
10. Ask instructor for clarification as needed – during or after lecture.
11. Study regularly in a quiet place; set study hours and keep them.
12. Plan something for fun and relaxation – stress management.
13. See your instructor when you think you need help. Your instructor wants you to succeed and will have some ideas which should help.
14. Review for unit exams is made easier by frequent review of chapter content reviews.
15. Be in class and don’t miss pop quizzes (mid-unit quizzes).