801. Research Procedures in Plant Science
Spring. 3(2-2)
P: STT 422.
Applications of epistemology and logic in plant science research. Classical research methods. Hypotheses. Analysis of laboratory, storage, greenhouse, and field experiments.

802. Growth and Development of Horticultural Crops
Spring of even-numbered years. 3(2-2)
Physiology of grafting, juvenility, flowering, fruiting, senescence, bud and seed dormancy, apical dominance of horticultural crops.

803. Postharvest Physiology
Spring of odd-numbered years. 3(2-2)
Physiology, biochemistry and molecular biology of maturation, ripening and senescence of harvested horticultural crops.

819. Advanced Plant Breeding
Fall. 3(3-0) Interdepartmental with Crop and Soil Sciences, and Forestry.
P: CSS 450, STT 422.
Genetic expectations resulting from breeding strategies with cross- and self-pollinated crop plants. Germplasm collections, mapping populations, and modifications of reproductive biology useful for crop improvement.

823. Methods in Genetic Engineering of Plants
Fall of even-numbered years. 4(0-8) Interdepartmental with Crop and Soil Sciences, and Forestry. Administered by Crop and Soil Sciences.
Bacterial transformation. Plant transformation via Ti-plasmid, protoplast/PEG, and electroporation methods. Detection of foreign gene integration and expression.

827. Techniques in Cytogenetics
Fall of odd-numbered years. 1(0-3) Interdepartmental with Crop and Soil Sciences, and Forestry. Administered by Crop and Soil Sciences.
Preparation of chromosomes from commercially important plants for cytogenetic analysis.

836. Plant Evolution and the Origin of Crop Species
Fall of even-numbered years. 3(3-0) Interdepartmental with Crop and Soil Sciences, and Forestry.
P: CSS 350.
Cultural and biological aspects of the evolution of domestic plants. Origin and diversity of cultivated plants.

853. Plant Mineral Nutrition
Fall of odd-numbered years. 3(3-0) Interdepartmental with Crop and Soil Sciences. Administered by Crop and Soil Sciences.
P: BOT 301.
Inorganic ion transport in plant cells and tissues. Physiological responses and adaptation to problem soils. Genetic diversity in nutrient uptake and use by plants. Physiological roles of elemental nutrients in crop growth.

863. Environmental Plant Physiology
Spring of odd-numbered years. 3(3-0) Interdepartmental with Botany and Plant Pathology. Administered by Botany and Plant Pathology.
P: BOT 301 or BOT 414 or BOT 415.
Interaction of plant and environment. Photobiology, thermophysiology, and plant-water relations.

890. Independent Study
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 6 credits in all enrollments for this course.
R: Approval of department.
Individual study of problems of special interest.

891A. Selected Topics in Horticulture
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 Horticulture. Approval of department.
Selected topics in horticultural science of current interest and importance.

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 Crop and Soil Sciences, and Forestry.
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 Crop and Soil Sciences, and Forestry.
Experience in review, organization, oral presentation, and analysis of research.

894. Horticulture Seminar
Fall, Spring. 1(1-0)
Experience in review, organization, oral presentation and analysis of research.

898. Master's Research
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course.
R: Approval of department.
Master's degree Plan B project.

899. Master's Thesis Research
Fall, Spring, Summer. 1 to 10 credits. A student may earn a maximum of 99 credits in all enrollments for this course.
R: Open only to graduate students in Horticulture.

930. Advanced Forest Genetics
Fall of odd-numbered years. 2(1-2) Interdepartmental with Forestry, and Crop and Soil Sciences. Administered by Forestry.
P: HRT 819 or HRT 836.
Applications of genetics, plant breeding, and biotechnology to the improvement, and preservation of diversity, of tree species.

941. Quantitative Genetics in Plant Breeding
Spring of even-numbered years. 3(3-0) Interdepartmental with Crop and Soil Sciences, and Forestry. Administered by Crop and Soil Sciences.
P: CSS 450, STT 422.
Theoretical genetic basis of plant breeding with emphasis on traits exhibiting continuous variation. Classical and contemporary approaches to the study and manipulation of quantitative trait loci.

943. Techniques of Analyzing Unbalanced Research Data
Spring. 4(4-0) Interdepartmental with Animal Science, Forestry, Crop and Soil Sciences, and Fisheries and Wildlife. Administered by Animal Science.
P: STT 464. R: Open only to graduate students in the College of Agriculture and Natural Resources.
Linear model techniques to analyze research data characterized by missing and unequal number of observations in classes. Simultaneous consideration of multiple factors. Estimable comparisons. Hypothesis testing. Computational strategies. Variance and covariance components. Breeding values.

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 Ph.D. students in Horticulture.

HOTEL, RESTAURANT AND INSTITUTIONAL MANAGEMENT HRI

School of Hotel, Restaurant and Instutional Management
The Eli Broad College of Business and The Eli Broad Graduate School of Management

200. Introduction to the Hospitality Industry
Fall. 3(3-0)
R: Open only to freshmen and sophomores.
Survey of all sectors, segments and disciplines of the hospitality and tourism industries. Topics include impact of travel and tourism, hospitality trends, and overview of accounting, marketing, and sales.

237. Management of Lodging Facilities
Spring. 3(3-0)
P: HRI 200, one ISP course. R: Open only to freshmen, sophomores and juniors.
Operational departments and logical functions in the operation of various types of lodging properties. Planning and control of physical, mechanical, and electrical systems.

265. Quality Food Management
Spring. 3(3-0)
P: HRI 200, one ISB course. R: Open only to sophomores and juniors.
Standards of microbiology, sanitation, nutrition, and other quality issues in food management. Chemical, health, and workplace standards. Management of product quality and costs.

302. Hospitality Managerial Accounting
Fall, Spring. 3(3-0)
P: ACC 201; CPS 100 or CPS 130; HRI 200; STT 315 or concurrently. R: Open only to juniors and seniors.
Principles of managerial accounting applied to hospitality enterprises. Topics include financial statements, forecasting methods, internal control, and accounting ethics.

307. Organizational Behavior in the Hospitality Industry
Spring. 3(3-0)
P: ML 300, MGT 302; HRI 237. R: Open only to juniors and seniors.
Human resource management and interpersonal skills in the hospitality industry. Focus on managing in a culturally diverse workplace.

337. Hospitality Information Systems
Fall. 3(3-0)
P: HRI 237; CPS 100 or CPS 130.
Technology for gathering, analyzing, storing and communicating information within the hospitality industry.

345. Quantity Food Production Systems
Fall, Spring. 3(1-4)
P: HRI 265. R: Open only to juniors and seniors.
Organization of food and beverage operations. Product knowledge, especially purchasing, storing, preparing and production in food service operations. Menu development and recipe management.

353. Professional Work Experience I (W)
Fall, Spring, Summer. 1(1-0)
P: HRI 200. R: Completion of Tier I writing requirement.
Work and training in hospitality management and supervision. Written report detailing work experience.

454. Professional Work Experience II (W)
Fall, Spring, Summer. 1(1-0)
P: HRI 353. R: Open only to juniors and seniors. Completion of Tier I writing requirement.
Professional workplace experience involving planning, controlling, staffing, and organizing. Professionally written reports detailing experiences required.

473. Hospitality Industry Research
Fall, Spring. 3(3-0)
P: HRI 337, STT 315. R: Open only to seniors. Not open to students with credit in ML 317.
Strategies and techniques for obtaining, analyzing, evaluating, and reporting relevant research data.

475. Innovations in Hospitality Marketing
Fall, Spring. 3(3-0)
P: ML 300, HRI 307; HRI 473 or concurrently. R: Open only to seniors.
Marketing of hospitality industry products and concepts, amid global competition and culturally diverse markets and workforces.

482. Hospitality Managerial Finance
Fall, Spring, Summer. 3(3-0)
P: FI 311. R: Open only to seniors.
Cash flow determination and management. Strategies for financing hospitality ventures and expansion. Determining financial viability of proposed and existing operations.

485. Advanced Foodservice Management
Fall, Spring, Summer. 3(1-4)
P: HRI 302, HRI 307, HRI 345. R: Open only to seniors in Hotel, Restaurant and Institutional Management.
Beverage management and dining room service. Guest relations and current management topics. Emphasis on foodservice team projects.

489. Policy Issues in Hospitality Management
Fall, Spring. 3(3-0)
P: HRI 482, HRI 454. R: Open only to seniors in Hotel, Restaurant and Institutional Management. Not open to students with credit in MGT 409.
Management problems and issues in the hospitality industry. Focus on decision-making models. Case study analysis, discussion and written reports.

490. Independent Study
Fall, Spring, Summer. 1 to 3 credits.
Supervised research in hospitality management and operations.

491. Current Topics in Hospitality Industry
Spring. 3(3-0)
P: HRI 307. R: Open only to seniors.
Emerging topics or issues confronting the hospitality service industry.

807. Workforce Management in the Hospitality Industry
Fall. 3(3-0)
R: Open only to graduate students in Business.
Identifying and solving hospitality workforce problems. Topics include leader hip styles, interpersonal and organization communication.

837. Hospitality Computer Information Systems
Spring. 3(3-0)
R: Open only to graduate students in College of Business.
Overview of computer systems and networks designed for the hospitality industry.

875. Marketing in the Hospitality Industry
Spring. 3(3-0)
R: Not open to first-year graduate students. Open only to MBA students.
A framework for understanding hospitality marketing in a global business environment. Emphasis on industry responses to changing consumer trends, and applying marketing principles to case studies.

882. Financial Management in the Hospitality Industry
Spring. 3(3-0)
P: ACC 840, FI 889. R: Not open to first-year graduate students. Open only to MBA students.
Interpretation and analysis of financial statements. Budget preparation and analysis. Leasing, franchising, and management contracts.

885. Seminar in Food and Beverage Systems Management
Fall. 3(3-0)
R: Open only to graduate students in Business. Not open to students with credit in HRI 485.
Management principles and practices in quality food and beverage operations. Emphasis on product, sales, income, and human resource strategies.

890. Independent Study
Fall, Spring. 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 the College of Business. Approval of school.
Faculty-supervised independent study.

HUMAN ECOLOGY HEC

College of Human Ecology

201. The Human Ecological Perspective
Fall, Spring. 3(3 -0)
R: Not open to freshmen.
Human ecological perspective and philosophy. Holistic, futuristic problem solving.

290. Independent Study
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course.
R: Open only to students in the College of Human Ecology.
Individual study of interdisciplinary topics related to the human ecology perspective under the guidance of a faculty member.

HUMAN ENVIRONMENT AND DESIGN HED

Department of Human Environment and Design
College of Human Ecology

121. Apparel I: Two-Dimensional Design
Fall. 3(0-6)
Design fundamentals and creative problem solving in apparel design. Visual communication of design ideas through apparel rendering.

140. Design for Living
Fall, Spring, Summer. 3(3-0)
Interior design from the human ecological perspective. The reciprocal impact of the designed environment on human behavior, design terminology, and the design process.

142. Design Theory Studio
Fall, Summer. 3(0-6)
P: HED 140 or concurrently. R: Open only to Interior Design students.
Design elements and principles in creative problem solving.

150. Interior Design Drafting
Spring. 3(1-4)
R: Open only to Interior Design students.
Drafting and two-dimensional drawing for interior design.

152. Interior Environments
Fall, Spring. 4(4-0)
Interior design fundamentals and human behavior. Selection of textiles, materials and components of the built environment.

222. Apparel II: Introduction to Three Dimensional Design
Spring. 3(0-6)
P: HED 121.
Garment structuring: pattern development using two-dimensional and three-dimensional styling techniques.

231. Textiles I: Introductory Textile Science
Fall. 4(3-2)
P: CEM 141, CEM 161.
Application of basic chemistry to textiles. Structure and finish of fibers and yarns. dye chemistry. Printing applications. Tactile, optical, flammability and electrical properties. Care of textiles.

240. Computer Aided Design for Interior Designers
Fall. 3(0-6)
R: Not open to freshmen.
Introduction to computer aided design applications for interior design.

242. Interior Design Presentation and Media
Fall. 3(0-6)
P: HED 150. R: Open only to Interior Design students.
Design fundamentals as components of interior space. Design communication through three-dimensional drawings in media. Presentation procedures and techniques.

244. Interior Design Materials
Fall. 3(3-0)
P: HED 152. R: Not open to freshmen. Open only to Interior Design and Merchandising Management students.
Selection of textiles, materials and components of the built environment.

250. Structural Systems in Interior Design
Spring. 3(1-4)
P: HED 240, HED 242. C: HED 252.
Structural principles of interior design.

252. Interior Design Synthesis I
Spring. 4(1-6)
P: HED 242; HED 152 or concurrently. C: HED 250. R: Not open to freshmen. Open only to Interior Design students.
Design process with emphasis on problem resolution for residential and commercial interiors.

261. Introduction to Merchandising Management
Fall, Spring. 3(3-0)
R: Not open to freshman.
Retailing of goods and services. Retail industry structure, location, pricing, promotion, and management.