**Fall 2017**

# BIOTECHNOLOGY- SCIENCE, IMPACT, PERCEPTION, ETHICS

**SPSS3230**

**Instructor:** Dr. Huanzhong Wang
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**Secretary:** Mrs. Christine Strand, Room 122S, W. B. Young, Tel. 486-3436

**Text: optional**

1) Biotechnology: An Introduction by Susan R. Barnum
Wadsworth Publishing Co. ISBN -534-23436-4
2) Biotechnology from A to Z by William Bains
Oxford University Press. ISBN 0199636931
3) Molecular Biotechnology: Principles and Applications of Recombinant DNA by B. R. Glick and J. J. Pasternak
ASM, 2nd edition ISBN: 1555811361

**Lecture:** Tuesday and Thursday, 3:30 - 4:45 PM
ABL329

**Office Hours**: By appointment.

**Grading:**

| | | |
|---|---|---|
| Regular students: | Two Exams | 30 % each |
| | Final Exam | 35 % |
| Honor students: | Two Exams | 25 % each |
| | Final Exam | 35 % |
| | Term paper | 10% |

Participation will count for 5% of the final grade. Students will be allowed to miss 3 days of participation without penalty, and no make-ups will be provided. Honor students are required to write a 5-page paper on a topic of interest with approval from Dr. Wang. The paper must be type written. The paper is due on December 10th, 2017. To have an opportunity for a review and revision, the first submission must be handed in before November 19, 2017. (Note: stricter standards apply to grading of exams for Honors and Graduate Students.)

**Course Objectives:**

The overall goal of this course is to prepare the students of all backgrounds to understand the basic scientific principles, methodologies, and applications used in modern biotechnology. This course will also encourage discussions related to the impact and public perception of biotechnology and consider ethical and otherwise controversial issues related to biotechnology.

**POLICIES:**

- Cell phones, mp3 players and other electronics are to be turned off and put away during class. Use of these devices is distracting to others. Laptops will be allowed during lecture for note-taking only.
- Late assignments will be docked by 10% (one letter grade) for each day late and will not be accepted after 7 days (zero points). Prior consent of the instructor is required for all extensions.
- If anyone has needs requiring special assistance, please see the instructor so arrangements can be made. For more information please find at the website http://www.csd.uconn.edu/.
- Academic misconduct will not be permitted in any form and is a violation of the University of Connecticut Student Code. Academic misconduct includes, but is not limited to, copying or sharing answers on exams, quizzes or assignments; plagiarism; and having someone else do your work for you. Cheating and plagiarism policy see Appendix A Code of Conduct http://www.community.uconn.edu/student_code_appendixa.html.
- Final grading scale is the following:

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|---|---|
| ≥92% | A |
| 89-91.9 | A- |
| 86-88.9 | B+ |
| 82-86.9 | B |
| 79-81.9 | B- |
| 76-78.9 | C+ |
| 72-75.9 | C |
| 69-71.9 | C- |
| 66-68.9 | D+ |
| 62-65.9 | D |
| 59-61.9 | D- |
| ≤59 | F |

**SCHEDULE:**

Note: Information in the course syllabus may be subject to change with advance notice.

| Date | Instructor | Lecture Focus |
|---|---|---|
| **INTRODUCTION** | | |
| 8/29 | Wang | Course overview |
| 8/31 | Wang | What is biotechnology?<br>ancient, classical, modern biotechnology |
| 9/05 | Wang | Biotechnology timeline |
| 9/07 | Wang | Prokaryotes vs. Eukaryotes-Cell Biology |
| 9/12 | Wang | Gene Expression |
| 9/14 | Wang | Basic Molecular Methodologies / Macromolecules |
| **MICROBIAL BIOTECH** | | |
| 9/19 | Wang | Microbial Biotechnology |
| 9/21 | Wang | Microbial Biotechnology |
| 9/26 | Wang<br>Distribute | Microbial Biotechnology<br>TAKE-HOME Exam # 1 |
| **PLANT BIOTECH --- FOODS, FUELS AND BIOMATERIALS** | | |
| 9/28 | Wang | Plant Biotechnology |
| 10/03 | Wang | Plant Biotechnology |
| 10/05 | Wang | A story about Agrivida |
| 10/10 | Berkowitz | Biotech and a cannabis industry? |
| **HEALTH: VACCINE, ANIMAL BIOTECH, NUTRITIONAL SCIENCE AND STEM CELLS** | | |
| 10/12 | Paulo Verardi | Biotech for a Zika Vaccine |
| 10/17 | Kristen Govoni | Animal Biotechnology |
| 10/19 | Ji-Young Lee | Nutritional research and Biotech |
| 10/24 | Mary Anne Amalaradjou | Probiotics, health and bioprocessing |
| 10/26 | Laijun Lai | Stem Cell Research and biotech |
| 10/31 | Dennis D'amico | Dairy Food and Microbiology |

**GENOMICS/DIAGNOSTICS, COMPUTATIONAL BIOLOGY AND BIOINFORMATICS,**

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|---|---|---|
| 11/02 | Jill Wegrzyn | Computational Genomics/Application |
| 11/07 | Field trip | Visit Center for Genome Innovation |
| 11/09 | Anamani | Human Genome/Molecular Diagnostics |
| 11/14 | Yi Ma<br>Distribute | Bio-informatics applications<br>TAKE-HOME Exam # 2 |

**ETHICS, TECHNOLOGY COMMERCIALIZATION, AND REGULATORY MATTERS**

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|---|---|---|
| 11/16 | Maria Gyure | Ethic Issues on hESC and beyond |
| 11/21 | NO LECTURE | THANKSGIVING BREAK |
| 11/23 | NO LECTURE | THANKSGIVING BREAK |
| 11/28 | Greg Gallo | Patent issues in Biotechnology |
| 11/30 | Gerry Berkowitz | Public Perception and GMO Concerns |
| 12/05 | Vaibhav Saini | Technology Commercialization |
| 12/07 | Wang | Careers in Biotechnology |
| 12/11-17 | | FINAL EXAM |