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IB 534: Evolution and Medicine Fall 2022

Course Description

Our health is inseparably tied to our evolutionary history. As a result, evolution is an important underpinning discipline for health professionals. This course first provides and overview of evolutionary processes, molecular evolution, human evolution, life history theory, and evolutionary-developmental biology. Second, it illustrates the application of these principles to our understanding of nutrition and metabolism, reproduction, disease and stress, and behavior. Third, it shows in practical terms how the principles of evolutionary medicine can be applied in medical practice and public health.

Student Learning Objectives

Upon completing this course, students will be able to:

- Understand how our evolutionary history has impacted human health.
- Explain evolutionary principles as they apply to human health.
- Apply these principles to our understanding of nutrition, metabolism, reproduction, disease and stress and behavior.
- Show in practical terms how evolutionary medicine can be applied to medical practice and human health.

Course Structure

This is a **4–credit hour** course. The course is **8 weeks** long and consists of 8 content modules. Please be aware that this course is accelerated in nature; 16 weeks' worth of content will be covered in a 8-week time span. You should dedicate approximately **14-24 hours** per week (at least 6-8 hours per week learning the advanced topics of this course (through video lectures and readings), and at least 8-16 additional hours per week on homework assignments and class projects) to working on the course itself, but actual time commitments will vary depending on your input, needs, and personal study habits. You are required to log on to the course website a minimum of **4 days per week** but as discussions develop, you will probably need to do so more frequently.

This course is designed with the principles of collaborative learning, constructivism, and active participation in mind. You are encouraged to share your thoughts and engage in problem-solving. The course has a consistent and predictable structure, organized around the weekly modules, with a course website that is straightforward and easy to navigate.

Instructions and due dates for activities and assignments are clearly articulated so that you know what is expected of you and will be able to easily stay on track.

We realize that you have a life beyond the scope of this course. However, if you are unable to complete an assignment because of professional obligations, you should notify the instructor or, better yet, prepare the assignment ahead of time and post it early. This will give your classmates a head start in reading and responding to your work. Most assignments are due by 11:55 PM of their respective due dates as listed on the course calendar, giving you and your classmates time to read and comment on each other's work before the next module begins.

Readings and responses to discussion questions should be read and submitted during the module for which they are assigned in order to get the most benefit from the discussions. At the end of each content module, participants will have an opportunity to make sure that they have completed all the required activities and assignments.

Instructor

Joanne Manaster

University of Illinois at Urbana-Champaign

Contact Information

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Textbooks

Our Textbook: Principles of Evolutionary Medicine by Gluckman, Beedle, Buklijas, Low, and Hanson, 2nd edition.
The textbook can be purchased through the Illini Union Bookstore or elsewhere.

Articles and e-Reserves

Other reading materials and e-reserves will be listed in the weekly Module Overview pages within the course website.

Course Outline

Week 1: Evolutionary Theory and Molecular Basis of Human Variation

In this module, you will be introduced to the field of Evolution in Medicine and how it can be a very useful perspective for both those in the medical field and for evolutionary biologists. You will also be doing a review of evolutionary theory and the basis of human genetic variation.

Week 2: Evolution and Human Development

In this module, you will be learning about the concept of developmental plasticity and how the environment influences how an organism ultimately develops and the effects on future health.

Week 3: Evolution of Life Histories

In this module, you will be learning about the health trade-offs that come during the typical human life history, learning the flow from birth, childhood, adolescence through senescence.

Week 4: Human Evolution and the Origins of Human Diversity

In this module, you will be exploring the key elements in human evolution, how humans have adapted to different environments during their evolution and the genetic changes that make us human.

Week 5: Reproduction and Evolution

In this module, you will be exploring various aspects related to reproduction including mate choice, why females menstruate, sex ratio determination in a population, the difficulties of childbirth, maternal-fetal interactions and menopause.

Week 6: Nutritional and Metabolic Adaptation

In this module, you will learn how an organism's ability to adapt to food availability is a major point where natural selection can act. You will also examine how obesity and other metabolic disorders result from a mismatch between our bodies and the modern diet.

Week 7: Defenses and Social Organization and Behavior

In this module, you will be looking at the roles that stress as well as infectious and autoimmune diseases play in the overall health of an individual and how these are evolutionarily linked. Virulence, antibiotic resistance, vaccinations, asthma and allergies will all be examined.

Additionally, you will look at how human social structure has changed and how this is the underpinning of the subfield of evolutionary psychiatry. Altruism, personality disorders and psychoses all seem to be related to evolution of human interactions.

Week 8: Ultimate Mechanisms Affecting Disease Risk and Evolutionary Perspectives on Cancer

In this module, you will review the mechanisms that affect disease risk and learn how evolutionary principles can be applied to medical practice and will also take a look at how evolution may play a role in the development of cancer and the implications for prevention and therapy.

Course Activities

Grading Scale

Letter Grade	Percentage Range	Point Range
A+	97.00–100.00	795.4–820
A	92.00–96.99	754.4-795.3
A-	90.00–91.99	738-754.3
B+	87.00–89.99	714.4-737.95
B	82.00–86.99	672.4-713.3
B-	80.00–81.99	627.32-656
C+	77.00–79.99	631.4-655.9
C	72.00–76.99	590.4-631.3
C-	70.00–71.99	574-590.32
D+	67.00–69.99	573.9-549.4
D	62.00–66.99	508.4-549.32
D-	60.00–61.99	492-508.32
F	0–59.99	0–491.2

You are expected to complete your work independently, in accordance with University policy. Failure to do so will result in strict disciplinary action, including loss of all credit for the assignment, notification of a dean, and possible dismissal from the University. You may work with others on homework, but the final product must be your own.

Assignments, Weights, and Deliverables

You can access your scores by clicking the **Grades** link from the course home page.

All interim and final deliverables have due dates. Failure to meet deadlines results in a reduction of the assignment points. For the due dates of each assignment, please see the course calendar.

Point Distributions

Assignments	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8		Total points per assignment	Relative weight
Why Do Humans HAVE That? Presentation									150	150	18%
Discussions	25	25	25	25	25	25	25	25		200	25%
Self-Assessment Quizzes	10	10	10	10	10	10	10	10		80	10%
Wiki Project					140					140	17%
Final Project									250	250	30%
Total										820	100%

Module Overview Each module will begin with the module overview, explain what the module is about, what learning goals you are expected to achieve, how long the module will take, and in what activities you will participate. Each module is designed with the same structure and activities unless otherwise specified. The module activities are explained in greater detail below. You can find the due dates of specific assignments in the course calendar.

Synchronous Sessions Each week there will be an optional synchronous session in which all students will come together online at the same time to talk. These sessions will use *Zoom* to join all participants together in a session where you can text chat, voice chat, and see the computer desktop of the instructor. These sessions run from 7-8:30pm Central time weekly. Attendance is not mandatory, except during your Why do Humans Have That? presentation, but students attend to support their classmates when they present and to ask questions about the week's materials. The majority of students find this time valuable to help them connect to their classmates and the instructor.

Discussion Forums Each week, you will answer given discussion questions and reply to the answers of two other classmates. The purpose of this activity is for you to contemplate and articulate your thoughts on the content of this week's material and become more familiar with it.

Your Discussion assignments will be graded based on the following rubric.

	Points Possible	Insufficient	Proficient	Advanced
Development of Ideas	4	Poorly developed ideas; does not add to discussion. (0–1 points)	Partially developed ideas; sometimes stimulates discussion. (2–3 points)	Well-developed ideas, including introduction of new ideas; stimulates discussion. (4 points)
Evidence of Critical Thinking	3	No evidence of critical thinking; could be improved with application, analysis, synthesis, and evaluation of module content. Posting needs more analysis and creative thought, such as in-depth critique and application of assigned readings. Posting is attached to the right discussion board, but does not answer the questions. (0 points)	Some critical thinking is evident, but could be improved with more application, analysis, synthesis, and evaluation of module content. Posting tends to address peripheral issues. Could be improved with stronger analysis and more creative thought, such as in-depth critique and application of assigned readings. Some references to assigned readings are made, but overall, questions are addressed indirectly. (1 point)	Clear evidence of critical thinking—application, analysis, synthesis, and evaluation of module content. Posting is characterized by clarity of argument, depth of insight into theoretical issues, originality of treatment, and relevance to course content. Posting provides clear references to assigned readings and articulate responses to discussion questions, sometimes including unusual insights. (2–3 points)
Evidence of Scholarly Investigation	3	No evidence of scholarly investigation. (0 points)	Sometimes introduces relevant literature. Not all the references are cited, or	Locates and describes relevant literature as it applies to discussion

			references are cited, but not in an appropriate style. (1 point)	topics, cases, and problems addressed by group work and the class as a whole. All references are appropriately cited. (2–3 points)
Contribution to Group's Learning	10	Lack of contribution or participation in group or class discussions. Minimal or no interaction with other students. (0-5 points)	Sometimes provides useful ideas when participating in group and class discussions. A satisfactory group member who does what is required. Interacts with only one other student. (6-11 point)	Provides useful ideas when participating in group and class discussions. A definite leader who puts forth a lot of effort. Interacts with at least two other students. (12-15 points)
Mechanics	5	References are rarely cited. Numerous problems with mechanics exist, such as spelling and grammar errors, poor logical sequencing that causes confusion for readers, and/or poor layout, such as inconsistent font sizes, font colors, headings, and/or text alignment. (0-1 points)	References are cited, but not in an appropriate format; some references are not cited at all. Minimal problems exist with mechanics, such as spelling and grammar errors, poor logical sequencing that causes confusion for readers, and/or poor layout, such as inconsistent font sizes, font colors, headings, and/or text alignment. (2-3 point)	Appropriate citations are used. Standard English mechanics and grammar are used. Posting is presented in a logical format that is easy to follow. (4-5 points)

Total Possible Points: 25

Weekly Self-Assessments Weekly Self-Assessments are brief summative assessments in multiple choice and True/False format to double check your knowledge of the material presented in the readings and lectures. They are worth 10 points each. You should spend approximately **30 minutes** to finish this quiz. You will be given 2 30-minute attempts at the self-assessment.

Why Do Humans HAVE That? Presentation The human body can be quite perplexing. We have body parts of unknown use but if we examine them in depth, we can discover their origins. Through this exercise, we will become familiar with these oddities. You will explore why humans presumably either retain or have developed these structures from an evolutionary standpoint and their implications for human health. Each week, two to three students will deliver a 7–10-minute presentation of their chosen topic during the synchronous session. Ideally, you will discover where these structures first appeared in

phylogeny (i.e. which organism first displayed these structures). This activity fulfills the LAS requirement for verifying the identity of students for 20% of the course grade.

	Points Possible	Not Present	Needs Work	Satisfactory	Exceptional
Content and Knowledge of Subject Matter	60	Presentation illustrates that the student does not fully understand the concepts and the subject matter and is unable to answer pertinent questions when asked by instructor or classmates. (0–12 points)	Presentation illustrates a mastery of a few concepts and subject matter and student is able to field only a few pertinent questions on the subject. (15-24 points)	Presentation illustrates a mastery of some of the concepts and subject matter and student is able to field pertinent questions on the subject in most cases. (25-44 points)	Presentation illustrates a mastery of concepts and subject matter and student is able to field all pertinent questions on the subject correctly. (45-60 points)
Presentation Design and Organization	30	Presentation shows signs of being hastily put together. Content is not well organized and lacks in general continuity. (0–6 points)	Presentation shows signs of being hastily put together. Content shows some signs of organization but lacks continuity among main points. (7–12 points)	Presentation is organized well and follows a linear train of thought. Content is organized in fairly logical order. (13-21 points)	Presentation is well organized and presenter ties main points together, creating a continuous stream of pertinent information. (22-30 points)
Mechanics	30	Presentation has glaring grammatical errors. Citations are few if present at all. (0–6 points)	Presentation has more than one grammatical error. Citations are provided but there are some sources that are not attributed. (7-12 points)	Presentation has only one grammatical error. Some citations are provided but not all are properly used. (13-21 points)	Presentation devoid of grammatical errors. Citations are provided and properly used. (22-30 points)
Meets Required Time Limit	30	Does not meet the time limit at all. Presentation is short due to severe lack of content. (0–6 points)	Time limit is insufficient to round to 7 minutes. Presentation is short due to lack of content. (7-12 points)	Meets time limit just shy of the 7-minute mark using multimedia examples that introduced, explained, and summarized. (13-21 points)	Meets time limit of 7 to 10 minutes using pertinent multimedia examples that are introduced, explained, and summarized by the presenter. (22-30 points)

Total Possible Points: 150

Why Do Humans DO That? Individual Wiki

The goal of this Individual wiki is to explore evolutionary reasons for symptoms or traits humans have in detail and then write a summary of your findings. Later, in a separate individual reflection exercise you will review the summaries of other topics developed by your fellow students. Students create a wiki (an interactive term paper) that discusses human traits and functions from an evolutionary perspective. This project begins in Week 2 with the choice of topic, and in week 3 students create a Wiki in Google Docs, Weebly, etc. (unless you really want to use the Moodle Wiki), that summarizes key behaviors humans exhibit that might be explained by evolutionary principles. The text part of your summary should be 1000-1500 words in length (equivalent to a 4–5-page paper). Figures, tables, and references do not count towards the total word count. Students must list at least three (3) properly formatted references as sources of information. In **Week 4**, students will evaluate and provide feedback on the projects of their classmates, and in Week 5, a final corrected version is submitted for grading. The total for the entire project is 140 points.

Your wiki will be graded based on the following rubric.

	Points Possible	Insufficient	Progressing	Proficient	Advanced
Phase 1, Initial Version:Content	20	Content of initial wiki development is laden with errors and cites no sources or draws upon non-authoritative sources. (0–5 points)	Content of initial wiki development is largely inaccurate and draws upon non-authoritative sources. (6–10 points)	Content of initial wiki development is mostly accurate and usually draws upon authoritative sources. (11–15 points)	Content of initial wiki development is accurate and draws upon authoritative sources. (16–20 points)
Phase 1, Initial Version:Completeness	20	Content of initial wiki development omits many important topics, lacks completeness on covered topics, and lacks clarity, inhibiting others from learning the relevant and important details regarding this topic. (0–5 points)	Content of initial wiki development omits some important topics, is only partially complete on covered topics, and lacks clarity, inhibiting others from learning the relevant and important details regarding this topic. (6–10 points)	Content of initial wiki development covers most relevant topics with sufficient completeness and clarity that others can learn the most relevant and important details regarding this topic. (11–15 points)	Content of initial wiki development covers all relevant topics with sufficient completeness and clarity that others can learn all relevant and important details regarding this topic. (16–20 points)

Phase 2, Evaluation:Quality Feedback	20	No feedback is provided, or feedback is entirely superficial, e.g., “Good job” or “The wiki looked nice.” (0–5 points)	Minimal substantial feedback is provided, or feedback is only critical without providing any sense of how to improve; e.g., “The first section was really bad.” (6–10 points)	Feedback provided to peers is somewhat insightful and not superficial. A reasonable amount of constructive feedback is offered. (11–15 points)	Feedback provided to peers is insightful and not superficial. Additional resources for wiki authors to consider are offered, as are ample amounts of constructive feedback. (16–20 points)
Phase 3, Final Product:Improvement over Initial Development	10	No apparent changes are made between the initial development and final version of the wiki, even if the initial version was of good quality. (0–2 points)	Minimal changes are made to the wiki. Feedback from peers is largely ignored. (3–5 points)	Final revision to wiki reflects some incorporation of peer feedback and additional research done by the group. While initial development was good, final revision reflects substantial effort in improving the overall quality of the wiki. (6–7 points)	Final revision to wiki reflects significant incorporation of peer feedback and additional research done by the group. Good judgment is used in deciding what revisions to make. While initial development was good, final revision reflects substantial effort in improving the overall quality of the wiki. (8–10 points)
Overall:Content	20	Final wiki reflects author bias and a very limited understanding of the topic. Content of wiki causes confusion and is difficult to understand. (0–5 points)	Final wiki provides a somewhat balanced view, with some insight and understanding into the topic. Ideas are not clearly and concisely explained. (6–10 points)	Final wiki provides a balanced view, with good insight and understanding into the topic. Ideas are clearly explained in a logical progression with effective supporting evidence. (11–15 points)	Final wiki provides a balanced view, with comprehensive insight and understanding into the topic. Ideas are clearly and concisely explained in a logical progression with effective supporting evidence. (16–20 points)
Overall:Organization	10	Final wiki is devoid of any organization and is difficult to navigate. (0–2 points)	Final wiki uses inconsistent organization and is fairly difficult to navigate. (3–5 points)	Final wiki uses a consistent organization that groups relevant information and defines specialized vocabulary. (6–8 points)	Final wiki uses a consistent organization that groups relevant information and is intuitive. Specialized vocabulary is defined. (9–10 points)

Overall:Visual Appeal/Layout	5	Final wiki makes no use of headings, bullets, etc. Wiki is largely just blocks of text and is difficult to read. Fonts are not consistent. (0 points)	Final wiki uses some headings, but it otherwise rather plain in appearance. Fonts are not consistent. (1–2 points)	Final wiki makes use of headings and bullet points to enhance the content's visual appearance. Fonts are usually used consistently. (3–4 points)	Final wiki makes effective use of headings, bullet points, and white space to enhance the content's visual appearance. Fonts are used consistently throughout. (5 points)
Overall:External Sources	10	Final wiki cites no sources or draws upon non-authoritative sources. Sources, if present, are improperly cited. (0–2 points)	Final wiki is missing some citations. It draws upon non-authoritative or outdated sources. Sources are improperly cited. (3–5 points)	Final wiki draws mostly upon authoritative and up-to-date sources. Some well-known and authoritative sources are omitted. Sources are properly cited. (6–8 points)	Final wiki is accurate and draws upon authoritative and up-to-date sources. Sources are all properly cited. Wiki includes links to sources. (9–10 points)
Overall:Graphics and Multimedia	5	Final wiki lacks any graphics or multimedia. (0 points)	Final wiki incorporates a few slightly relevant graphics. Graphics are not attributed. (1–2 points)	Final wiki incorporates relevant graphics and multimedia which aid in the understanding of the content. Graphics include citations. (3–4 points)	Final wiki incorporates high-quality, relevant graphics and multimedia which aid in the understanding of the content. Acknowledges all image and multimedia sources with captions or annotations. (5 points)
Overall:Mechanics	5	Final wiki includes more than 10 errors in grammar, capitalization, punctuation, and spelling. (0 points)	Final wiki includes 5–10 errors in grammar, capitalization, punctuation, and spelling. (1–2 points)	Final wiki includes fewer than 5 errors in grammar, capitalization, punctuation, and spelling. Commonly accepted American English is used. (3–4 points)	Final wiki includes no errors in grammar, capitalization, punctuation, and spelling. Commonly accepted American English is used. (5 points)
Overall:Suitability for the Classroom or presentation to the general public	15	Final wiki would not be suitable for use in the secondary classroom. Wiki authors have	Final wiki might be suitable for use in the secondary classroom, but only with significant additional work.	Final wiki would be suitable for use in the secondary classroom with minor enhancements. Wiki	Final wiki would be suitable for use in the secondary classroom. Wiki authors have significantly considered their

		either not used relevant sources or have directly copied from such sources. Wiki presents minimal educational value. (0–4 points)	Wiki authors have adapted information from sources, but without taking the target audience into consideration. Wiki presents minimal educational value. (5–8 points)	authors have adapted information from sources to be understandable to target audience. Wiki presents educational value. (9–12 points)	target audience when adapting information from sources. Wiki presents superior educational value. (13–15 points)

Total for the project is 140 points

Final Project

The goal of the final project is to look deeply at diseases and disorders from an evolutionary perspective. The project requires that you use the information we have learned in the course, demonstrating your mastery of the material, to come up with your own theories (with supporting documentation) as to why our bodies sometimes fail us. The format will be a Powerpoint presentation (or similar, such as Prezi or a Google slideshow), with a slide and word limit.

Final Project Rubric

	0-6 points each category	**7-12 points each category**	**13-19 points each category**	**20-25 points each category**
Organization	Sequence of information is disorganized	Transitions between topics are hard to follow	Information in logical sequence which can be followed	Information in logical sequence that promotes understanding
Subject Knowledge	Little grasp of information	Limited grasp of information	Demonstrates understanding of subject matter.	Demonstrates full knowledge (more than required)
Evolutionary Hypothesis	No relation to evolutionary processes	An evolutionary hypothesis is presented, but not disease related	Evolutionary hypothesis and disease link attempted but not clearly defined	Evolutionary hypothesis and disease clearly defined in terms of cost and benefit, adaptation of function or phylogeny
Proximate vs.Ultimate	No distinction between proximate and ultimate made	Proximate and ultimate causation implied	Proximate and ultimate causation defined but unclear	Proximate and ultimate hypotheses explicitly defined and clearly stated
Evolutionary Hypothesis Category	Presentation does not mention categories of	A category of evolutionary hypotheses is stated but it is	Student correctly identifies an appropriate evolutionary	Student correctly identifies one or more evolutionary hypothesis

	evolutionary hypotheses	off=target or incomplete	hypothesis category	category and correctly explains how they are relevant
Alternative Hypotheses	A single hypothesis is presented	An alternative hypothesis is mentioned without explanation or elaboration	An alternative hypothesis is presented and explained.	Alternative hypotheses are presented and explained. Student should consider whether the main hypothesis is plausible and give alternatives; examples include the null hypothesis (hypothesis not true), another evolutionary hypothesis, or a nonadaptive hypothesis such as an epiphenomenon, or by-product)
Evolutionary Reasoning	No predictions made	Predictions unclear and unexplained	Predictions offered but no completely explained with evolutionary logic	Predictions explained with evolutionary logic. (Try to explain how natural selection or another evolutionary process would produce disease under your hypothesis; what would you expect to see if the hypothesis is true. How could you distinguish between the main hypothesis and alternatives.)
Significance	No mention of the implications of the hypothesis are made	Implications of hypothesis are implied only	The significance of the main hypothesis, if true, is mentioned	The significance, if true, of the main hypothesis to human health is explained
Research Efforts	No supporting references mentioned	Scant supporting references, presented in disorganized manner	Adequate literature search is evident in presentation	Thorough literature search is evident in presentation

Grammar, Spelling, Mechanics	Poor grammar and spelling make project difficult to understand	Grammar and spelling presents many errors	Grammar and spelling mostly correct with a few errors	Excellent, fluent and persuasive command of grammar and spelling

Final Project Total: 250 points

Schedule for Fall 2022

Week	Topic	Major Assignments Due
1 (Aug 22)	Week 1: Evolutionary Theory and Molecular Basis of Human Variation	• Orientation Activities • Week 1 Lessons and Readings • W1 Synchronous Session (Tu 7pm Central) • W1 Discussion (post, replies) • W1 Self-Assessment • Choose your topic and date to present: Why Do Humans HAVE That?
2 (Aug 29)	Week 2: Evolution and Human Development	• Week 2 Lessons and Readings • W2 Synchronous Session (Tu 7pm Central) • *Present Why Do Humans HAVE That? If it is your week* • W2 Discussion (post, replies) • W2 Self-Assessment • W2 Wiki Milestone: Why Do Humans DO That?
3 (Sep 5)	Week 3: Evolution of Life Histories	• Week 3 Lessons and Readings • W3 Synchronous Session (Tu 7pm Central) • *Present Why Do Humans HAVE That? If it is your week* • W3 Discussion (post, replies) • W3 Self-Assessment • W3 Wiki Milestone: Why Do Humans DO That?
4 (Sep 12)	Week 4: Human Evolution and the Origins of Human Diversity	• Week 4 Lessons and Readings • W4 Synchronous Session (Tu 7pm Central) • *Present Why Do Humans HAVE That? If it is your week* • W4 Discussion (post, replies) • W4 Self-Assessment • W4 Wiki Milestone: Why Do Humans DO That?
5 (Sep 19)	Week 5: Reproduction and Evolution	• Week 5 Lessons and Readings • W5 Synchronous Session (Tu 7pm Central) • *Present Why Do Humans HAVE That? If it is your week* • W5 Discussion (post, replies) • W5 Self-Assessment • W5 Wiki Milestone: Why Do Humans DO That? • Choose your Final Project topic
6 (Sep 27)	Week 6: Nutritional and Metabolic Adaptation	• Week 6 Lessons and Readings • W6 Synchronous Session (Tu 7pm Central) • *Present Why Do Humans HAVE That? If it is your week* • W6 Discussion (post, replies)

		• W6 Self-Assessment
7 (Oct 3)	Week 7: Defenses and Social Organization and Behavior	• Week 7 Lessons and Readings • W7 Synchronous Session (Tu 7pm Central) • *Present Why Do Humans HAVE That? If it is your week* • W7 Discussion (post, replies) • W7 Self-Assessment
8 (Oct 10)	Week 8: Ultimate Mechanisms Affecting Disease Risk and Evolutionary Perspectives on Cancer	• Week 8 Lessons and Readings • W8 Synchronous Session (Tu 7pm Central) • *Present Why Do Humans HAVE That? If it is your week* • W8 Discussion (post, replies) • W8 Self-Assessment • Final Project Upload

Textbook Readings

Our book: Principles of Evolutionary Medicine by Gluckman, Beedle, et al., 2nd edition.

Textbook readings are static. Other articles and resources are not listed because they could change at the last minute, so it is preferable to consult the list given in the weekly module list.

Module 1 Evolutionary Theory and Molecular Basis of Human Genetic Variation

- Principles of Evolutionary Medicine by Gluckman, Beedle, et al., 2nd edition. Chapter 1, Chapter 2, and Chapter 3. Also page 324-325, (section 13.12).

Module 2 Evolution and Development

- Principles of Evolutionary Medicine by Gluckman, Beedle, et al., 2nd edition. Chapter 4.

Module 3 Evolution of Life Histories

- Principles of Evolutionary Medicine by Gluckman, Beedle, et al., 2nd edition. Chapter 5.

Module 4 Human Evolution and the Origins of Human Diversity

- Principles of Evolutionary Medicine by Gluckman, Beedle, et al., 2nd edition. Chapter 6.

Module 5 Reproduction and Evolution

- Principles of Evolutionary Medicine by Gluckman, Beedle, et al., 2nd edition. Chapter 8

Module 6 Nutritional and Metabolic Adaptation

- Principles of Evolutionary Medicine by Gluckman, Beedle, et al., 2nd edition. Chapter 9.

Module 7 Defenses and Social Organization and Behavior

- Principles of Evolutionary Medicine by Gluckman, Beedle, et al., 2nd edition. Chapter 10 and Chapter 11.

Module 8 Ultimate Mechanisms Affecting Disease Risk and Evolutionary Perspectives on Cancer

- Principles of Evolutionary Medicine by Gluckman, Beedle, et al., 2nd edition. Chapter 7 and Chapter 12.

Exam Information

There are no exams for this course.

A note about sources of information:

It is highly recommended that you primarily consult the following sources of information in studying for this class. Use Google-discovered sites with caution and a skeptical eye, as you probably are aware.

- Suggested books and required readings
- Supplemental information posted on course website
- Internet links provided in class or on course website

Technical Support

Students who experience technical difficulties should get help from the following resources:

- For course content, activities, grades, etc., consider posting your question to the General Q & A Forum ; otherwise, contact your instructor.
- Course website problems
- Other technical problems

Academic Calendar

Course Length

This University of Illinois course is **8 weeks** long. This course runs from August 22, 2022 until October 16, 2022.

Definition of a Course Week

A course week is defined as the period between Sunday, 12:00 AM Central Time, and Saturday, 11:59 PM Central Time.

For more information, see the University's Academic Calendar.

Participation

Student Commitment

By registering for this online course, you commit to self-motivated study, participation in online course activities, and timely submission of all assignments. Furthermore, you commit to accessing the course website and checking e-mail at least 4 days per week, as well as to devoting at least 14-24 hours weekly to preparing for each module and completing the required assignments and readings.

Assignments

Late Submissions of Assignments and Other Written Work

Assignments, case studies, reflective essays, and other written work are due by **11:55 PM** Central Time on the dates specified in the course calendar, unless otherwise noted. Unless permission from the instructor is obtained **at least 1 day before a due date**, projects later than 24 hours past the due date will not receive a grade.

Late Submissions of Discussions, Wikis, and Blog Posts

The required initial discussion and wiki posts **must be made on time**. Assignments submitted within 24 hours will receive a penalty of 20%. Beyond 24 hours, the grade will be zero unless other arrangements have been made.

Being Excused from Assignments

If you wish to be excused from participation in class discussions or from submitting projects on time because of medical reasons or personal emergencies, you must address the issue with the course instructor. Because of this course's fast pace and the potential effect that such excusals may have on your ability to complete it successfully, such accommodation will be made on a case-by-case basis.

Instructor Responses

Instructor Feedback Turnaround Time

Questions posted to the General Q & A Forum usually will be answered within 24 hours. If possible, students are encouraged to answer questions posted by other students to the General Q & A Forum, rather than waiting for an instructor's response.

Assignments submitted online will be reviewed and graded by the course instructor within 3 business days. Exams, essays, and term papers will be graded within 5 business days.

Responding to E-mails and Phone Calls

The instructor will respond to e-mail messages and phone calls within 24 hours of receiving them unless the instructor notifies you ahead of time of an inability to do so. **When sending e-mail, include a subject line that identifies the course number and nature of your question.** The instructor may not respond to questions sent to him or her that should be posted in the General Q & A Forum. Please don't be offended if you are asked to forward your question to this location. If you leave a voice mail message with the instructor, please check your e-mail for a response.

Communications

Daily Contact

Your daily contact should be via the General Q & A forums in our Learning Management System (Moodle) and via e-mail.

Course Questions

Questions pertaining to the course should be posted in our General Q & A Forum discussion forum. You can get to this forum from the course home page. Posting questions here allows everyone to benefit from the answers. If you have a question, someone else is probably wondering the same thing. Anyone submitting a question via e-mail will be directed to resubmit the question to the General Q & A Forum. Also, participants should not hesitate to answer questions posed by peers if they know the answers and the instructor has not yet responded. This not only expedites the process, but also encourages peer interaction and support.

Personal Questions

Questions of a personal nature should first be sent to the instructor's e-mail address. **When sending e-mail, include a subject that identifies the course number and nature of your question.**

Emergencies

If you have an emergency that will keep you from participating in the course, please notify your instructor by using the instructor's e-mail address (listed on the Instructor Information page). Provide callback information in your e-mail (if necessary). You should also notify your program director of any emergencies.

Zoom

Zoom is a tool that allows multiple people to come together simultaneously via a computer to text chat, audio chat, video chat, collaborate on a digital whiteboard, and even share your computer's desktop with one another. The Instructor's Virtual Office and the Student Lounge (when available) make use of *Zoom*.

Instructor's Virtual Offices

Another way to communicate with the instructor is to make use of the virtual office hours. The instructor will be available by appointment in the **Virtual Office** for office hours, via Zoom.

Student Lounge

Participants may also want an alternative way to meet synchronously with each other for studying together, group projects, problem solving, and so on. Students may enter the **Student Lounge** virtual *Zoom* classroom. See the **Student Lounge** page at the left for more information and a link to the Student Lounge.

Announcements

The **Course Announcements** forum serves as a way for your instructor and University of Illinois administrators to make announcements within our virtual learning environment. Announcements posted here will also be sent to your Illinois e-mail address, so be sure to check your e-mail or the Course Announcements forum at least once a day to see whether any new announcements have been made.

E-mail

Course participants can also use the internal e-mail tool inside Moodle to communicate privately with the instructor, group members, and each other. Make sure your e-mail address is current and activated within your Moodle Profile so that messages sent to you from within Moodle are automatically forwarded to your regular e-mail address as well. You may find this video tutorial on updating your Moodle profile helpful in setting this up.

Telephone

The telephone is still sometimes the most effective mode for troubleshooting problems related to the course. The instructor's phone number, virtual office hour times, and other contact information can be found by clicking on the **Instructor Information** page within this Syllabus.

Academic Integrity

Academic dishonesty will not be tolerated. Examples of academic dishonesty include the following:

- Cheating
- Fabrication
- Facilitating infractions of academic integrity
- Plagiarism
- Bribes, favors, and threats
- Academic interference
- Examination by proxy
- Grade tampering
- Non-original work

Should an incident arise in which a student is thought to have violated academic integrity, the student will be processed under the disciplinary policy set forth in the Illinois Academic Integrity Policy, using the FAIR system (https://studentcode.illinois.edu/article1/part4/1-401/). If you do not understand relevant definitions of academic infractions, contact your instructors for an explanation within the first week of class.

Copyright

Student Content

Participants in University of Illinois courses retain copyright of all assignments and posts they complete; however, all materials may be used for educational purposes within the

given course. In group projects, only the portion of the work completed by a particular individual is copyrighted by that individual. The University of Illinois may request that students' materials be shared with future courses, but such sharing will only be done with the students' consent. The information that students submit during a course may, however, be used for the purposes of administrative data collection and research. No personal information is retained without the students' consent.

Non-Student Content

Everything on this site and within University of Illinois courses is copyrighted. The copyrights of all non-student work are owned by the University of Illinois Board of Trustees, except in approved cases where the original creator retains copyright of the material. Copyrights to external links are owned by or are the responsibility of those external sites. Students are free to view and print material from this site so long as

- the material is used for informational purposes only;
- the material is used for noncommercial purposes only; and
- copies of any material include the respective copyright notice.

These materials may not be mirrored or reproduced on non–University of Illinois websites without the express written permission of the University of Illinois Board of Trustees. To request permission, please contact the academic unit for the program.

Student Behavior

Student Conduct

Students are expected to behave in accordance with the penal and civil statutes of all applicable local, state, and federal governments, with the rules and regulations of the Board of Regents, and with university regulations and administrative rules. For more information about the student code and handbook, see academic integrity policy and procedure (https://studentcode.illinois.edu/article1/part4/1-402/).

Netiquette

In any social interaction, certain rules of etiquette are expected and contribute to more enjoyable and productive communication. The following are tips for interacting online via e-mail or discussion board messages, adapted from guidelines originally compiled by Chuq Von Rospach and Gene Spafford (1995):

- Remember that the person receiving your message is someone like you, deserving and appreciating courtesy and respect.

- Be brief; succinct, thoughtful messages have the greatest effect.
- Your messages reflect on you personally; take time to make sure that you are proud of their form and content.
- Use descriptive subject headings in your e-mails.
- Think about your audience and the relevance of your messages.
- Be careful when you use humor and sarcasm; absent the voice inflections and body language that aid face-to-face communication, Internet messages are easy to misinterpret.
- When making follow-up comments, summarize the parts of the message to which you are responding.
- Avoid repeating what has already been said; needless repetition is ineffective communication.
- Cite appropriate references whenever using someone else's ideas, thoughts, or words.

OTHER CONCERNS

Disabilities and Religious Observances:

Please contact your instructors or TAs during the first week of classes to make requests for disability accommodations or observation of religious holidays.

To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and the Disability Resources and Educational Services (DRES) as soon as possible. To contact DRES, you may visit 1207 S. Oak St., Champaign, call 333-4603, e-mail disability@illinois.edu or go to the DRES website. If you are concerned you have a disability-related condition that is impacting your academic progress, there are academic screening appointments available on campus that can help diagnosis a previously undiagnosed disability by visiting the DRES website and selecting "Sign-Up for an Academic Screening" at the bottom of the page.

To obtain waivers for student athlete (cheerleader, marching band, etc.) activities, submit your documentation to your instructor.

Diversity, Equity, and Inclusion (DEI)

In forming an inclusive course, we mean a course that values and creates space for all identities such as those based on ethnicity, culture, sexual identity, gender identity, religious identity and beyond. Research shows that inclusive courses allow for better learning outcomes, a more positive learning experience, better community, and better leadership training in engaging humanity.

To create an inclusive space in this course, we must all work to collaboratively create a safe and respected space that supports and encourages everyone to share their views and concerns. We

must value multiple perspectives and experiences, while also reducing student experiences of marginalization. We must treat each other as individuals.

Family Educational Rights and Privacy Act (FERPA) Statement

Any student who has suppressed their directory information pursuant to *Family Educational Rights and Privacy Act* (FERPA) should self-identify to the instructor to ensure protection of the privacy of their attendance in this course. See https://registrar.illinois.edu/academic-records/ferpa/ for more information on FERPA.

Sexual Misconduct Policy and Reporting Statement

The University of Illinois is committed to combating sexual misconduct. Faculty and staff members are required to report any instances of sexual misconduct to the University's Title IX and Disability Office. In turn, an individual with the Title IX and Disability Office will provide information about rights and options, including accommodations, support services, the campus disciplinary process, and law enforcement options.

A list of the designated University employees who, as counselors, confidential advisors, and medical professionals, do not have this reporting responsibility and can maintain confidentiality, can be found
here: https://wecare.illinois.edu/resources/students/#confidential

Other information about resources and reporting is available here: wecare.illinois.edu.

Support

Basic needs insecurity is common among college students and the negative impacts are real:

- Increases difficulty in concentrating and studying, lowers retention, and decreases graduation rate.
- Generates and/or elevates depression, anxiety, insomnia, headaches, and burnout.
- Lowers morale and motivation, reduces creativity, hinders communication, decreases productivity, increase absenteeism, and decreases social opportunities.

Students who are hungry, burned-out, depressed, preoccupied with issues like money are less likely to succeed academically, socially, and personally. If at any point in the semester you are struggling with mental health issues (anxiety, depression, grief, PTSD, addiction, cultural struggles, coming out, etc.), inconsistent access to nutritious foods, housing or financial instability, or lack of access to any other basic needs, we encourage you to seek help through one of the campus resources. Seeking support is healthy and courageous.

Mental Health

Significant stress, mood changes, excessive worry, substance/alcohol misuse or interferences in eating or sleep can have an impact on academic performance, social development, and emotional wellbeing. The University of Illinois offers a variety of confidential services including individual and group counseling, crisis intervention, psychiatric services, and specialized screenings which are covered through the Student Health Fee (see https://wellness.illinois.edu). If you or someone you know experiences any of the above mental health concerns, it is strongly encouraged to contact or visit any of the University's resources provided below. Getting help is a smart and courageous thing to do for yourself and for those who care about you.

- Counseling Center (217) 333-3704
- McKinley Health Center (217) 333-2700
- National Suicide Prevention Lifeline (800) 273-8255
- Rosecrance Crisis Line (217) 359-4141 (available 24/7, 365 days a year)
- If you are in immediate danger, call 911.

Community of Care

As members of the Illinois community, we each have a responsibility to express care and concern for one another. If you come across a classmate whose behavior concerns you, whether regarding their well-being or yours, we encourage you to refer this behavior to the Student Assistance Center 217-333-0050 or http://odos.illinois.edu/community-of-care/referral/). Based on your report, the staff in the Student Assistance Center reaches out to students to make sure they have the support they need to be healthy and safe.

Further, we understand the impact that struggles with mental health can have on your experience at Illinois.

Significant stress, strained relationships, anxiety, excessive worry, alcohol/drug problems, a loss of motivation, or problems with eating and/or sleeping can all interfere with optimal academic performance. We encourage all students to reach out to talk with someone, and we want to make sure you are aware that you can access mental health support at McKinley Health Center (https://mckinley.illinois.edu/). Or the Counseling Center (https://counselingcenter.illinois.edu/). For urgent matters during business hours, no appointment is needed to contact the Counseling Center. For mental health emergencies, you can call 911.

Food Assistance and Wellbeing Program

Among college students, 35-51% report experiencing food insecurity. At UIUC around 1 in 5 students experience food insecurity. Proper nutrition has been linked to positive brain function

and better academic outcomes; don't settle for the "right of passage" of living on cheap, processed food. There are several community and campus resources to get you the nutrition you need to succeed. You can find them here: https://odos.illinois.edu/community-of-care/resources/students/food-resources/