# AT A GLANCE COURSE SUMMARY

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Reading Assignments for the week and Due dates for Projects and 3 questions</th>
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<tr>
<td><strong>Topic 1: Introduction to Cancer Epidemiology</strong></td>
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<tr>
<td>1</td>
<td>01/8</td>
<td>1) Course Logistics/Introductions</td>
<td>Text, Chapter 1, Accomplishments in Cancer Epidemiology</td>
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<tr>
<td>2</td>
<td>01/15</td>
<td>1) Discussion of Accomplishments in Cancer Epidemiology_Text Chapter 1</td>
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<td>(Discussion led by students of assigned Sections)</td>
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<td>2) Burden of Cancer: Descriptive Epidemiology-Text Chapter 2</td>
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<td>3) Discussion of Siegel paper (Discussion led by students of assigned specific Tables and Figures from Siegel)</td>
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<tr>
<td>3</td>
<td>01/22</td>
<td>1) Cancer Surveillance – SEER Registry</td>
<td>SEER/Globocan map/graph</td>
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<td></td>
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<td>2) Cancer Surveillance</td>
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<td>3) Cancer Site Presentations</td>
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<td>4</td>
<td>01/29</td>
<td>1) Principles of Cancer Statistics &amp; in-class practice of sample age standardization</td>
<td>3 questions submission&lt;br&gt;<strong>Finalize</strong> the Research Question and submit into Dropbox&lt;br&gt;Papers posted on D2L&lt;br&gt;Basic_concepts_rate_calculation_avon.nhs Standardization - A Classic Epidemiological Method for Comparison of Rates</td>
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<td><strong>Topic 2: Cancer Biology</strong></td>
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<td>5</td>
<td>02/5</td>
<td>1) Carcinogenesis- Dr. James Trosko</td>
<td>3 questions submission&lt;br&gt;Text Chapter 3 _The Origin of Cancer&lt;br&gt;Dr. Trosko will provide readings that will be posted on D2L</td>
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<td>2) Classification of Cancer</td>
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<td>6</td>
<td>02/12</td>
<td>1) Carcinogenesis Cont –Dr. James Trosko</td>
<td>3 questions submission&lt;br&gt;Text_Chapter 16_Breast Cancer&lt;br&gt;Additional Readings will be posted on D2L</td>
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<td>2) Breast Cancer _ Dorothy Pathak</td>
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<td>7</td>
<td>02/19</td>
<td>1) Issues in Cancer Epidemiology (if Breast Cancer not finished we will finish it during this week)</td>
<td>3 questions submission&lt;br&gt;Text Chapter 6-Concepts in Cancer Epidemiology and Etiology&lt;br&gt;Additional papers on Methodology in Cancer Epidemiology will be posted on D2L&lt;br&gt;<strong>DUE:</strong> Abstract &amp; list of Key Papers for Final Topic</td>
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<td>2) Discussion of analytic papers for Methodology. Also review of topics we did not finish-like Siegel paper, Standardization, etc. that will be on the Exam</td>
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<td>Week</td>
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<td>8</td>
<td>02/26</td>
<td>1) MIDTERM</td>
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<td><strong>03/04-3/9 SPRING BREAK</strong></td>
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<td>9</td>
<td>03/12</td>
<td>Obesity and Colon Cancer – Dr. Jenifer Fenton</td>
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<td>10</td>
<td>03/19</td>
<td>Biomarkers in Cancer Epidemiology - Dr. Brad Upham</td>
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<td>11</td>
<td>03/26</td>
<td>Genetic Epidemiology of Cancer - Part I and II Dr. Ana Vazquez and Dorothy Pathak</td>
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<tr>
<td>12</td>
<td>04/02</td>
<td>1) Screening – 2) Review of Exam</td>
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<td></td>
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<td>3 questions submission. Text Chapter 4_Genetic Epidemiology of Cancer Additional readings will be posted when I receive them from Dr. Vazquez</td>
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<td>Draft of complete literature review and final presentation for review by DP and feedback</td>
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<tr>
<td>13</td>
<td>04/09</td>
<td>Student In-Class Final Presentation Discussion of Specific Cancer Site</td>
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<tr>
<td>14</td>
<td>04/16</td>
<td>Student In-Class Final Presentation Discussion of Specific Cancer site</td>
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<tr>
<td>15</td>
<td>04/23</td>
<td>Student In-Class Final Presentations Discussion of Specific Cancer Site</td>
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<td>Complete Final Packet DUE - For each presentation students will be required to submit 3 key concepts that they learned from that presentation</td>
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<tr>
<td>16</td>
<td>04/29</td>
<td>Exam 2-Weeks 9-13</td>
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**Instructor**
Dorothy Pathak, PhD
A641 West Fee Hall
Ph: 8847610
pathak@msu.edu
Office Hours: After class or by appt.
Prerequisites
EPI 810 “Introduction to Descriptive and Analytic Epidemiology”, EPI808 and 809 “Biostatistics” and LCS 829 “Design of Epidemiologic Studies and Clinical Trials”, or equivalent with approval of instructor.

Intended for
Graduate students in epidemiology, nutrition, kinesiology, as well as medical professionals interested in learning the fundamentals of cancer epidemiology and control.

Course Description
This is a three-credit intermediate-level graduate course. The course will focus on cancer surveillance and biology as they impact on the design and interpretation of studies in cancer epidemiology, the understanding of major risk factors for cancer, as well as screening and public health approaches to cancer control. Research methods in cancer epidemiology will be examined, including issues related to the formulation of study hypotheses, and study design, analysis and interpretation. Some of the mechanics of cancer epidemiology, such as the selection of appropriate biomarkers, will also be explored. Students will further develop their ability to critically read and evaluate published cancer epidemiology literature and gain up-to-date knowledge of important issues in the field. The course will be in both a lecture and class discussion format. Students will also give oral presentations summarizing a literature review in an area of particular interest in cancer epidemiology.

Course Format
Each two-hour and 50 minute class (two 1 hour and 20 min sessions) will generally be comprised of a lecture (during the 1st session), 10 min break, and during the 2nd session either continuation of the presentation, discussion of readings or individual/group presentations from students.

Important Note
The instructor may make changes to the syllabus, course schedule, readings, assignments and due dates, as necessary, depending on class progress, and with notice, within Faculty/University regulations.

Course Objectives
To develop an understanding of:
- The burden of cancer (descriptive epidemiology)
- Measures of cancer burden (statistics specific to cancer surveillance)
- Carcinogenesis and the molecular genetics of cancer
- Major risk factors for cancer and the epidemiology of site-specific cancers
- Strategies for cancer prevention and control
- Important current issues in cancer epidemiology
- How to communicate cancer research findings and their implications
Required And Recommended Readings


Additional Readings on D2L

Each lecture will require background readings available either in the course text or on D2L. Students are responsible for readings each of the assigned readings prior to each class.

For most weeks, additional “suggested readings” will also be available on D2L. Students will be assigned to help lead class discussion of a given week’s readings.

Other Useful Resources

www.cancer.org (American Cancer Society)  
www.iarc.fr (International Agency for Research on Cancer)


Email Policy
Please begin the subject line with: EPI823. If you do not receive a response within 2 business days, please feel free to email me again (sometimes emails are misplaced given the volume).

Attendance
Attendance is mandatory for the full class time. Any absences or need to leave a class early must be requested and approved prior to class time. Strict attendance to full class time attendance is required. If you do have to miss a class you are responsible for obtaining all materials, class notes, etc.
**Course Requirements and Grading**

1. Class participation and 3 question submissions ........................................... 10%
2. Other assignments and lead class discussion ............................................. 15%
3. Exam 1 - Midterm - Material from first 7 weeks of the course ..................... 25%
4. Seminar presentation ................................................................................. 25%
   (1) Identification of topic/Abstract, key analytic epidemiology studies
   (2) Present Topic at Class Workshop
   (3) Review of literature and bibliography
   (4) Outline of presentation and key paper
   (5) In-class presentation
5. Exam 2 – Final – Material from second part of the course – Weeks 9-13 .......... 25%

**ASSIGNMENTS**

**Weekly 3 questions/important take away messages based on the readings (with answers or no answers if student needs additional information for this question), to be turned in by Monday evening of each week (lately by 8PM, so it can be collated by the instructor and uploaded to D2L for discussion during class).**

One-Two Page Reading Highlights (for self). The one-two page summaries are intended to encourage the practice of writing article highlights to improve memory retention. For weeks where peer-reviewed articles from the literature are assigned, one-page literature reviews of reading(s) (see attached APPENDIX A: Sample Literature Review Format), should be used in addition to highlights of the other readings assigned for that week. These 1-2 page summaries will not be graded. The 3 questions will be graded as check if turned in, or ‘missing’. SEER Graph and GLOBOCAN map (to be graded) as a write up.

SEER and GLOBOCAN: Create a brief few slides power point presentation (5-10 minutes) stating 2 research questions about one cancer site. Provide a recent graph from the SEER website [www.seer.cancer.gov](http://www.seer.cancer.gov), as well as a map from the GLOBOCAN website. Turn-in a statement of research questions you chose for this brief presentation and a print out of each graph/map accompanied by a typed paragraph summarizing the findings. This topic and SEER and GLOBOCAN graphs are not to be confused with your choice of the topic for Final Project Presentation - although it could be the same)

**Project Presentation**

**Objective:** Select a topic in cancer epidemiology that particularly interests you, collect and read the relevant literature, and present the project to the class. **This is a team effort.** Usually two students work together. Sometimes students prefer to do their own topic. That will be acceptable upon review by the instructor.

**Topic Selection:**
- Select an aspect of cancer epidemiology with implications for public health.
- The literature should provide no less than ten analytic epidemiologic studies to review. (Many topics have hundreds. Some areas that are very interesting do not lend themselves to this assignment, either because there is inadequate or an overabundance of epidemiologic literature.)
- All topics require advance approval by the instructor obtained through Abstract approval.

1. **Identification of topic/Abstract, key analytic epidemiology studies and presentation of topic at ‘student presentation of proposed topic’ workshops – draft and final**

In a summary paragraph state the nature of the problem or hypothesis that you plan to address and list up to 10 key analytic epidemiologic studies that address this hypothesis. The final version of this ‘Abstract’ (less than 300 word counts) and ‘Bibliography’ should be turned in with your final submission of your literature review (see below). Drafts need to be turned in as specified in the Syllabus.

**Present Topic at Class Workshop – preliminary and final**

**Preliminary workshop:** You will present your topic idea or ‘Introduction’ for 5-10 mins. to the class followed by brief class discussion (**hand out your Abstract and list of 3-4 key analytic studies**).

**Final presentation:** (see (4) below).

Between preliminary workshop and final presentation, hand out your **revised Abstract, one sample lit. review summary** (see (2) below), and **turn-in your bibliography of key papers** (the Due dates for the revised abstract and one sample lit. review summary are indicated in the course-at-a-glance).

2. **Review of literature and bibliography – draft and final**

In a table format summarize each of the studies that contributed to your review of the literature – first in draft form for review and feedback and then in final form (see attached **APPENDIX B: Sample Literature Review Table**). The table should group the studies by study design (animal, ecologic, case-control, cohort, experimental, etc.) and include at least the following for each study: author and date, study population and years conducted, sample size, exposure of interest and how it was measured, outcome of interest and how it was ascertained, confounders, main study results, and comments. A complete bibliography organized by study design should also be submitted.

3. **Outline of presentation (or PPT presentation) and key paper – draft and final**

A one to two page outline of your final presentation or of the handouts from your powerpoint presentation should first be handed-in in draft form for review and feedback. It is recommended that a draft of the power point presentation be turned in for feedback. Based on previous interactions, this helps to improve the quality of information that will be shared with class.

**Outline of the presentation (example will be provided):**

(i) Discuss the relevance of the topic. Why is it important and interesting?

(ii) Briefly review background information. This should include:

• General epidemiology of the condition -- its incidence and distribution
• A review of known risk factors
• Biologic mechanisms to support an association between the exposure and disease of interest

(iii) Identify and illustrate the major methodological issues (exposure assessment, timing of exposure assessment relative to disease onset, etc.) or problems related to this literature (biases, etc.).

(iv) Critically review study results, emphasizing methodology, and summarize results in a table format.
(v) Reach a conclusion. (Do you think there is a relationship between x and y? What are the implications for public health practice and policy? What additional research is needed?)

4. **In-class final presentation**
   - Understand the study methodology. Do not simply state the results of a paper, but describe the strengths and weaknesses of the study; tell us whether you believe the findings and why.
   - Identify the important methodologic issues for that topic (e.g. what are the important potential confounders, were they controlled for, were the exposure assessment methods adequate, what potential biases were present and did the authors address them?) Review the literature in the context of these important methodological issues.
   - Do not read prepared notes. Instead, use an outline and brief notes so that you can make eye contact with and interact with your audience. It will be essential to practice prior to presentation in class. A common problem is running out of time; **you must practice to identify areas that must be shortened or eliminated in order to cover the key points.**
   - Decide in advance the most important points you want to emphasize and build the seminar around them.
   - At the end of the presentation, come to a conclusion. Do you think the claimed relationship really exists? What other data would you like to see? What are the implications?
   - Use office hour time to get advance feedback from the instructor.

**Time:** Generally, you will have **30 minutes** for your presentation and **10 minutes** for class discussion and questions. **Depending on the number of students in class this might need to be adjusted and will be discussed at the start of the course.**

**FINAL Packet to hand-in should include:**
   1. Final Abstract (<300 word count)
   2. Final presentation outline
   3. Final table summarizing literature review
   4. Complete bibliography
   5. PowerPoint presentation (handouts of 3 slides per page for other students)
   6. Copy of key paper on your topic

**Grading Policy**

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>% Range</th>
<th>MSU grade</th>
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<tbody>
<tr>
<td>A</td>
<td>90-100</td>
<td>4.0</td>
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<td>B+</td>
<td>83-89.9</td>
<td>3.5</td>
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<td>B-</td>
<td>75-82.9</td>
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<td>C</td>
<td>65-74.9</td>
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<td>C-</td>
<td>55-64.9</td>
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<td>D</td>
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<tr>
<td>F</td>
<td>0-44.9</td>
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Requests for re-marking of assignments or exams will a) only be considered in exceptional circumstances; b) must be accompanied by a clearly articulated justification for why the mark should be higher; and c) must include the original marked assignment (if returned to you). **Note:** Re-marking does not guarantee a higher grade.
ACADEMIC HONESTY
Academic honesty is essential for maintaining a high standard of academic excellence and integrity. There are many different forms of academic dishonesty. These include plagiarism, such as inadequately recognizing the source of short phrases or ideas or an author in written work submitted for a grade, cheating on exams (e.g. during the exam, looking at someone else’s exam or using electronic communication), submitting another’s work as one’s own, among others.

The Department of Epidemiology adheres to the policies on academic honesty as specified in General Student Regulations 1.0, Protection of Scholarship and Grades, and in the University Policy on Integrity of Scholarship and Grades, which are included in the Spartan Life: 1998 Student and Handbook and Resource Guide, and on the MSU Web site.

PLAGIARISM
Plagiarism is defined as the presenting of another person’s work or ideas as one’s own. You are expected to do your own work on all assignments. Students who plagiarize will receive a 0.0 grade on the assignment or test and may fail the entire course.

STUDENTS WITH SPECIAL NEEDS
MSU recognizes and affirms the rights of students with disabilities who are academically qualified to have full, fair and equal access to all University services, programs and facilities. Students seeking academic accommodation for a disability should contact the MSU Resource Center for Students with Disabilities and contact me early in the semester to discuss accommodations that he/she may require.
APPENDIX A: Sample Literature Review Format

1) **Study design:** What is the study design?

2) **Time frame:** What is the time frame?

3) **Exposure/Risk Factor:** What is the primary exposure(s) of interest and how specifically is(are) it(they) defined? How well is the exposure assessed?

4) **Outcome/Disease:** What is the primary outcome of interest and how specifically is it defined?

5) **Sample Size:** What is the overall sample size? Is there adequate sample size for all analyses presented?

6) **Population:** Where is the study being conducted? From what population were cases and controls selected?

7) **Response rate/Loss to follow-up:** Do the authors clearly describe the response rate and loss to follow-up (if relevant)?

8) **Confounding/Effect Modification:** What potentially confounding variables/effect modifiers were included in analyses? Why do you think each variable was included? Are these all that should be studied, based on what you know or are there others you think should have been examined?

9) **Results:** Do you agree with the authors’ interpretation of results?

10) **Conclusions:** What are the authors’ conclusions and do they seem warranted based on reported results?

11) **Other comments:** Are there other issues you can identify as particularly relevant to the interpretation of study results? Other potential biases? If this is a case-control study: What potential biases might there be in obtaining exposure information from these cases and controls? If this is a cohort study: are results generalizable? Are there loss-to-follow-up biases that may affect exposed and unexposed participants differentially? Other analyses you would recommend? Other concerns regarding the authors’ interpretation of results?
APPENDIX B: Sample Literature Review Table

Organized by Study Design: Animal, Ecologic, Case-Control, Cohort, etc.

<table>
<thead>
<tr>
<th>Study (Author/Date)</th>
<th>Population/Sample Size</th>
<th>Exposure/Risk Factor</th>
<th>Outcome/Disease</th>
<th>Confounders</th>
<th>Results</th>
<th>Comments</th>
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