ENVIRONMENTAL TOXICOLOGY

Dr. Mohammed Farooqui
Associate Dean and Professor of Biology
College of Sciences
University of Texas Rio Grande Valley
Edinburg, Texas 78539
Phone 956-665-3543
Email mohammed.farooqui@utrgv.edu
Syllabus
Biology 4316 / 5316.01

- Instructor: Dr. Mohammed Farooqui
- Office: MAGC 2.316 D
- Phone: 665-2404 / 3543
- Office Hours: 9:30 – 10:30 AM Mon-Fri
- email: mohammed.farooqui@utrgv.edu
- Textbooks: Suggested – Not Required
  Casarett and Doull’s Toxicology
  The Basic Science of Poisons
Welcome

• Welcome to a senior and graduate level course in toxicology

• In this course we shall analyze
  • General principles of toxicology and
  • Physiological and systemic interactions of environmental pollutants with the living systems
Learning Tools and Course Objectives

- The book is our chief source and we will use the book as a foundation for various assignments and additional studies.

- Other learning tools include:
  - Student’s informed discussions
  - Presentations in class, tests, library work
  - Reprints of recently published articles and
  - Instructor’s and guest lectures
Learning Tools and Course Objectives

- Learning involves effort
- A key to learning is active and informed participation in class
- The purpose is not memorization but understanding
- Punctuality and attendance are mandatory
- Any student who is absent unexcused for 4 consecutive lectures will be dropped from the class
- The subject will be clarified and amplified in the class
- There won’t be enough time to discuss all of the material for which you are responsible
- Make sure you clarify concepts before exams
Instructions and Assignments

- Read the course agenda and assignments carefully
- Plan your activities and budget your time.
- **Expect more handouts and additional work**
- Broad purpose of assignments is to foster your own professional development
- Work independently
- Prepare your work as a reflection of yourself
- No late acceptances and no make-ups
Instructions and Assignments

- Important grading criteria include
- Proper application of concepts
  - Sound reasoning and logical justification
  - Practical imagination
  - Correct presentation
- Contribute in discussions without dominating
- Supplement learning by regular visits to library and surfing the webs
- Bring and discuss any subject in toxicology and discuss in the class
- Visit my office for any questions and concerns
Student – Instructor Interaction

- One of the best tools of learning process is effective in-class and out-of-the-class interaction between the student and the instructor.
- This is your course. My major interest is to make this course useful to you. I welcome questions, suggestions and discussions.
- Ask questions and clarify concepts before it is too late (i.e. before exams).
- Do not miss classes and do attend review sessions.
- No electronics are allowed: Laptops, pagers, cellular phones, cameras, tape recorders and ipods are not allowed unless specifically requested for a valid reason.
Grades and Evaluation
Biology 4316.01

- Lecture (multiple choice and/or essay questions)
  - Exam 1 20 %
  - Exam 2 20 %
  - Library Project 20 %
  - Final Exam (Semi-comprehensive) 40 %

- Grading system
  - Your final grade will be determined by matching your final grade with the following scale: 90 and above = A, 80-89 = B, 70-79 = C, 60-69 = D and below 60 = F
Grades and Evaluation
Biology 5316.01

- Lecture (multiple choice and/or essay questions)
  - Exam 1 15%
  - Exam 2 15%
  - Library Project 15%
  - Grant Proposal 15%
  - Final Exam (Semi-comprehensive) 40%

- Grading system
  - Your final grade will be determined by matching your final grade with the following scale: 90 and above = A, 80-89 = B, 70-79 = C, 60-69 = D and below 60 = F
## Calendar of Activities
### University Calendar

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 16</td>
<td>MLK Holiday and Day of Service</td>
</tr>
<tr>
<td>Jan 30</td>
<td>Last day to add a class for spring 2017 semester</td>
</tr>
<tr>
<td>Mar 13 – 18</td>
<td>Spring Break, <strong>no classes</strong></td>
</tr>
<tr>
<td>Apr 13</td>
<td>Last day to drop (DR grade) a class or withdraw (grade of W)</td>
</tr>
<tr>
<td>Apr 14 – 15</td>
<td>Easter holiday, <strong>no classes</strong></td>
</tr>
<tr>
<td>May 3</td>
<td>Last day of classes for full semester</td>
</tr>
<tr>
<td>May 4</td>
<td>Study Day, <strong>no classes</strong></td>
</tr>
<tr>
<td>May 5 - 11</td>
<td>Final Exams (<a href="#">Schedule</a>)</td>
</tr>
</tbody>
</table>
Calendar of Activities
Tentative Class Schedule

Week 1  The Cell,
Week 2  Principles of Toxicology
Week 3  Absorption, Distribution and Excretion of Toxicants
Week 4  Biotransformation of Toxicants
Week 5  Toxicokinetics

**EXAM I, Wednesday February 22nd**

Week 6  Chemical Carcinogenesis – Genetics / Developmental Toxicology
Week 7  Toxic Responses of Liver and Kidney
Week 8  Toxic responses of Respiratory and Nervous Systems
Week 9  Spring Break
Calendar of Activities
Tentative Class Schedule

Week 10  Toxic Effects of Pesticides
Week 11  Toxic Effects of Solvents and Vapors
  **EXAM II, Wednesday March 29th**
Week 12  Toxic Effects of Radiation and Radioactive Materials
Week 13  Ecotoxicology / Toxic Effects of Air Pollution
         Food Toxicology and Toxicology of Household Products
Week 14  Student Presentations
Week 15  Student Presentations
Week 16  Student Presentations
Week 17  **Semi-comprehensive Final Exam at 10:15 AM – 12:00 PM, Monday May 8th**
Other Course Information
Make up work

- You must make arrangements, in advance, for any exam for which you know you will not be present.

- If, in my judgment, the reason for such absence is genuine, I may allow you to take an essay type exam PRIOR TO scheduled exam. However, I must point out to you that equivalent exams are difficult to make.

- An exam missed for unexpected cause may be made up, at my discretion, provided
  - the reason is sound and
  - you notify me or the office staff (665-2404) at least the morning of the exam (limit ONE exam).
Other Course Information

Dropping the Course

- If you find yourself doing very poorly after the first exam you may choose to drop the course, get additional help to improve and/or pursue other interests.

- Last day to drop or withdraw from the University with a grade of “DR” or “W” recorded is **April 13, 2017**. After this date student remains enrolled in course and receives whatever letter grade he/she earns. Please browse utrgv.edu/registration for more detail.

- Dropping the course is not automatic, it requires your initiation using proper forms.
UTRGV Policy Statements
Students with Disabilities

If you have a documented disability (physical, psychological, learning, or other disability which affects your academic performance) and would like to receive academic accommodations, please inform your instructor and contact Student Accessibility Services to schedule an appointment to initiate services.

It is recommended that you schedule an appointment with Student Accessibility Services before classes start. However, accommodations can be provided at any time.

**Brownsville Campus**: Student Accessibility Services is located in Cortez Hall Room 129 and can be contacted by phone at (956) 882-7374 (Voice) or via email at accessibility@utrgv.edu

**Edinburg Campus**: Student Accessibility Services is located in 108 University Center and can be contacted by phone at (956) 665-7005 (Voice), (956) 665-3840 (Fax), or via email at accessibility@utrgv.edu
Students are required to complete an ONLINE evaluation of this course, accessed through your UTRGV account (http://my.utrgv.edu); you will be contacted through email with further instructions.

Online evaluations will be available April 17 – May 3, 2017. Students who complete their evaluations will have priority access to their grades.

Attendance:

- Students are expected to attend all scheduled classes and may be dropped from the course for excessive absences.
- UTRGV’s attendance policy excuses students from attending class if they are participating in officially sponsored university activities, such as athletics; for observance of religious holy days; or for military service.
- Students should contact the instructor in advance of the excused absence and arrange to make up missed work or examinations.
As members of a community dedicated to Honesty, Integrity and Respect, students are reminded that those who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and expulsion from the University.

Scholastic dishonesty includes but is not limited to: cheating, plagiarism, and collusion; submission for credit of any work or materials that are attributable in whole or in part to another person; taking an examination for another person; any act designed to give unfair advantage to a student; or the attempt to commit such acts.

Since scholastic dishonesty harms the individual, all students and the integrity of the University, policies on scholastic dishonesty will be strictly enforced (Board of Regents Rules and Regulations and UTRGV Academic Integrity Guidelines).

All scholastic dishonesty incidents will be reported to the Dean of Students.
In accordance with UT System regulations, your instructor is a “responsible employee” for reporting purposes under Title IX regulations and so must report any instance, occurring during a student’s time in college, of sexual assault, stalking, dating violence, domestic violence, or sexual harassment about which she/he becomes aware during this course through writing, discussion, or personal disclosure.

More information can be found at www.utrgv.edu/equity, including confidential resources available on campus.

The faculty and staff of UTRGV actively strive to provide a learning, working, and living environment that promotes personal integrity, civility, and mutual respect in an environment free from sexual misconduct and discrimination.
According to UTRGV policy, students may drop any class without penalty earning a grade of DR until the official drop date.

Following that date, students must be assigned a letter grade and can no longer drop the class.

Students considering dropping the class should be aware of the “3-peat rule” and the “6-drop” rule so they can recognize how dropped classes may affect their academic success.

The 6-drop rule refers to Texas law that dictates that undergraduate students may not drop more than six courses during their undergraduate career.

Courses dropped at other Texas public higher education institutions will count toward the six-course drop limit.

The 3-peat rule refers to additional fees charged to students who take the same class for the third time.
Student Learning Outcomes

- The student knows the role of the cell in life and living systems, and understands the inter-relationships between sub-cellular structures that contribute to its functioning as a unit.

- The student is aware of the diversity of life, and understands inter-relationships among organs and organ systems within an organism, and inter-relationships between an organism and its environment.

- The student understands how the organization of a specific structure within an organism is related to a specific function, and how this function contributes to survival of the organism.

- The student is prepared to accept employment in a variety of environmental and health related professions, enter medical and dental schools, pursue graduate degrees in the biological sciences, or teach in public or private schools.

- The student understands the Scientific Methods, is able to analyze and interpret data, and communicate research findings in both oral and written form.
Library Projects

Make groups of 4-5 students each and select a project leader

Prepare a short proposal of a project you wish to work on

Submit a descriptive and precise title, a brief list of sections of presentation, name of project leader and other participants by Feb 8th

Submit an electronic copy of your presentation by March 8th

During last 3 weeks of semester you will present your projects during the class time.
**Library Projects**

For your library projects you will be graded by me (80%) and your fellow classmates (20%)

Grading will be at two levels- Group Level and Individual Level

Grading criteria includes time management, flow of information, coordination between group participants, presenting not reading, question and answer session

*Library Project will be used as 20 % of your lecture grade and counts as your EXAM II*
Examples of Previous Library Projects

- Effects of barbiturates on central nervous system
- Carcinogenic effects of DES on human male reproductive system
- The effect of foreign compounds on cytochrome P-450
- Biotransformation of acrylonitrile in mammals
- Neurotoxicity of food contaminants and its treatment
- The Love Canal chemical disaster
- Comparative potential antitumor effects of plant alkaloids
- Fetal toxicity of caffeine
- Effect of polychlorinated biphenyls on the environment
- Embryotoxicity of thalidomide
Examples of Previous Library Projects

- Effects of formaldehyde on the respiratory system
- DES and its effects on offspring’s female genital tract
- The composition, uses and dangers of compounds 1080 (NaF)
- Toxicity of vitamin A
- Neurotoxicity of acetaldehyde
- Toxicity of arsenic compound
- Vertebrate susceptibility to marine algal toxin *Gymnodenium breve*
- Comparative toxicities and treatment of nitriles
- Toxicity of Environmental Estrogens
- LSD, Lysergic Acid Diethylamide: Toxicity characteristics