

## Crop and Soil Sciences—CSS

- 870 Techniques of Analyzing Unbalanced Research Data**  
Spring. 4(4-0) Interdepartmental with Animal Science; Forestry; Fisheries and Wildlife; Horticulture. Administered by Department of Animal Science. RB: (STT 464) R: Open only to graduate students in the College of Agriculture and Natural Resources. SA: ANS 943 Not open to students with credit in ANS 943.

Linear model techniques to analyze biological research data characterized by missing and unequal number of observations in classes. Simultaneous consideration of multiple factors. Prediction of breeding values and estimation of population parameters from variance and covariance components.

- 890 Independent Study**  
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to graduate students in College of Agriculture and Natural Resources, College of Engineering, or College of Natural Science.

Individual study on field, laboratory, or library research.

- 891 Current Topics in Ecology and Evolution**  
Summer. 1 credit. Given only at W.K. Kellogg Biological Station. A student may earn a maximum of 8 credits in all enrollments for this course. Interdepartmental with Zoology; Plant Biology. Administered by Department of Zoology.

Presentation and critical evaluation of theoretical and empirical developments by visiting scientists.

- 891B Selected Topics in Plant Breeding and Genetics**  
Fall, Spring, Summer. 1 to 2 credits. A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with Horticulture; Forestry. Administered by Department of Horticulture. R: Open only to graduate students in Plant Breeding and Genetics or Genetics. Approval of department.

Selected topics in plant breeding.

- 892 Plant Breeding and Genetics Seminar**  
Fall, Spring, Summer. 1(1-0) A student may earn a maximum of 8 credits in all enrollments for this course. Interdepartmental with Horticulture; Forestry. Administered by Department of Horticulture.

Experience in review, organization, oral presentation, and analysis of research.

- 893 Selected Topics**  
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open only to graduate students in College of Agriculture and Natural Resources, College of Engineering, or College of Natural Science.

Selected topics in crop and soil sciences of current interest and importance.

- 899 Master's Thesis Research**  
Fall, Spring, Summer. 1 to 12 credits. A student may earn a maximum of 99 credits in all enrollments for this course. R: Open only to master's students in Crop and Soil Sciences.

Master's thesis research.

- 921 Contemporary Statistical Models in Biology**  
Fall of odd years. 3(3-0) RB: (STT 465) or approval of department. Working knowledge of SAS.

Estimating functions. Growth models, generalized linear models, linear and non-linear mixed models. Field experiments with spatial trends. Longitudinal data. Modeling in the presence of spatial and temporal correlations.

- 941 Quantitative Genetics in Plant Breeding**  
Spring of even years. 2(1-2) Interdepartmental with Forestry; Horticulture. RB: (CSS 819 and STT 464)

Theoretical and genetic basis of statistical analysis of quantitative traits using genetic markers. Computational tools for the study of quantitative traits.

- 999 Doctoral Dissertation Research**  
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 99 credits in all enrollments for this course. R: Open only to doctoral students in Crop and Soil Sciences.

Doctoral dissertation research.

- 202 Introduction to Macroeconomics**  
Fall, Spring, Summer. 3(3-0) Not open to students with credit in EC 252H.

Determinants of Gross National Product, unemployment, inflation and economic growth. National income accounting and fiscal policy. Aggregate demand, supply management and monetary policy.

- 210 Economics Principles Using Calculus**  
Fall. 3(3-0) P:M: (MTH 133 or MTH 153H or MTH 126) Not open to students with credit in EC 201 or EC 202.

A combined microeconomics and macroeconomics course. Emphasis on topics of interest in engineering and management, such as discounting, cost-benefit analysis, innovation, externalities, and the role of government regulation.

- 251H Microeconomics and Public Policy**  
Fall, Spring. 4(4-0) Not open to students with credit in EC 301.

Theories of consumer behavior, production and cost. Output and price determination in competition and monopolies. Welfare economics, general equilibrium, externalities, and public goods.

- 252H Macroeconomics and Public Policy**  
Fall, Spring. 3(3-0) P:M: (EC 201 and EC 301) or (EC 251H) Not open to students with credit in EC 302.

Theory of national income, unemployment, inflation and economic growth and its application to economic analysis and policy.

- 293 Cooperative Education for Business Students**

Fall, Spring. 1(1-0) A student may earn a maximum of 3 credits in all enrollments for this course. Interdepartmental with Marketing and Supply Chain Management; Accounting; Finance; Management; Hospitality Business. Administered by Department of Marketing and Supply Chain Management. R: By permission of the Department only.

Integration of pre-professional educational employment experiences in industry and government with knowledge and processes taught in the student's academic program. Educational employment assignment approved by the Department of Marketing and Supply Chain Management.

- 301 Intermediate Microeconomics**  
Fall, Spring, Summer. 3(3-0) P:M: (EC 201) RB: (EC 202) Not open to students with credit in EC 251H.

Theories of consumer choice, production, cost, perfect competition, and monopoly. Welfare economics, general equilibrium, externalities and public goods.

- 302 Intermediate Macroeconomics**  
Fall, Spring, Summer. 3(3-0) P:M: (EC 201 and EC 202) Not open to students with credit in EC 252H.

National income accounting. Determination of aggregate output, employment, price level, and inflation rate. Policy implications.

- 303 Economic Thought I**  
Fall. 3(3-0) P:M: (EC 201 or EC 251H) and (EC 202 or EC 252H) SA: EC 403

Forerunners of classical economics. Classical economic thought from Adam Smith to J.S. Mill. The socialist reaction.

## EARTH SCIENCE ES

### Department of Geological Sciences College of Natural Science

- 446 Laboratory Investigations in Earth Science**  
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Approval of department.

Laboratory techniques and investigations in geological sciences or oceanology.

- 800 Special Problems in Earth Science**  
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Approval of department.

Individual faculty directed study on topics in earth science.

## ECONOMICS EC

### Department of Economics College of Social Science

- 201 Introduction to Microeconomics**  
Fall, Spring, Summer. 3(3-0) Not open to students with credit in EC 251H.

Economic institutions, reasoning and analysis. Consumption, production, determination of price and quantity in different markets. Income distribution, market structure and normative analysis.

- 201T Introduction to Microeconomics**  
Fall, Spring. 3(2-2) Not open to students with credit in EC 201 or EC 251H.

Microeconomic reasoning and analysis. Determination of price and quantity in different markets. Income distribution, market structure, and normative analysis. Extensive use of computer exercises and internet technology.