

Descriptions—History of Art of Courses

870. Seminar in African Art

Spring of odd years. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course. R: Approval of department.
Intensive investigation of a topic in the history of African painting, sculpture, or architecture.

890. Independent Study

Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Approval of department.
Special project, directed reading, and research arranged by an individual graduate student and a faculty member in areas supplementing regular course offerings.

891. Special Topics in History of Art

Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Approval of department.
Special topics supplementing regular course offerings proposed by faculty on a group study basis for graduate students.

899. Master's Thesis 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.
Directed research leading to a master's thesis, used in partial fulfillment of Plan A master's degree requirements.

HORTICULTURE

HRT

Department of Horticulture College of Agriculture and Natural Resources

100. Horticulture: Plants and People

Spring. 3(2-2) R: Not open to junior or senior Horticulture majors.
Functional uses of plants: aesthetics, food, industry, recreation. Growing and using horticultural plants. Consumer and environmental issues related to horticulture in daily living.

203. Principles of Horticulture I

Fall. 2(3-0) P: BOT 105 or BS 110 or BS 111 or concurrently.
Contributions of horticulture to society. Cultivar development, crop geography, environmental factors, vegetative and reproductive development, and crop management. Field trip required.
SA: HRT 201

203L. Principles of Horticulture I Laboratory

Fall. 1(0-3) P: HRT 203 or concurrently.
Growing, handling, and identifying plants. Irrigation, fertilization, and media for plant production. Pruning and control of flowering and growth. Measuring environmental factors. Sources of cultural information.
SA: HRT 201L

204. Principles of Horticulture II

Spring. 2(3-0) P: HRT 203.
Asexual and sexual propagation. Plant population effects, pest management, harvesting, and post-harvest handling and marketing of horticultural crops. Field trip required.
SA: HRT 202

204L. Principles of Horticulture II Laboratory

Spring. 1(0-3) P: HRT 204 or concurrently.
Growing, handling, and identifying plants. Asexual propagation from cuttings. Micropropagation. Bulbs, tubers, and corms. Grafting. Seed germination on perennial and annual crops. Storage of fruit.
SA: HRT 202L

211. Landscape Plants I

Fall. 3(2-3)
Identification, adaptation, and evaluation of shade trees, narrow-leaved evergreens, shrubs, woody vines, herbs, ornamental grasses, and herbaceous perennials.

212. Landscape Plants II

Spring. 3(2-3)
Identification, adaptation, and evaluation of flowering trees and shrubs, broad-leaved evergreens, herbaceous vines, ground covers, bulbs, wildflowers, ferns, and aquatic plants.

221. Greenhouse Structures and Management

Fall. 3(3-0)
Planning and operation of a commercial greenhouse. Structures, coverings, heating, cooling, ventilation, irrigation, fertilization, root media, and pest control. Field trips required.

225A. Basic Floral Design

Spring. 2(1-2)
Principles and mechanics of floral design. Line and mass designs, symmetrical and asymmetrical designs. Contemporary techniques. Flower identification. Retail pricing. Laboratory fee required. First half of semester.

225B. Advanced Floral Design

Spring. 2(1-2) P: HRT 225A or concurrently.
Marketing, selling, and designing flowers for weddings, funerals, and other special events. Identification, handling, and design use of fresh flowers and other materials. Laboratory fee required. Second half of semester.

310. Nursery Management

Fall. 3(2-3) P: HRT 204. R: Not open to freshmen and sophomores.
Management practices applied to wholesale and retail nursery production and marketing. Field trip required.

311. Landscape Design and Management Specifications

Spring. 4(3-2) Interdepartmental with Landscape Architecture. P: HRT 211; HRT 212 or concurrently.
Landscape design techniques, spatial organization, plant selection, plant and site interaction. Relationship between design, construction and maintenance. Preparation of planting and maintenance specifications.

322. Greenhouse Production I: Potted Plants

Fall. 3(1-4) P: HRT 204; HRT 221 or concurrently.
Commercial production of floriculture greenhouse crops with emphasis on flowering and potted foliage plants and on seed germination. Field trips required.

323. Greenhouse Production II: Cut Flowers and Bedding Plants

Spring. 3(1-4) P: HRT 204, HRT 221.
Commercial production of bedding plants and cut flowers. Finishing procedures for selected potted plant crops. Field trips required.

325. Floral Distribution and Marketing

Spring. 3(2-2) P: HRT 204 or concurrently.
Business operations of wholesale and retail floral outlets. Identification, care, and handling of commercial cut flowers and foliage. Field trips required.

331. Tree and Small Fruit Production and Management

Fall. 3(2-3) P: HRT 204.
Commercial aspects of tree and small fruit production. Procedures used in production of major fruit crops grown in Michigan: apples, cherries, peaches, grapes, blueberries, brambles, and strawberries. Field trips required.
SA: HRT 330

341. Vegetable Production and Management

Spring. 3(2-3) P: HRT 204.
Field production of vegetable crops. Marketing systems, tillage practices, field establishment, cultural management, pest management, harvesting, and postharvest handling and storage. Field trip required.
SA: HRT 440, HRT 442

394A. Retail Florist Practicum

Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. P: HRT 204. R: Open only to juniors and seniors. Approval of department and application required. Maximum of 8 credits may be earned in HRT 394A and HRT 490.
Customer relations. Floral design, flower buying, holiday planning. Advertising, display. Financial recordkeeping. Flower care and handling.

401. Physiology and Management of Herbaceous Plants

Spring. 3(3-0) P: HRT 221, BOT 301. R: Not open to freshmen and sophomores
Physiological and flowering responses of herbaceous plants to light, temperature, nutrients, and gases. Management of these factors for optimum production.

403. Handling and Storage of Horticultural Crops

Fall. 3(2-3) P: BOT 105 or BS 110. R: Not open to freshmen and sophomores.
Biological principles involved in quality maintenance of horticultural products. Control of deterioration during harvesting, handling, transport, and storage. Field trip required.
SA: HRT 482

- 404. Horticultural Management (W)**
Spring. 3(2-2) P: EC 201 or EC 202; HRT 204 or CSS 370 or FOR 404. R: Open only to seniors in the College of Agriculture and Natural Resources. Completion of Tier I writing requirement.
Integration of physiological, genetic, economic, and production principles to develop a horticultural business plan. Management techniques. Environmental impacts of business and production practices.
SA: HRT 488
- 411. Landscape Contract Management**
Fall. 3(2-2) P: HRT 311.
Management of landscape construction and maintenance operations. Working drawings, construction specifications, labor and equipment standards, and bid procedures. Case studies.
- 441. Plant Breeding and Biotechnology**
Spring of even years. 4(3-2) Interdepartmental with Crop and Soil Sciences; and Forestry. Administered by Crop and Soil Sciences. P: (CSS 350)
Plant improvement by genetic manipulation. Genetic variability in plants. Traditional and biotechnological means of creating and disseminating recombinant genotypes and cultivars.
- 451. Cellular and Molecular Principles and Techniques for Plant Sciences**
Spring. 4(2-6) Interdepartmental with Crop and Soil Sciences; and Forestry. Administered by Crop and Soil Sciences. P: (CSS 350 or ZOL 341)
Principles, concepts, and techniques of agricultural plant biotechnology. Recombinant DNA technology, plant molecular biology, transformation, cell tissue, and organ culture in relation to plant improvement.
- 477. Pest Management I: Pesticides in Management Systems**
Fall. 3(3-0) Interdepartmental with Entomology; Crop and Soil Sciences; and Fisheries and Wildlife. Administered by Entomology. P: CEM 143; BOT 405 or CSS 402, ENT 404 or ENT 470 or FW 328.
Chemistry, efficient use, and environmental fate of pesticides. Legal and social aspects of pesticide use.
- 478. Pest Management II: Biological Components of Management Systems (W)**
Spring of even years. 3 credits. Interdepartmental with Entomology; Crop and Soil Sciences; Forestry; and Fisheries and Wildlife. Administered by Entomology. P: ENT 404 or ENT 470 or BOT 405 or CSS 402 or FW 328. R: Completion of Tier I writing requirement.
Principles of host plant resistance and biological control and their relationship to the design of agroecosystems. Classification of insect biological control agents.
- 480. Woody Plant Physiology**
Spring. 3(3-0) Interdepartmental with Forestry. P: BOT 301. R: Not open to freshmen and sophomores.
Physiology of carbon utilization. Effects of water, temperature, nutrition, and light on apical, vegetative, and reproductive growth of woody plants.
- 486. Biotechnology in Agriculture: Applications and Ethical Issues**
Spring of even years. 3(3-0) Interdepartmental with Crop and Soil Sciences; Forestry; and Philosophy. P: BS 111 or BOT 105. R: Not open to freshmen and sophomores.
Current and future roles of biotechnology in agriculture: scientific basis, applications. Environmental, social, and ethical concerns.
- 490. Independent Study in Horticulture**
Fall, Spring, Summer. 1 to 2 credits. A student may earn a maximum of 6 credits in all enrollments for this course. P: HRT 202. R: Approval of department; application required.
Independent study of horticulture on a field, laboratory or library research program of special interest to the student.
- 491. Selected Topics in Horticulture**
Fall, Spring. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. P: HRT 202. R: Not open to freshmen and sophomores.
Selected topics in horticulture of current interest and importance.
- 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 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 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 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 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 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.
- 842. Population Genetics, Genealogy and Genomics**
Fall. 3(3-0) Interdepartmental with Forestry; Animal Science; Crop and Soil Sciences; Genetics; and Fisheries and Wildlife. Administered by Forestry. RB: Precalculus, basic genetics.
Population genetic processes underlying patterns of molecular genetic variation. Genealogical approaches to the study of genomic diversity, phylogenetic reconstruction, and molecular ecology.
- 853. Plant Mineral Nutrition**
Fall of odd 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 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) A student may earn a maximum of 4 credits in all enrollments for this course.
Experience in review, organization, oral presentation and analysis of research.

Descriptions—Horticulture of Courses

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 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 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; Crop and Soil Sciences; Forestry; 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.

HOSPITALITY BUSINESS HB

School of Hospitality Business The Eli Broad College of Business and The Eli Broad Graduate School of Management

200. Introduction to the Hospitality Industry

Fall. 3(3-0)

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.

SA: HRI 200

210. Introduction to the Casino Industry

Fall. 3(3-0)

Social issues of gaming, casino games of chance, management controls and marketing plans.

211. Club Operations and Management

Spring of odd years. 3(3-0)

Club operations and management. City, country, yacht, and athletic clubs. Field trips required.

237. Management of Lodging Facilities

Spring. 3(3-0) P: (HB 200) R: Open only to freshmen or sophomores or juniors.

Operational departments and logical functions in the operation of various types of lodging properties. Planning and control of physical, mechanical, and electrical systems.

SA: HRI 237

265. Quality Food Management

Spring. 3(3-0) P: (HB 200) R: Open only to freshmen or sophomores or juniors.

Standards of microbiology, sanitation, nutrition, and other quality issues in food management. Chemical, health, and workplace standards. Management of product quality and costs.

SA: HRI 265

302. Hospitality Managerial Accounting

Fall, Spring. 3(3-0) P: (ACC 201 and CSE 101 or concurrently and HB 200) R: Open only to juniors or seniors.

Principles of managerial accounting applied to hospitality enterprises. Topics include financial statements, forecasting methods, internal control, and accounting ethics.

SA: HRI 302

307. Organizational Behavior in the Hospitality Industry (W)

Spring. 3(3-0) P: (MGT 302 and HB 237) and completion of Tier I writing requirement. R: Open only to juniors or seniors.

Human resource management and interpersonal skills in the hospitality industry. Focus on managing in a culturally diverse workplace.

SA: HRI 307

320. Casino Operations and Management

Spring of even years. 3(3-0) P: (HB 210)

Practices and problems associated with casino management, staffing, security, protection of table games, and control.

337. Hospitality Information Systems

Fall. 3(3-0) P: (HB 237 and CSE 101)

Technology for gathering, analyzing, storing and communicating information within the hospitality industry.

SA: HRI 337

345. Quantity Food Production Systems

Fall, Spring. 3(1-4) P: (HB 265) R: Open only to juniors or seniors.

Organization of food and beverage operations. Product knowledge, especially purchasing, storing, preparing and production in food service operations. Menu development and recipe management.

SA: HRI 345

410. Casino Controls and Finance

Fall of odd years. 3(3-0) P: (ACC 201 and HB 210)

Gaming regulation of the casino industry, casino cash controls, accounting controls, slot machine controls, financial reporting, requirements.

411. Hospitality Beverages

Spring of odd years. 3(3-0) P: (HB 200)

Evaluation and selection of hospitality beverages. Geographical origins of beverages, beverage production, quality assessment, matching beverages with food, health and social considerations.

415. Total Quality Management in the Hospitality Industry

Spring. 3(3-0) P: (MGT 302 or HB 307)

Total quality management and continuous quality improvement in the hospitality industry. Quality planning and control, assessment, customer surveys and feedback, cost of quality.

473. Hospitality Industry Research

Fall, Spring. 3(3-0) P: (HB 337 and STT 315) R: Open only to seniors. Not open to students with credit in MSC 317 or STT 317.

Strategies and techniques for obtaining, analyzing, evaluating, and reporting relevant research data.

SA: HRI 473

475. Innovations in Hospitality Marketing

Fall, Spring. 3(3-0) P: (MSC 300 and HB 307 and HB 473) R: Open only to seniors.

Marketing of hospitality industry products and concepts, amid global competition and culturally diverse markets and workforces.

SA: HRI 475

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.

SA: HRI 482

485. Advanced Foodservice Management

Fall, Spring, Summer. 3(1-4) P: (HB 302 and HB 307 and HB 345) R: Open only to seniors in The School of Hospitality Business.

Beverage management and dining room service. Guest relations and current management topics. Emphasis on foodservice team projects.

SA: HRI 485

489. Policy Issues in Hospitality Management (W)

Fall, Spring. 3(3-0) P: (HB 307) R: Open only to seniors in The School of Hospitality Business. 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.

SA: HRI 489

490. Independent Study

Fall, Spring, Summer. 1 to 3 credits.

Supervised research in hospitality management and operations.

SA: HRI 490