

Submit original with signatures + 1 copy + electronic copy to UAF Governance.
 See <http://www.uaf.edu/uafgov/faculty/cd> for a complete description of the rules governing curriculum & course changes.

TRIAL COURSE OR NEW COURSE PROPOSAL

SUBMITTED BY:

Department	Biology	College/School	CNSM
Prepared by	Andrea Bersamin	Phone	474-6129
Email Contact	<u>abersamin@alaska.edu</u>	Faculty Contact	Andrea Bersamin

1. ACTION DESIRED (CHECK ONE):

Trial Course	<input type="checkbox"/>	New Course	<input checked="" type="checkbox"/>
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2. COURSE IDENTIFICATION:

Dept	BIOL	Course #	3+7 TBD	No. of Credits	3
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Justify upper/lower division status & number of credits:

This course has STATS 200 (or higher) or permission of instructor as a prerequisite. The course builds on basic statistical concepts. 3 hours of instruction will be provided per week. Students need the general sophistication of upper-division status before taking on this integrative course. Students will be expected to locate, read and discuss journal articles that will supplement the text book.

3. PROPOSED COURSE TITLE: **Principles of Epidemiology**

4. To be CROSS LISTED? YES/NO **NO** If yes, Dept: Course #
 (Requires approval of both departments and deans involved. Add lines at end of form for such signatures.)

5. To be STACKED? YES/NO **NO** If yes, Dept. Course #

6. FREQUENCY OF OFFERING: **Spring, even numbered years**
 Fall, Spring, Summer (Every, or Even-numbered Years, or Odd-numbered Years) - or As Demand Warrants

7. SEMESTER & YEAR OF FIRST OFFERING (if approved) **Spring 2012**

8. COURSE FORMAT:

NOTE: Course hours may not be compressed into fewer than three days per credit. Any course compressed into fewer than six weeks must be approved by the college or school's curriculum council. Furthermore, any core course compressed to less than six weeks must be approved by the core review committee.

COURSE FORMAT: (check all that apply) 1 2 3 4 5 6 weeks to full semester

OTHER FORMAT (specify)

Mode of delivery (specify lecture, field trips, labs, etc)

9. CONTACT HOURS PER WEEK: **3** LECTURE hours/weeks LAB hours/week PRACTICUM hours/week

Note: # of credits are based on contact hours. 800 minutes of lecture=1 credit. 2400 minutes of lab in a science course=1 credit. 1600 minutes in non-science lab=1 credit. 2400-4800 minutes of practicum=1 credit. 2400-8000 minutes of internship=1 credit. This must match with the syllabus. See <http://www.uaf.edu/uafgov/faculty/cd/credits.html> for more information on number of credits.

OTHER HOURS (specify type) **N/A**

RECEIVED

JUN 17 2011

Dean's Office
 College of Natural Science & Mathematics

10. COMPLETE CATALOG DESCRIPTION including dept., number, title and credits (50 words or less, if possible):

BIOL 394, Principles of Epidemiology, 3 credits. Introduction to the basic concepts of epidemiology, with examples from human and veterinary medicine, including chronic and infectious disease epidemiology, social epidemiology, outbreak investigation, properties of tests, and an introduction to study design and surveillance.

11. COURSE CLASSIFICATIONS: (undergraduate courses only. Use approved criteria found on Page 10 & 17 of the manual. If justification is needed, attach on separate sheet.)

H = Humanities

S = Social Sciences

Will this course be used to fulfill a requirement for the baccalaureate core? YES NO

IF YES, check which core requirements it could be used to fulfill:

O = Oral Intensive, Format 6

W = Writing Intensive, Format 7

Natural Science, Format 8

12. COURSE REPEATABILITY:

Is this course repeatable for credit? YES NO

Justification: Indicate why the course can be repeated (for example, the course follows a different theme each time).

N/A

How many times may the course be repeated for credit? TIMES

If the course can be repeated with variable credit, what is the maximum number of credit hours that may be earned for this course? CREDITS

13. GRADING SYSTEM: Specify only one.

LETTER:

PASS/FAIL:

RESTRICTIONS ON ENROLLMENT (if any)

STAT 200X STAT 200X or higher or permission of instructor

These will be required before the student is allowed to enroll in the course.

RECOMMENDED

Classes, etc. that student is strongly encouraged to complete prior to this course.

15. SPECIAL RESTRICTIONS, CONDITIONS N/A

16. PROPOSED COURSE FEES \$0

Has a memo been submitted through your dean to the Provost & VCAS for fee approval? Yes/No

17. PREVIOUS HISTORY

Has the course been offered as special topics or trial course previously? Yes/No

If yes, give semester, year, course #, etc.:

Spring 2011, BIOL 394

18. ESTIMATED IMPACT

WHAT IMPACT, IF ANY, WILL THIS HAVE ON BUDGET, FACILITIES/SPACE, FACULTY, ETC.

Classroom space will be needed. This course will be part of the instructor's regular workload.

19. LIBRARY COLLECTIONS

Have you contacted the library collection development officer (kljensen@alaska.edu, 474-6695) with regard to the adequacy of library/media collections, equipment, and services available for the proposed course? If so, give date of contact and resolution. If not, explain why not.

No		Yes	X	8/30/10. Karen Jensen directed me to the following resources which are adequate for the class: online and print Epidemiology journals, Epidemiology books that are available both in the library and via the Electronic Book Library.
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20. IMPACTS ON PROGRAMS/DEPTS

What programs/departments will be affected by this proposed action? Include information on the Programs/Departments contacted (e.g., email, memo)

Biology and Wildlife will house the course. No impact is anticipated on other programs/departments.

21. POSITIVE AND NEGATIVE IMPACTS

Please specify positive and negative impacts on other courses, programs and departments resulting from the proposed action.

This course introduces the basic concepts of epidemiology, using examples from human and veterinary medicine. The course will likely complement a number of existing programs within the Biology and Wildlife department including biomedical sciences and wildlife biology. No negative impacts are anticipated. This course will be part of the instructor's regular workload.

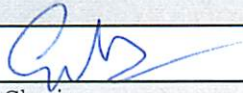
JUSTIFICATION FOR ACTION REQUESTED

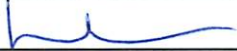
The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. Use as much space as needed to fully justify the proposed course.

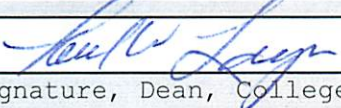
This course will contribute to UAF's growing biomedical program and responds to increasing student interest in health sciences; a recent poll of undergraduates indicated that 39% are interested in a health science track within the department. The course will also serve students with an interest in veterinary and wildlife disease processes. The course will cover topics that are shared by human and veterinary medicine including: measures of morbidity and mortality, properties of tests, study design, outbreak investigations, surveillance, causal inference and chronic and infectious disease epidemiology. More broadly, the class should also improve students' scientific literacy. I anticipate that the course will also be of interest to other public health related majors on campus (i.e. psychology).

This course was offered on a trial basis in Spring 2011; 14 undergraduates and 2 graduate students enrolled. Final IAS course evaluations are not yet available; however students provided positive feedback throughout the semester as part of an on-going self-evaluation. A number of modifications have been made based on student feedback and my experience with the trial course.

APPROVALS:

	Date	June 9, 2011
Signature, Chair, Program/Department of:	Biology & Wildlife	

	Date	15 June 11
Signature, Chair, College/School Curriculum Council for:	CNSM	

	Date	June 20, 2011
Signature, Dean, College/School of:	CNSM	

	Date	
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Signature of Provost (if applicable)

Offerings above the level of approved programs must be approved in advance by the Provost.

ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE

	Date	
Signature, Chair, UAF Faculty Senate Curriculum Review Committee		

ADDITIONAL SIGNATURES: (As needed for cross-listing and/or stacking)

	Date	
Signature, Chair, Program/Department of:		

	Date	
Signature, Chair, College/School Curriculum Council for:		

	Date	
Signature, Dean, College/School of:		

BIOLOGY 3XX
PRINCIPLES OF EPIDEMIOLOGY
Spring 2012- 3 Credits
Time: TBD
Location: TBD

Prerequisites: STATS 200 or permission of instructor

Instructor Information

Andrea Bersamin, Ph.D.
Email: abersamin@alaska.edu
Office: 234 AHRB
Telephone: (907)474-6129

Office Hours

TBD

If you have questions about the class or would like to discuss your class performance, I encourage you to come and see me during my office hours (or by appointment).

Course description

Epidemiology is the study of the distribution and determinants of disease, or other health-related outcomes, in human and animal populations. *Fundamentals of Epidemiology* introduces the basic concepts of epidemiology, with examples from human and veterinary medicine, including chronic and infectious disease epidemiology, social epidemiology, outbreak investigation, properties of tests, and an introduction to study design and surveillance.

Course goals

To provide students with an overview of the fundamentals of epidemiology.

Learning objectives

Upon completion of this course, you will be able to do the following:

- Understand the contributions of epidemiology to clinical research, medicine and public health
- Identify key sources of data for epidemiological purposes.
- Explain the population perspective and describe public health problems
- Apply and interpret measures of disease occurrence and correlates in populations
- Explain the concept of risk
- Use basic methods for investigating disease outbreaks
- Explain relative strengths and limitations of different epidemiologic study designs
- Identify and control major sources of error in epidemiological studies
- Evaluate epidemiologic evidence by applying criteria for causal inference
- Use epidemiologic methods to evaluate public health interventions
- Appreciate complexities in applying scientific evidence in making policy

Instructional Methods

The course will include lectures, class discussions, case studies, text book and journal article readings, and assignments. ***Student participation is important and this requires that all students come prepared having read the required readings in advance.***

Course Readings

Required:

- Gordis L. *Epidemiology*, 4th ed: Saunders Elsevier, 2008
- Additional readings will be assigned to supplement the main textbook or as part of various homework assignments; these will be made available on Blackboard.

Optional (if you are particularly interested in a topic and desire additional information, these are excellent texts that can be used to supplement the primary text and lectures):

- Abramson JH and Abramson ZH. *Making Sense of Data: A Self Instruction Manual on the Interpretation of Epidemiological Data*. 3rd ed. Oxford: Oxford University Press, 2001.
- Aschengrau A and Seage III GR. *Essentials of Epidemiology in Public Health*. 2nd ed. Sudbury MA: Jones and Bartlett Publishers, 2008.
- *Applied Epidemiology: Theory to Practice*. 2nd ed. Brownson R and Petitti D eds. Oxford: Oxford University Press, 2006.
- Freidman GD. *Primer of Epidemiology*. 5th ed. New York: McGraw Hill, 2004.
- Friis RH and Sellers TA. *Epidemiology for Public Health Practice*. 4th ed. Sudbury MA: Jones and Bartlett Publishers, 2009.
- Giesecke J. *Modern Infectious Disease Epidemiology*.
- Gregg MB. *Field Epidemiology*. 2nd ed. Oxford: Oxford University Press, 2002.
- Heller RF. *Evidence for Population Health*. Oxford: Oxford University Press, 2005.
- Last J. *A Dictionary of Epidemiology*. 4th ed. Oxford: Oxford University Press, 2001.
- *Risk Communication and Public Health*. Bennett P and Calman K eds. Oxford: Oxford University Press, 1999.
- Rose G. *Rose's Strategy of Preventive Medicine*. Oxford: Oxford University Press, 2008.
- Rothman KJ, Greenland S and Lash TL. *Modern Epidemiology*. 3rd ed. Lippincott Williams & Wilkins, 2008.
- Smith RD. 2006. *Veterinary Clinical Epidemiology: a problem-oriented approach*. 3rd Ed. Taylor & Francis, Boca Raton, FL.
- Thrusfield M. 2005. *Veterinary Epidemiology*. 3rd Ed. Blackwell Science, London
- Young TK. *Population Health: Concepts and Methods*. 2nd ed. Oxford: Oxford University Press, 2005.

Some useful websites:

WHO Statistical Information System <http://www.who.int/whosis/en/index.html>

PubMed database (Medline) <http://www.ncbi.nlm.nih.gov/pubmed/>

The Cochrane Library <http://www.cochrane.org/reviews/index.htm>

The Community Guide <http://www.thecommunityguide.org/index.html>

US Preventive Services Task Force (USPSTF) <http://www.ahrq.gov/clinic/uspstfix.htm>

Demographic and health surveys (DHS) <http://www.measuredhs.com/>
Health Systems Database: <http://healthsystems2020.healthsystemsdatabase.org>
CDC Morbidity and Mortality Weekly Report: <http://www.cdc.gov/mmwr/>
Alaska Health and Social Services Department of Epidemiology: <http://www.epi.hss.state.ak.us/>

Student Evaluation

Points Possible:

Exams	3 @100 points
Assignments	10@ 10 points each
Content Reviews	50 points

Total Possible Points: 450

Grades will be on a straight percentage basis.

A= 94-100%; A-=90-93.9%

B+= 87-89.9%; B= 84-86.9% ;B-= 80-83.9%

C+= 77-79%; C= 74-76.9% ; C-= 70-73.9 %

D+= 67-69%; D = 64-66.9%; D-= 60-63.9%

F= 59% and below

Instructor and course evaluation:

Teaching is a learning process and it is impossible to facilitate learning without student feedback. I will be gathering feedback throughout the semester will allow me to address problems or difficulties while the course is on-going. Unsolicited constructive feedback is welcome anytime.

Course Requirements

Exams: There will be 3 in-class exams. Exams will include T/F, multiple-choice, matching, short answer and essay questions. Exams will be based on lectures, readings, and assignments. There will be NO make-up exams. Under very unusual circumstances early exams will be offered with approval from the instructor; arrangements must be made well in advance.

Assignments: There will be 10 assignments over the course of the semester. Assignments will be posted on Blackboard and detailed instructions will be provided in class. Paper copies of your completed assignments are due at the **beginning** of the class indicated on the class schedule. No late assignments will be accepted. If you are not able to turn in an assignment due to extenuating circumstances (i.e. medical emergency for which you have a doctor's note), please come and see me during my office hours or by appointment. Each assignment is worth ten points.

Readings:

In-class discussions and activities will require that you have completed the required readings. The course reading list is included in the syllabus. Additional readings (e.g. newspaper articles, journal articles, policy briefs, etc.) will be assigned throughout the semester and will be provided as

hand-outs or posted on Blackboard. ***Student participation is important and this requires that all students come prepared having read the required readings in advance.***

Content Reviews:

Students will be required to give one 20 minute presentation that reviews the content from an earlier lecture. This presentation will not simply review of the lecture, but should incorporate examples from outside readings or sources (e.g. journal articles, textbooks, government websites). Students will also provide the class with an **in-class activity** that supports the learning and understanding of the concept as well as **one-page review sheet**. These presentations will be done in groups. Sign-ups will occur the second week of class. This is worth 50 points.

Reaction cards:

At the end of each class session on Thursdays, please write a short (two to three sentences) question or comment pertaining to the class discussion or provide feedback on how the class is going for you. Write your comment or question on a 3x5 card with your full name and date printed clearly at the top of the card. Please give your card to me before leaving the class. You are responsible for buying (or sharing with a friend) a pack of 3x5 cards to use for this purpose.

Current events:

Throughout the course, you have the opportunity to earn five extra credit points by bringing a newspaper or internet article related to the topic covered in class that day and summarizing its contents for the class. Current events must have been published within the last six months. You will earn one point for each current event article and summary.

Course Policies

Communication: Announcements and schedule changes will be made by e-mail or on Blackboard. It is your responsibility to check your e-mail or Blackboard at least twice weekly. I encourage you to contact me with any comments or questions. If you don't understand something please ask.

Attendance: Daily attendance and participation are expected.

Withdrawal:

Jan. X: Deadline for 100 percent refund of tuition and fees

Feb. X: Deadline for student-initiated and faculty-initiated drops (course does not appear on academic record)

Feb. X: Deadline for 50 percent refund of tuition (tuition only, no fees refunded)

Mar. X: Deadline for student-initiated and faculty-initiated withdrawals (W grade appears on academic transcript)

Honor Code and Plagiarism: You are expected to uphold the UAF standard of conduct for students relating to academic dishonesty. You assume full responsibility for the content and integrity of the academic work you submit. For the student code or additional information, please use the following URL <http://www.uaf.edu/catalog/current/academics/regs3.html>

UAF Disability Services

Disabilities Services: The Office of Disability Services implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials. I will work with the Office of Disabilities Services (208 WHIT, 474-5655) to provide reasonable accommodation to students with disabilities. **** If you require any assistance due to documented disability, please let me know by the 2nd week of classes and I will be happy to make whatever accommodations are necessary.**

Detailed schedule of topics, concepts, key terms, readings, and assignments

Concepts and key terms are provided for each week of the course, and these should be used to ensure that you've understood the reading materials and lectures.

Introduction to Epidemiology

January 25 (*note: these dates will be modified*)

Concepts and key terms:

- Definition of epidemiology and its contribution to other disciplines
- Role of epidemiology in public health and prevention
- Applications of epidemiology in public health practice vs. clinical practice
- Epidemiological approach
- Primary, secondary and tertiary prevention
- Exposure and outcome

Readings:

Chapter 1

Studying Populations

January 27

Concepts and key terms:

- Population vs. an individual perspective
- Epidemiological transition
- Heterogeneity of populations
- Dynamic population factors: birth rate, fertility and mortality rates
- High risk populations

Readings:

Rose. 1985. Sick individuals and sick populations

Dynamics of Disease Transmission

January 27

Concepts and key terms:

- Stages of disease
- Epidemiologic triad
- Modes of transmission of communicable disease in a population
- Endemic, epidemic and pandemic
- Herd immunity
- Attack rate
- Acute outbreak investigation

Readings:

Gordis, Chapter 2

Measuring Disease: Morbidity
February 1

Concepts and key terms:

- Calculate and interpret the following measures of morbidity:
 - ratios
 - proportions
 - incidence rates, including attack rate
 - prevalence
- Relationship between incidence and prevalence
- Surveillance in public health

Readings:

Gordis, Chapter 3

Measuring Disease: Mortality
February 3

Concepts and key terms:

- Calculate and interpret the following measures of morbidity:
 - Mortality rate
 - Case-fatality rate
 - Proportionate mortality
- Direct and indirect age adjustment
- Years of potential life lost
- Cohort effect

Readings:

Gordis, Chapter 4

Disease Detection and Population Screening: validity and reliability
February 8 and 10

Concepts and key terms:

- True positive, false positive, true negative and false negative test results
- Consequences of false positive and false negative test results
- Sensitivity, specificity, positive and negative predictive value
- Effect of prevalence on predictive value
- Validity and reliability

Readings:

Gordis, Chapter 5

EXAM I
******* February 15 *******

Intervention Studies

February 17 and 22

Concepts and key terms:

- Double-blind randomized controlled trial
- Placebo or control group
- Purpose of randomization and blinding
- Generalizability
- Non-compliance
- Strengths and limitations of trials
- Ethical considerations of conducting trials
- Three major US randomized trials

Readings:

Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. NEJM. 346;6

CONSORT guidelines

Gordis, Chapters 7 and 8

Cohort, Cross-sectional, and Ecological Studies February 24 and March 1

Concepts and key terms:

- Cohort study design, strengths and limitations
- Cross-sectional study design, strengths and limitations
- Ecological study design, strengths and limitations
- Ecological fallacy
- Prospective and retrospective studies

Readings:

Gordis, Chapter 9 and 10

Case-Control Studies March 3

Concepts and key terms:

- Case-control study design, strengths and limitations
- Selection of cases and controls
- Matching
- Recall bias

Readings:

Gordis, Chapter 10 and 13

Estimating Risk March 8 and 10

Concepts and key terms:

- Relationship between exposures and outcomes
- Odds ratio and a relative risk
- Absolute risk
- Attributable risk

Readings:

Gordis, Chapter 11 and 12

Spring Break
March 15 and 17

Causal Inference
March 22

Concepts and key terms:

- Association vs. causation
- Criteria for causality, Koch's postulates
- Real or spurious association
- Necessary and sufficient

Readings:

Gordis, Chapter 14

Bias, Confounding and Interaction
March 24 and 29

Concepts and key terms:

- Bias, confounding and error
- Interaction
- P-value

Readings:

Gordis, Chapter 15

Exam II
March 31

Role of Genetic and Environmental Factors
April 5 and 7

Concepts and key terms:

- Diseases with known genetic origin
- Use of genetic markers
- Family studies, twin studies, adoption studies, migrant studies
- Gene X environment interactions

Readings:

Gordis, Chapter 16

Translating Epidemiological Evidence in Practice

April 12 and 14

Concepts and key terms:

- Efficacy, effectiveness, and efficiency
- Steps involved in health planning
- examples of disease prevention and health promotion strategies
- Examples of interventions to address the social determinants of health
- Vertical and horizontal approaches for improving health
- Methodological issues in epidemiology: volunteer bias, lead time bias, overdiagnosis bias
- Cost benefit analysis

Readings:

Framework for program evaluation in public health. *MMWR* 1999;48(No. RR-11): 1-40.

<ftp://ftp.cdc.gov/pub/Publications/mmwr/rr/rr4811.pdf>

Gordis, Chapter 17 and 18

Social Determinants of Health

April 21 and 26

Concepts and key terms:

- Social epidemiology and social determinants of health
- Discrimination
- Biological expressions of social inequality
- Ecosocial theory of disease distribution
- Social justice

Readings:

Krieger. (2007). Why Epidemiologists Cannot Afford to Ignore Poverty. *Epidemiology*

Film:

Unnatural Causes: In Sickness and in Wealth

Epidemiology and Public Policy

April 28

Concepts and key terms:

- Population vs. high-risk approach to prevention
- Epidemiology and clinical medicine
- Risk assessment
- Publication bias

- Sources and impact of uncertainty

Readings:

Francis, JA, et al. (2006) Challenging the epidemiologic evidence on passive smoking: tactics of tobacco industry expert witnesses. *Tobacco control*. 15 (Suppl IV)

Taubes G. Do we really know what makes us healthy? *The NY Times Magazine*. Sept. 16, 2007.
<http://www.nytimes.com/2007/09/16/magazine/16epidemiology-t.html>

Gordis, Chapter 19

Ethical and professional issues in Epidemiology

May 3

Concepts and key terms:

- Privacy and confidentiality
- Geneva convention and Belmont report
- Race and ethnicity in epidemiological studies
- Conflict of interest

Readings:

Gordis, Chapter 20

Exam III

May 5