Course Description: Fundamentals of cancer biology. Examines the scientific causes of cancer. Additional analysis includes studying the emotional, financial, social and psychological effects on patients, family and caregivers in "real-world" applications. This course is intended for the non-biology major and meets the University Studies Curriculum Cluster 2B requirements.

Learning Outcomes

Course-Specific Learning Outcomes: After completing the course, students will be able to:

1. Understand and use specialized vocabulary specific to cancer biology.
2. Explain basic biological concepts relevant to cancer biology.
3. Apply those biological concepts to understand observations of the natural world.
4. Discuss the societal relevance of cancer.

University Studies Learning Outcomes: Cluster 2B Science in the Engaged Community. After completing the course, students will be able to:

1. Analyze and evaluate the use of scientific information in the context of social, economic, environmental or political issues.
2. Apply scientific theories and knowledge to real-world problems.
3. Effectively communicate scientific information in writing


Course Schedule (subject to change): Please see the myCourses site for all week and assignment due dates

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Reading Assignment</th>
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<tbody>
<tr>
<td>1</td>
<td>Course Introduction</td>
<td>Syllabus</td>
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<tr>
<td></td>
<td>What is Cancer?</td>
<td>Chapter 1</td>
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<td>Profile of a Cancer Cell</td>
<td>Chapter 2</td>
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<td>(pp 17-22, 36-41)</td>
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<td>2</td>
<td>How Cancers Spread</td>
<td>Chapter 3</td>
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<td>Watch Video: Cancer Warrior</td>
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<td>Causes of Cancer</td>
<td>Chapter 4</td>
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<td>Chemicals and Cancer</td>
<td>Chapter 5</td>
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</tbody>
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Project #1: Poster Session (due date on MyCourses site)
| 3 | Radiation and Cancer | Chapter 6 |
|   |                       | Chapter 2 (pp 30-36) |
|   |                       | Chapter 10 (pp 186-190) |
|   | Infectious Agents     | Chapter 7 |
| 4 | Oncogenes             | Chapter 9 |
|   | **Watch Video:** Ghost in Your Genes | Chapter 10 |
|   | Tumor Suppressor Genes | Chapter 2 (pp 22-30) |
|   | **Watch Video:** HHMI Cancer Series: Bert Vogelstein Lecture 1: Introduction and Genes (Parts 1 and 2) |
| 5 | Cancer Screening, Diagnosis, Treatment | Chapter 11 |
|   | Preventing Cancer     | Chapter 12 |
|   | **Watch Video** HHMI Cancer Series: Bert Vogelstein Lecture 2: Treatment (Parts 1 and 2) |

**Final Project # 2 Due:** Last Day of classes (due date on myCourses site)

**Quiz Information:**
Quiz 1 Chapters 1, 2
Quiz 2 Chapters 3, 4 and Video: Cancer Warrior
Quiz 3 Chapters 5, 6, 2 (pp.30-36), 10 (pp186-190)
Quiz 4 Chapters 7, 9 and Video: Ghost in Our Genes
Quiz 5 Chapters 10 and 2 (pp 22-30) and Video: HHMI Cancer Series, Bert Vogelstein Lecture 1: Introduction and Genes (parts 1 and 2)
Quiz 6 Chapters 11, 12 and Video: HHMI Cancer Series, Bert Vogelstein Lecture 2 Treatment (parts 1 and 2)

The BIO 108-7101 myCourses site contains lecture PowerPoint slides, pre-recorded lectures, quizzes, and links to view videos and to submit projects. If you have any questions, please e-mail me at cladino@umassd.edu.

**Grading:**
The Registrar’s Office will mail final grades to students. You may check your final grades by accessing COIN. Grades will not be mailed, e-mailed or phoned-in to students.
Posting of final grades is prohibited by university and departmental policy.

(2) Projects @ 25 points each ............50 points (50%)
Quizzes ........................................ 50 points (50%)
100 points (100%)
Quizzes:

The quizzes are designed to assess Student Learning Outcomes #1 and #2 and University Studies Outcomes #1 and #2. All quizzes are taken on the MyCourses site. Students have until the last day of class at 11:59 pm EST (please see the MyCourses site for date of last class) to take all of the quizzes. You have only 1 attempt to take each quiz. Each quiz consists of 10 multiple choice questions on information from the textbook chapters, the assigned videos(s) and lectures. You have 15 minutes to take each quiz. The lowest quiz grade will be dropped. Students are not allowed to use books, computers, cell phones, lecture notes or fellow students when taking the quiz. This constitutes cheating. You must have a secure Internet connection before starting the quizzes. Retakes on quizzes are not permitted. The quizzes cannot be saved and then resumed at a later time.

Projects: all projects must be submitted on the MyCourses site.

The projects are designed to assess Student Learning Outcomes #1-4 and University Studies Outcomes #1-3. The last page of this syllabus provides information concerning the projects. All submitted assignments must be of the highest quality: specific and detailed.

Project #1: Late assignments will be subject to a late fee of 5 pts/day, including weekends.

Project #2: No late submissions will be accepted

Grading Scale:


Course Withdrawal:

There is no penalty for withdrawal, other than a “W” on your transcript, as long as it is done by the last date for student-generated withdrawal. A “W” will not affect your GPA (grade point average) but it may affect your SPI (student progress index) which may have consequences on your financial eligibility or academic standing. Verbal withdrawals cannot be accepted. If you choose to withdraw, please fill out the necessary withdrawal form by the appropriate deadline. Students who do not officially withdraw from the course, but instead simple stop attending class will receive a letter grade for the course.

Incomplete Grades: Work Incomplete may be given only in exceptional circumstances at the instructor’s discretion and at the student’s request made no more than 48 hours after the final examination or last class. The student must be passing at the time of the request or must be sufficiently close to passing for the instructor to believe that upon completion of the work the student will pass the course. If the work is not completed within a year of the recording of the grade of I, the grade will become an F (I). “I” grades cannot be changed to “W”.

Academic Difficulty:

Students experiencing academic difficulty should notify me as quickly as possible for assistance. Please do not procrastinate.
UMD offers students free tutoring in a variety of disciplines at the Academic Resource Center. The centers include the Writing and Reading Center, the Science and Engineering Center, and the Center for Access and Success (Pine Dale Hall, Room 7136).

Writing and Reading Center: x8710 in Group I-220 (Liberal Arts)
Math and Business Center: x8716 in Group I- 010 (Liberal Arts)
Science and Engineering Center: x8718 in Group II- 217B (SENG 217B)

**Academic Negligence:**

We maintain a zero-tolerance policy towards academic negligence in any form. Academic negligence is demonstrated by **failure to do assigned work, academic dishonesty.** Any faculty member may, at any time, recommend in writing to the Dean of Academic Affairs that a student guilty of academic negligence be dropped from a course with a grade of “W” or “F”. As stated in the Academic Ethical Standards section of UMD student Handbook, academic dishonesty may result in expulsion from the University.

A responsible, courteous and mature attitude is expected and required of all students at all times. Students are required to abide by the Code of Conduct as stated in the college catalog. Any attempt to create an intimidating, hostile or offensive situation or subject a person to unwanted and unsolicited attention will not be permitted.

**ADA Compliance:**

UMD strives to comply with the provisions of Title III of the Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973 in accordance with university policy, if you have a demonstrated disability and require accommodations to obtain equal access in this course. Please e-mail me.

**Requirements for Completion of the Course:**

All reading assignments are mandatory
Each student must be current with all assigned readings
Students must take and achieve at least a minimum passing average on projects
Students are bound by the details and provisions and rules/regulations of the official UMD catalog
Students must be free of academic negligence
Students must be officially registered for this course by the Registrar
Students are bound to the official UMD academic calendar
**Project Descriptions and Grading Rubrics:**

**Project #1: Late assignments will be subject to a late fee of 5 pts/day, including weekends.**

**Project #2: No late submissions will be accepted**

**Project #1: Cancer Poster – Type of Cancer (due date on MyCourses site)**

This writing-intensive project evaluates cancer in the context of social issues (risk factors, lifetime risks, causes, effective treatments) and applies it to the real-world problem of cancer. This project satisfies University Studies Cluster 2 B outcomes #1, #2 and #3 and Student Learning Outcomes #1-4. A template for this poster is given on the course MyCourses site. Poster can be made using the template on the MyCourses site (extra slides can be added if you need more space) and should be submitted using a new thread under link Week 1 “Introduction”. Please label your project “Project #1”.

Your poster should contain the following:

- **Name and Title (cover page slide)**

- **Descriptive Information (describe in detail):**
  - **Type of cancer:** describe the function of organ/tissue in detail
  - **Lifetime risk:** Provide statistics on gender, geographical location, age, etc.
  - **Risk factors:** List and describe in specific detail how each risk factor may cause cancer
  - **Hereditary component:** statistics of mutated genes (what percentage of mutated genes are inherited), which specific genes (provide the names of the genes) can be inherited
  - **Genes mutated:** describe which specific genes are mutated, name the genes, describe the gene’s normal function, what type of mutation in cancer and how the mutation specifically affected that gene’s function
  - **Treatment:** Describe each type of treatment, what are the treatment protocols, what are the specific names of each treatment, what are the name of the treatment drugs and how does each treatment specifically work, how does each drug affect cancer cells
  - **Social Relevance and Social Issues:** social relevance (why is this important, negatively, in society, what is the negative impact), social issues/problems (think in the U.S. and globally, what can be done for public awareness, public outreach, possible vaccine awareness etc.)
  - **Stages:** describe what happens at each cancer stage in detail (use TNM /grading system) with pictures, if possible
  - **Pathology** (with pictures, compare normal and cancer cells/tissues)
  - **Causes (epidemiology)**

**Reference Page Slide:** at least 5 peer-reviewed scientific references, you do not need to provide references on each slide (in-text citations), only provide them on the reference cited page.

**Reference Format: APA Format**  Be sure to give the names of all authors
Assessment:
This is a one-page assessment of your favorite poster (after reviewing class posters during the post session). This assignment will include an analysis of this poster and a detailed explanation of what was learned from this poster. The assessment is due by the last day of class. Submit your assessment under Week 1 Introduction link on the MyCourses site. Label it “Assessment”.

Grading:
Name and Title  2 pts
Design  3 pts
Content  10 pts
References  5 pts
Assessment  5 pts
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Total  25 pts
Project #2 Final Project: Due the last day of class (see myCourses site for due date)

The goal of Project II is to showcase what students have learned in this course and satisfies Student learning Outcomes #1-4 and University Studies Outcomes #1-3.

The topic (must be a topic learned in class and concern cancer biology) and mode of presentation for this project are chosen by the students. This provides flexibility and freedom to create in-depth, interesting, and creative projects. Some examples of projects include: power point presentations, research papers, patient interviews, models, pamphlets, art projects, and videos.

Videos, art projects, interviews and model projects require the submission of a two-page essay which explains the project. Research papers should be at least 10 pages in length and power point presentations should include at least 10 informative slides (excluding cover page, table of contents page, outline page, and reference page). All projects require at least 5 scientific references.

Each mode of presentation requires the student to effectively communicate information in writing. **The topic cannot be on a type of cancer.** Examples of topics include: radiation therapy, chemotherapy, p53, DNA repair genes, apoptosis, angiogenesis, c-myc, oncogenes, UV radiation.

Please submit this project under Introduction Week 1 link on the MyCourses site and label it “Project 2 or Final Project”. The project topic must be approved by the instructor via e-mail before project submission.

A. The topic and mode of presentation is your choice (topic must concern something discussed in class) but must be reviewed by me and cannot be on a type of cancer. All projects must include at least 5 scientific references. All written projects should be at least 10 double-spaced pages in length. Power point projects include submission of detailed slides. If you are submitting a model or an art project, you should also include a two-page detailed report explaining your project, including at least 5 references.

B. Grading: This project is worth 25 pts. For posters it will graded as seen for Project #1 (for posters/no assessment needed) and for all other projects as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
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</thead>
<tbody>
<tr>
<td>Writing Quality (includes PowerPoint slides design)</td>
<td>10</td>
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<tr>
<td>Content</td>
<td>10</td>
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<tr>
<td>References</td>
<td>5</td>
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<td>25 points</td>
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C. References: Please use APA Format