Mark Thurmond, D.V.M., M.P.V.M., Ph.D., Professor Emeritus
(Medicine & Epidemiology)

Graduate Adviser. Contact the Group office.

Courses in Preventive Veterinary Medicine (PMV)

Graduate

200. Introduction to Information Management for Epidemiologists (1)
Lab—1 hour. Restricted to students in the Master of Preventive Veterinary Medicine program. Introduction to practical application of epidemiological methods to solve problems involving population health data. Emphasis on using worksheet/database software tools for organizing, analyzing, reporting, and interpreting data. 35 students. —Su. (Su.) Lehnhuber

201. Emerging Issues at the Interface of Animal, Human, and Ecosystem Health (2.5)
Lecture—1 hour; discussion—1.5 hours. Class size limited to 35 students. Introduces the major health topics emphasizing relationships between environmental, animal and human health. Topics include ecosystem change and impacts on animals and humans, cross-species transmission of disease, and approaches for addressing critical data gaps to inform ecosystem health and disease prevention. —F. (F.) Johnson

202. Medical Statistics I (4)
Lecture—13 sessions; laboratory—10 sessions. Prerequisite: MPVM or MPH standing, or consent of the instructor. Restricted to 80 students. Basic statistics in clinical, laboratory, and population medicine: descriptive statistics; probability; binomial, Poisson, normal, t-, F-, and Chi-square distributions; sampling distributions; parameter estimation; hypothesis testing; elementary nonparametric methods, simple linear regression and correlation; life table construction and analysis. —Su. (Su.)

203. Medical Statistics II (4)
Lecture—3 hours; laboratory—2 hours. Prerequisite: course 202 (or equivalent) or consent of instructor. Continuation of course 202. Analysis of variance in biomedical sciences; nonparametric methods; multiple regression; biomedical applications of statistical methods. Microcomputer applications in population medicine to reinforce principles that are taught in lecture. Required for students in the Preventive Veterinary Program Graduate Group (PMV) and the Masters of Public Health Program (MPH). —F., W., S. (F., W., S.)

204. Medical Statistics III (4)
Lecture—3 hours; laboratory—2 hours. Continuation of course 203. Selecting the best regression equation, conditional logistic regression, Poisson regression, survival analysis, analysis of time dependent variation and trends. Microcomputer applications in population medicine to reinforce principles that are taught in lecture. —W. (W.)

205. Principles of Epidemiology (4)
Lecture—4 hours. Prerequisite: course 202, an introductory course in biostatistics. Continuation of course 202. Basic epidemiological concepts and approaches to epidemiologic research, with examples from veterinary and human medicine, including case-control investigations, infectious disease epidemiology, properties of tests, and an introduction to epidemiologic study design and surveillance. (Same course as Epidemiology 205.) —F. (F.)

206. Epidemiologic Study Design (4)
Lecture—30 sessions, discussion—9 sessions; laboratory—2 sessions. Prerequisite: course 205 or consent of instructor. Builds on concepts presented in course 205. Continuation of epidemiologic study design-clinical trials, observational cohort studies, case control studies—introduced in course 205A are covered in more depth, using a problem-based format. Discussion of published epidemiologic studies. (Same course as Epidemiology 206.) —F., W., S. (F., W., S.) Atwill

207. Applied Epidemiologic Problem Solving (1)
Lecture—discussion—2 hours. Integration of epidemiologic and statistical methodology in a problem-solving approach to contemporary animal population health issues. Data validation and manipulation. —W. (W.) Martinez-Lopez

Professional

402. Medical Statistics I (3)
Lecture—37 sessions; laboratory—13 sessions. Prerequisite: MPVM standing in the School of Veterinary Medicine or consent of instructor. Statistical methods in clinical, laboratory, and population medicine: graphical and tabular presentation of data; probability; binomial; Poisson, normal, t-, F-, and Chi-square distributions; elementary nonparametric methods; simple linear regression and correlation; life tables. Microcomputer applications of statistical procedures in population medicine. —F., Su. (F., Su.) Farver

403. Medical Statistics II (3)
Lecture—20 sessions; laboratory—10 sessions. Prerequisite: MPVM standing in the School of Veterinary Medicine and/or successful completion of course 402 (or equivalent) or consent of instructor. Analysis of variance in biomedical sciences; nonparametric methods; multiple regression; biomedical applications of statistical methods. Microcomputer applications to reinforce principles that are taught in lecture. Continuation of course 402. —F., W. (F., W.) Farver

404. Medical Statistics III (4)
Lecture—3 hours; laboratory—2 hours. Prerequisite: MPVM standing in the School of Veterinary Medicine and/or successful completion of course 403 (or equivalent) or consent of instructor. Continuation of course 403. Analysis of time dependent variation and trends, analysis of multiway frequency tables; logistic regression; survival analysis selecting the best regression equation; biomedical applications. —S. (S.)

405. Epidemiology Laboratory (1)
Lecture—1 session; lecture/discussion—1 session; laboratory—1 session. Prerequisite: MPVM standing in the School of Veterinary Medicine or consent of instructor. Practical application of epidemiological methods using the microcomputer as a tool to solve problems. Utilizes spreadsheets and databases as tools to organize and analyze data. Emphasize epidemiological methods introduced in course 405. Laboratory—10 sessions. Data sets provided. —F., W., S. (F., W., S.)

408A. Veterinary Research: Planning and Reporting (2)
Lecture—20 sessions. Prerequisite: MPVM standing in the School of Veterinary Medicine or consent of instructor. Planning, critical analysis, ethics, and written and oral communication of veterinary research. —F., W. (F., W.)

408B. Veterinary Research: Planning and Reporting (1)
Lecture—10 sessions. Prerequisite: MPVM standing in the School of Veterinary Medicine or consent of instructor. Planning, critical analysis, ethics, and written and oral communication of veterinary research. —F., W. (F., W.)

408C. Veterinary Research: Planning and Reporting (1)
Discussion—10 sessions. Prerequisite: Master of Preventive Veterinary Medicine standing in the School of Veterinary Medicine or consent of instructor. Planning, critical analysis, ethics, and written and oral communication of veterinary research. —S. (S.)

410. Animal Health Policy and Risk Communication (1)
Discussion—10 sessions. Prerequisite: MPVM standing in the School of Veterinary Medicine or consent of instructor. International, national and state policy issues affecting veterinary medicine, how policy is made, organizational cultures, the role of science in policy-making, ten best practices in risk/crisis communication, message-mapping for the public and policy-makers, and effective meeting management. —F. (F.) Mazet

426. Applied Epidemiologic Problem Solving (1)
Lecture—10 sessions. Prerequisite: MPVM standing in the School of Veterinary Medicine or consent of instructor. Integration of epidemiologic and statistical methodology in a problem-solving approach to contemporary animal population health issues. Data validation and manipulation; descriptive statistical analysis using spreadsheet applications, database management, and Epi Info software. Builds on skills learned in courses 405L and 406. —W. (W.)

Maternal and Child Nutrition (Department of Nutrition)

Francene M. Steinberg, Ph.D., Chairperson of the Department

Department Office. 3135 Meyer Hall
530-752-4630; http://www.extension.ucdavis.edu/nutrition

Faculty

Faculty members are listed on the website.

Graduate Study. The Nutrition Department offers the degree of M.A.S. in Maternal and Child Nutrition. This program consists of three required six-unit core courses (Nutrition During Pregnancy, Lactation and Infant Nutrition, and Child and Adolescent Nutrition), six to eight units of special topics seminars, two units of electives, and a six-unit student project (produced in consultation with a three-member guidance committee) for a total of 36 units. Each of the core courses will comprise 10 weeks of in-class instruction twice per week for two-and-a-half hours per meeting. Classes will also include online discussion of related material and readings.

Each student will be assigned a three-member guidance committee consisting of two members of the teaching faculty and an additional qualified faculty member to advise the student in identifying a student project.

Preparation. Admission to the program requires a bachelor’s degree with a grade point average of 3.0 or better. This includes (or is comparable to): one year of general chemistry, two quarters of organic chemistry, a course in statistics, one course in general physiology, and two quarters of the biochemistry of nutrition.

Graduate Advisers. Kathryn G. Dewey, Ph.D., Professor (Nutrition); Jane Heining, Ph.D., Academic Administrator (Nutrition)

Courses in Maternal and Child Nutrition. See courses under Nutrition, on page 490.

Mathematical and Physical Sciences

[College of Letters and Science]

Jesus De Loera, Ph.D., Program Director

Program Office. 118 Everson Hall

Committee in Charge

Andreas J. Albrecht, Ph.D. (Physics)
Joel Hass, Ph.D. (Mathematics)
Jacquelyn Gervay-Hague, Ph.D. (Chemistry)
Hans-Georg Muller, Ph.D. (Statistics)
Howard J. Spero, Ph.D. (Earth and Planetary Sciences)

The Program of Study

The Division of Mathematical and Physical Sciences teaches students to use experimental studies and the-
Mathematics

See Mathematics; and Applied Mathematics (A Graduate Group), on page 176.

Mathematics

[Mathematics 421]

Mathematics

[College of Letters and Science]

Dan Ramik, Ph.D., Chairperson

Department Office, 1130 Mathematical Sciences Bldg.

530-752-0827;

studentservices@math.ucdavis.edu; http://www.math.ucdavis.edu

Faculty

Javier Arsuaga, Ph.D., Professor (Molecular and Cellular Biology)

Eric Babson, Ph.D., Professor (Computer Science)

Zhaojun Bai, Ph.D., Professor (Computer Science)

Craig Benham, Ph.D., Professor

Joseph Biello, Ph.D., Professor

James Bremer, Ph.D., Associate Professor

Angela Y. Cheer, Ph.D., Professor

Tudor Dimofte, Ph.D., Assistant Professor

Jesus De Loera, Ph.D., Professor

C. Albert Fannjiang, Ph.D., Professor

Roland Freund, Ph.D., Professor

Michael P. Friedlander, Ph.D., Professor

Eugene Gorsky, Ph.D., Assistant Professor

Janko Gravner, Ph.D., Professor

Niels Gronbech-Jensen, Ph.D., Professor (Mechanical Engineering)

Robert Guglielmi, Ph.D., Professor

Joel Hass, Ph.D., Professor

John K. Hunter, Ph.D., Professor

Adam J. Jacob, Ph.D., Assistant Professor

Michael Kapovich, Ph.D., Professor

Matthias Koepe, Ph.D., Professor

Gregory J. Kuperberg, Ph.D., Professor

Timothy Lewis, Ph.D., Professor

Fu Liu, Ph.D., Professor

Kevin Luli, Ph.D., Assistant Professor

Ben Morris, Ph.D., Professor

Malotika Mulase, Ph.D., Professor

Academic Senate Distinguished Teaching Award

Bruno I. Nachtergaele, Ph.D., Professor

Brian Osserman, Ph.D., Professor

E. Gerry Puckett, Ph.D., Professor

Dan Romik, Ph.D., Associate Professor

Naoki Saito, Ph.D., Professor

Anne Schilling, Ph.D., Professor

Jennifer Schultens, Ph.D., Professor

Albert Schwarz, Ph.D., Professor

Steve Skipler, Ph.D., Professor

Alexander Soshnikov, Ph.D., Professor

Thomas Strohmer, Ph.D., Professor

J. Blake Temple, Ph.D., Professor

UC Davis Distinguished Professor 2012

Becca Thomases, Ph.D., Associate Professor

Abigail Thompson, Ph.D., Professor

Academic Senate Distinguished Teaching Award

Craig A. Tracy, Ph.D., Professor

Monica Vazirani, Ph.D., Professor

Mariel Vazquez, Ph.D., Professor (Microbiology and Molecular Genetics)

Samuel Walcott, Ph.D., Associate Professor

Andrew Waldron, Ph.D., Professor

Qinglan Xia, Ph.D., Professor

Emerti Faculty

David Barnett, Ph.D., Professor Emeritus

Donald C. Benson, Ph.D., Professor Emeritus

Carlos R. Borge, Ph.D., Professor Emeritus

Robert J. Buck, Professor Emeritus

Guldbak D. Chakerian, Ph.D., Professor Emeritus

Academic Senate Distinguished Teaching Award

Dyckes C. Culler, Ph.D., Professor Emeritus

James R. Diederich, Ph.D., Professor Emeritus

Dmitry B. Fuchs, Ph.D., Professor Emeritus

Robert D. Glaouz, Ph.D., Professor Emeritus

Kurt Kreith, Ph.D., Professor Emeritus

Arthur J. Krener, Ph.D., Professor

Melven R. Krom, Ph.D., Professor Emeritus

Gary J. Kwarski, Ph.D., Professor Emeritus

David G. Mead, Professor Emeritus

Academic Senate Distinguished Teaching Award

E. O. Milton, Ph.D., Professor Emeritus

Academic Senate Distinguished Teaching Award

Alexander I. Mogilner, Ph.D., Professor Emeritus

Donald A. Norton, Ph.D., Professor Emeritus

Weshek F. Pleffer, Ph.D., Professor Emeritus

G. Thomas Sallee, Ph.D., Professor

Academic Senate Distinguished Teaching Award

Sherman K. Stein, Litt.D. (Hon.), Ph.D., Professor Emeritus

Academic Senate Distinguished Teaching Award

Howard J. Weiner, Ph.D., Professor Emeritus

Roger Wets, Ph.D., Professor Emeritus

Affiliated Faculty

Ali Dad-del, Ph.D., Lecturer

Academic Federation Excellence in Teaching Award

Duane Koubk, Ph.D., Lecturer

Lawrence Marx, Ph.D., Lecturer

The Major Programs

Mathematics is the study of abstract structures, space, change, and the interrelations of these concepts. It is also the language of the exact sciences.

The Program.

Students majoring in mathematics may follow a program leading to either the Bachelor of Arts or the Bachelor of Science degree. After completing basic introductory courses such as calculus and linear algebra, students plan an upper division program in consultation with a faculty adviser. The upper division course offering is grouped into entry levelum, core, and enrichment courses. The core courses are designed to serve as a bridge between the concrete mathematics of the lower division and the more abstract concepts taught in upper division courses. The core courses are intended to provide basic mathematical techniques, whereas the enrichment choices allow students to further their mathematical knowledge and skills that feature their research or career interests. This individualized program can lead to graduate study in pure or applied mathematics, elementary or secondary level teaching, or to other professional goals. It can also reflect a special interest such as computational and applied mathematics, computer science, or statistics, or may be combined with a major in some other field.

Career Alternatives.

A degree in mathematics provides entry to many careers in addition to teaching. For instance, operations research, systems analysis, computing, actuarial work, insurance, and financial services are only a few such careers. Mathematics is also a sound basis for graduate work in a variety of fields, such as law, engineering, and economics.

A.B. Major Requirements:

Preparatory Subject Matter ............... 43-50

Mathematics 12 (or high school equivalent). ........................................... 0-3


One of the following two options: (a)

Mathematics 22A and 108 OR (b)

Mathematics 67, 11A, 11B, 11C, 11D ......................................... 47

Computer Science 30 or Engineering 41 ......................................... 4

Mathematics 22AL or equivalent MATLAB knowledge ......................... 0-1

Additional non-Mathematics courses chosen from natural sciences .... 12

NOTE: Basic knowledge of MATLAB is required for both Mathematics 67 and 22A. Students can learn it on their own, enroll in Engineering 2, Mechanical Engineering 14, or in the one unit course Mathematics 22AL (can be taken concurrently).

Depth Subject Matter ......................... 37-42

A. Entry Level (Optional) ...................... 0-4

Suggested choice; one course from

Mathematics 108, 114, 115A, 141, 145 ......................................... 0-4

B. Core ........................................ 16

Mathematics 125A .................................................. 4

Mathematics 125B .................................................. 4

Mathematics 135A .................................................. 4

Mathematics 150A .................................................. 4

C. Choose one Plan from the following two; up to 4 of these 18 units may be approved upper division courses outside of the Department of Mathematics with extensive use of mathematics .......... 18

Plan 1: General Mathematics

Additional upper division mathematics units selected in consultation with and subject to approval of an adviser ........................................... 18

Plan 2: Secondary Teaching Mathematics

Mathematics 111 .................................................. 4

Mathematics 115A .................................................. 4

Mathematics 141 .................................................. 4

Additional upper division mathematics units selected in consultation with and subject to approval of an adviser ........................................... 6

NOTE: Students who wish to satisfy the single subject matter waiver for the teaching credential should see an adviser as early as possible.

D. Capstone Course: Mathematics 189 or 192 (Internship in Math, Mathematics 194 (Undergraduate Thesis) or 196 (Special Topics) or an approved substitute in consultation with the Undergraduate Vice Chair ........................................... 3-4