

## Descriptions — Entomology of Courses

**870. Plant Nematology**  
*Spring of odd-numbered years. 3(2-3) Interdepartmental with Botany and Plant Pathology.*  
*P: BOT 405.*  
 Biology, host parasite relationships and management of selected nematode diseases of economic plants.

**890. Independent Study**  
*Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 8 credits in all enrollments for this course.*  
*R: Open only to graduate students.*  
 Individual study on a field or laboratory research topic or review of published literature on a topic of interest.

**899. Master's Thesis Research**  
*Fall, Spring, Summer. 1 to 12 credits. A student may earn a maximum of 24 credits in all enrollments for this course.*  
*R: Open only to masters students in Entomology.*

**940. Analytical Techniques for Bioactive Compounds: Separation**  
*Spring of odd-numbered years. 4(2-6)*  
 Extraction and chromatographic separations of compounds from environmental matrices.

**941. Analytical Techniques for Bioactive Compounds: Confirmation**  
*Spring of even-numbered years. 4(2-6)*  
 Instrumental confirmation of compounds from environmental matrices.

**999. Doctoral Dissertation 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 Ph.D. students in Entomology.*

## ENVIRONMENTAL ENGINEERING

ENE

### Department of Civil and Environmental Engineering College of Engineering

**800. Environmental Engineering Seminar**  
*Fall, Spring. 1(1-0)*  
*R: Open only to Environmental Engineering majors.*  
 Current research in environmental engineering.

**801. Dynamics of Environmental Systems**  
*Spring. 3(3-0)*  
 Principles of mass balance, reaction kinetics, mass transfer, reactor theory in environmental engineering.

**802. Physicochemical Processes in Environmental Engineering**  
*Fall. 3(3-0)*  
*P: ENE 801.*  
 Physical and chemical principles of air and water pollution control and environmental contaminants in water, air and soils.

**803. Physicochemical Process Laboratory**  
*Spring. 1(0-3)*  
*P: ENE 801. C: ENE 802.*  
 Experiments involving physicochemical processes such as air stripping coagulation and flocculation, activated carbon and chemical oxidation.

**804. Biological Processes in Environmental Engineering**  
*Fall. 3(3-0)*  
*P: ENE 801 or concurrently.*  
 Engineering of microbial processes used in wastewater treatment, in-situ bioreclamation, and solid waste stabilization.

**805. Biological Processes Laboratory**  
*Spring. 1(0-4)*  
*P: ENE 804.*  
 Principles of biological processes applied to wastewater treatment.

**807. Environmental Analytical Chemistry**  
*Fall. 3(3-0)*  
*R: Open only to Environmental Engineering majors.*  
 Techniques for measurement and analysis in environmental engineering. Sample preparation. Quality assurance.

**808. Environmental Analytical Chemistry Laboratory**  
*Spring. 1(0-3)*  
*P: ENE 807. R: Open only to Environmental Engineering majors.*  
 Laboratory work in environmental analytical chemistry.

**880. Independent Study in Environmental Engineering**  
*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 Environmental Engineering majors.*  
 Solution of environmental engineering problems not related to student's thesis.

**890. Selected Topics in Environmental Engineering**  
*Fall, Spring, Summer. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course.*  
*R: Open only to Environmental Engineering majors.*  
 Selected topics in new or developing areas of environmental engineering.

**899. Master's Thesis Research**  
*Fall, Spring, Summer. 1 to 8 credits. A student may earn a maximum of 24 credits in all enrollments for this course.*

**999. Doctoral Dissertation Research**  
*Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 72 credits in all enrollments for this course.*

## FAMILY AND CHILD ECOLOGY

FCE

### Department of Family and Child Ecology College of Human Ecology

**145. The Individual, Marriage and the Family**  
*Fall, Spring. 3(3-0)*  
*R: Open only to freshmen and sophomores.*  
 Development of the young adult in the human ecological context. Issues of sexuality, gener, parenting, work and family interface, communication and resource use. Diversity in relationships and families.

**211. Child Growth and Development: Conception Through Early Childhood**  
*Fall, Spring. 3(3-0)*  
*R: Not open to freshmen.*  
 Physical, cognitive, social, emotional and ecological aspects of human growth and development from conception through early childhood.

**211L. Child Growth and Development Laboratory**  
*Fall, Spring. 1(0-3)*  
*C: FCE 211. R: Not open to freshmen.*  
 Observation and recording the behavior and development of young children.

**212. Children, Youth and Family**  
*Fall, Spring. 3(3-0)*  
*P: FCE 145, SOC 100 or FCE 211. R: Not open to freshmen.*  
 An ecosystems perspective on development during childhood and adolescence emphasizing family and community contexts.

**225. Ecology of Family and Human Development**  
*Fall, Spring. 3(3-0)*  
*R: Not open to seniors except seniors in the College of Human Ecology.*  
 Human development across the lifespan with an ecological perspective. Relationships between human resource professionals and family systems.

**238. Personal Finance**  
*Fall, Spring, Summer. 3(3-0)*  
 Strategies, techniques and resources useful in the management of personal finance.

**270. Human Services in the Community**  
*Fall, Spring. 4(3-2)*  
*R: Not open to freshmen. Open only to students in the Department of Family and Child Ecology.*  
 Human services from an ecological perspective. Human service needs, resources and methods of service delivery. Participation in community agency required.

**320. Interaction Processes with Children in Groups**  
*Fall, Spring. 3(3-0)*  
*P: FCE 211. R: Open only to juniors and seniors in the Department of Family and Child Ecology.*  
 Principles of verbal and non-verbal interaction in relation to children's behavior in groups. Focus on young children in early childhood programs.

**320L. Interaction with Children-Laboratory**  
*Fall, Spring. 1(0-3)*  
*P: FCE 211; FCE 320 or concurrently. R: Open only to juniors and seniors in the Department of Family and Child Ecology.*  
 Practice applying principles of interaction to individuals and small groups in early childhood programs.

**321. Curriculum for Early Childhood Programs**  
*Fall, Spring. 3(3-0)*  
*P: FCE 320, FCE 320L. R: Open only to juniors and seniors in the Department of Family and Child Ecology. Completion of Tier I writing requirement.*  
 Child development principles and accreditation standards for designing curricula for early childhood programs. Planning and evaluating learning activities and programs.

**321L. Curriculum for Early Childhood Programs: Laboratory**  
*Fall, Spring. 1(0-3)*  
*P: FCE 320, FCE 320L, FCE 321 or concurrently. R: Open only to juniors and seniors in the Department of Family and Child Ecology.*  
 Supervised practice in providing learning activities for individual children and small groups. Planning, implementing and evaluating activities.

**350. Management and Decision Making in the Family**  
*Fall. 3(3-0)*  
*R: Not open to freshmen and sophomores. Completion of Tier I writing requirement.*  
 Management for the realization of values and goals through decision making about resources in the family.

- 370. Educational Systems in Human Ecology**  
Fall, Spring. 3(2-2)  
P: FCE 270. R: Not open to freshmen. Completion of Tier I writing requirement.  
The human ecologist as educator in formal, nonformal, and informal educational systems. Instructional methods appropriate for those environments.
- 405. Work and Family**  
Spring. 3(3-0)  
R: Not open to freshmen and sophomores. Completion of Tier I writing requirement.  
Historical perspectives on work and family. Effects of work on family members across life cycle, and employer and public policy response.
- 411. Developmental Study of a Child**  
Fall, Spring. 2(1-3)  
P: FCE 211 or PSY 244. R: Not open to freshmen and sophomores. Completion of Tier I writing requirement.  
Ecological analysis of developmental behavior. Application of research findings to observations of a child.
- 413. Adult Development and the Family: Middle and Later Years**  
Spring, Summer. 4(3-3)  
P: One course in psychology or sociology. R: Not open to freshmen and sophomores.  
Social, psychological and biological development within the family. Field study approach.
- 414. Parenting**  
Fall of odd-numbered years. 3(3-0)  
R: Not open to freshmen and sophomores.  
Childrearing in modern society. Adult parenting roles in various family structures. Support roles of families and communities.
- 424. Student Teaching in an Early Childhood Program**  
Fall, Spring, Summer. 6 to 8 credits.  
P: FCE 321, FCE 321L. R: Open only to seniors or graduate students in Child Development, Child Development and Teaching, Community Services or Family and Child Ecology. Completion of Tier I writing requirement. Approval of department.  
A supervised teaching practicum. Planning, implementing, and evaluating an ecological, educational program for children and their families.
- 441. Home Economics Education Programs**  
Fall. 2(2-0)  
R: Not open to freshmen and sophomores.  
Types, functions, and purposes of various home economics education programs, and operational issues.
- 442. Ethnic Minority Families in America**  
Fall, Spring. 3(3-0)  
R: Not open to freshmen and sophomores.  
Historical, structural, and functional components of selected ethnic minority family systems in America. Life styles, pressures, adaptations, viability, and continuity.
- 444. Interpersonal Relationships in the Family**  
Fall, Spring. 3(3-0)  
R: Not open to freshmen and sophomores.  
Personal awareness and interpersonal relationships within the family system. Small group discussions.
- 445. Human Sexuality**  
Fall, Spring. 3(3-0)  
R: Not open to freshmen and sophomores.  
Family and psychosocial factors affecting the development of a person's sexuality across the life cycle. Reciprocal impact on society and the legal system.
- 452. Consumer Issues**  
Spring. 3(3-0)  
P: FCE 238 or approval of department. R: Not open to freshmen and sophomores. Completion of Tier I writing requirement.  
Issues in contemporary consumer ecosystems.
- 454. Family Financial Management**  
Fall. 3(3-0)  
P: FCE 238 or approval of department. R: Not open to freshmen and sophomores. Completion of Tier I writing requirement.  
Financial management strategies of families during the life cycle. Income support programs.
- 458. Family Financial Advising**  
Spring of odd-numbered years. 2(2-0)  
P: FCE 454 or concurrently. R: Not open to freshmen and sophomores.  
Advising strategies for working with families with financial concerns.
- 470. Current Issues in Family and Child Ecology**  
Spring. 3 to 9 credits. A student may earn a maximum of 9 credits in all enrollments for this course.  
R: Not open to freshmen and sophomores.  
Legislation, current events, and issues affecting families and children. Implications for professional decisions and actions.
- 472. Evaluation of Human Service Programs**  
Spring, Summer. 3(2-2)  
P: FCE 370. R: Not open to freshmen and sophomores.  
Evaluation design, methodology and implementation, with applications to family, child, consumer, and human service related programs. Interactions of individuals, families and human service programs from a perspective of the ecology of human development, family ecosystems, and community ecology.
- 473. Administration of Child and Family Programs**  
Fall. 3(3-0)  
P: FCE 370 or FCE 424. R: Open only to juniors, seniors, or graduate students in the Department of Family and Child Ecology.  
Administrative and ecological principles. Program linkages with agencies and their regulations.
- 490. Independent Study**  
Fall, Spring, Summer. 1 to 5 credits. A student may earn a maximum of 9 credits in all enrollments for this course.  
R: Not open to freshmen and sophomores. Approval of instructor; application required.  
Individual study of selected topics under faculty guidance.
- 490H. Honors Independent Study**  
Fall, Spring, Summer. 1 to 5 credits. A student may earn a maximum of 9 credits in all enrollments for this course.  
R: Not open to freshmen and sophomores. Open only to honors students. Approval of instructor; application required.  
Honors individual study of selected topics with faculty guidance.
- 492. Internship Seminar**  
Fall, Spring. 2(2-0)  
P: FCE 370. R: Open only to juniors or seniors in the Department of Family and Child Ecology. Approval of department.  
Preparation for professional internship.
- 493. Internship**  
Fall, Spring, Summer. 3 to 9 credits. A student may earn a maximum of 9 credits in all enrollments for this course.  
P: FCE 492. R: Open only to seniors in the Department of Family and Child Ecology. Completion of Tier I writing requirement. Approval of department.  
Professional experience in a community organization.
- 801. Family Ecosystems**  
Fall, Spring. 3(3-0)  
Family viewed from ecosystems perspective. Assessment tools used to analyze family systems.
- 810. Theories of Human Development**  
Fall. 3(3-0)  
Major theories of development; research findings and the validity of theoretical positions.
- 811. Child Development: Ecological Perspectives**  
Fall of even-numbered years. 3(3-0)  
Ecological factors that influence family functioning and child outcomes.
- 812. Adolescence in the Family: Ecological Perspectives**  
Spring of even-numbered years. 3(3-0)  
Ecological factors that influence family functioning and adolescent outcomes.
- 813. Adulthood and Aging in the Family: Ecological Perspectives**  
Fall of odd-numbered years. 3(3-0)  
Adult development and aging in the contexts of family and community. Family relationships in adulthood and aging.
- 814. Parenthood and Parent Education**  
Spring of odd-numbered years. 3(3-0)  
Influence of parents on children/youth and factors that influence parenting; approaches to providing education and support for parents.
- 821. Early Childhood Education: Curricular Approaches**  
Spring. 3(3-0)  
P: FCE 810.  
Theoretical background, content, and evaluation of early childhood curricula and programs. Influence of research and public policy.
- 822. Assessment of the Young Child**  
Fall of even-numbered years. 3(3-0)  
Assessment instruments and procedures for children from birth to age seven. Techniques for assessing physical, social, emotional, and cognitive development of young children.
- 823. Infant Programs and Practices**  
Spring of odd-numbered years. 3(2-3)  
P: FCE 810 or PSY 845.  
Concepts of early childhood education applied to children from birth to age three. Evaluation of research, learning materials, and activities for infants at home and in small group settings. Field work required.
- 830. Survey of Marriage and Family Therapy Theories**  
Fall. 3(3-0)  
Contemporary ecosystem theories of marriage and family therapy.
- 831. Treatment Processes in Marriage and Family Therapy**  
Spring. 3(2-3)  
P: FCE 830. R: Open only to Marriage and Family Therapy majors.  
Case management and treatment processes for problems affecting system change and family functioning.

**Descriptions — Family and Child Ecology of Courses**

- 832. Ethics, Law, and Professional Development**  
*Spring of odd-numbered years. 3(3-0)*  
 Ethics and laws affecting family life professionals. Developing a professional identity. Management of private practice and consulting services.
- 842. African American Families**  
*Spring. 3(3-0)*  
 Historical and contemporary approaches to the study of African and African American families. Major theoretical frameworks.
- 845. Foundations of Family Study**  
*Fall. 3(3-0)*  
 Historical and cultural perspectives of the family; conceptual approaches to family study; sensitivity to family diversity; key issues related to the life cycle. Field observations required.
- 847. Theories of the Family**  
*Spring. 3(3-0)*  
*P: FCE 845.*  
 Perspectives on the family. Relationships of theory, research, and practice.
- 848. Divorce and Remarriage Interventions**  
*Fall of even-numbered years. 3(3-0)*  
 Impact of changing marital status on the individual, family and society. Current research, laws, educational programming for clinical treatment strategies.
- 850. Theories of Management and Decision Making in the Family**  
*Fall. 3(3-0)*  
 Theories of decision making in the context of family management. Application to human resource development in the family. Integrated ecological approach.
- 851. Family Economics**  
*Fall of odd-numbered years. 3(3-0)*  
*P: One course in economics.*  
 The household as an economic unit in consumer and producer roles. Economic functions and processes.
- 871. Methods of Teaching Adults**  
*Fall of odd-numbered years. 3(3-0)*  
 Uses of human and family ecological perspectives in teaching adult audiences.
- 872. Program Design and Development**  
*Fall of even-numbered years. 3(3-0)*  
 Processes involved in program design and development for human service organizations and agencies.
- 873. Administration and Management of Human Services Programs**  
*Spring of even-numbered years. 3(3-0)*  
*P: FCE 872.*  
 Processes and procedures related to the management and administration of human services programs.
- 874. Volunteer Development and Management**  
*Fall of odd-numbered years. 3(3-0)*  
 Recruitment, development, and guidance of volunteers for human service programs. Administration of programs involving volunteers.
- 875. Curriculum and Evaluation in Home Economics Education**  
*Spring of even-numbered years. 3(3-0)*  
 Relationships between curriculum and evaluation. Processes used in developing curriculum and evaluation models.
- 880. Research Methods in Family and Child Ecology**  
*Fall, Spring. 3(3-0)*  
 Methods applied to problem definition, research design, and analysis.

- 890. Independent Study**  
*Fall, Spring, Summer. 1 to 5 credits. A student may earn a maximum of 9 credits in all enrollments for this course.*  
 Individual study of selected topics with faculty guidance.
- 891. Topics in Family and Child Ecology (MTC)**  
*Fall, Spring. 2 to 3 credits. A student may earn a maximum of 12 credits in all enrollments for this course.*  
 Family science, early childhood development, problems in programs, or services for families.
- 892. Seminar in Family and Child Ecology**  
*Fall, Spring. 1 to 4 credits. A student may earn a maximum of 12 credits in all enrollments for this course.*  
 Selected content in family relationships, family economics, human development in the family, community services, or programs for children and families.
- 894. Laboratory and Field Experience**  
*Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.*  
*R: Open only to graduate students in the Department of Family and Child Ecology.*  
 Supervised observation, practica, or internships.
- 899. Master's Thesis Research**  
*Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 12 credits in all enrollments for this course.*  
*R: Open only to graduate students in the Department of Family and Child Ecology.*
- 902. Advanced Marriage and Family Therapy Theories**  
*Spring of even-numbered years. 3(3-0) A student may earn a maximum of 12 credits in all enrollments for this course.*  
*P: FCE 830.*  
 Selected theoretical perspectives in marriage and family therapy and related therapy techniques.
- 904. Family Ecology Theory Construction**  
*Fall of odd-numbered years. 3(3-0)*  
*P: FCE 801; FCE 810; FCE 830 or FCE 847 or FCE 850.*  
*R: Open only to doctoral students.*  
 Integration and application of concepts in constructing family ecology theory. Theory development strategies.
- 980. Advanced Research Methods (MTC)**  
*Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 9 credits in all enrollments for this course.*  
*P: FCE 801, FCE 880. R: Open only to doctoral students.*  
 Research design, measurement and implementation.
- 991. Topics in Family and Child Ecology (MTC)**  
*Fall, Spring. 2 to 3 credits. A student may earn a maximum of 12 credits in all enrollments for this course.*  
*R: Open only to doctoral students.*  
 Topics and problems in programs and services for families.
- 993. Internship**  
*Fall, Spring, Summer. 1 to 9 credits. A student may earn a maximum of 12 credits in all enrollments for this course.*  
*R: Open only to Family and Child Ecology graduate students. Approval of department.*  
 Supervised practicum, or internship.

- 999. Doctoral Dissertation Research**  
*Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 50 credits in all enrollments for this course.*  
*R: Open only to majors in Family Ecology.*

**FAMILY MEDICINE FM**

**Department of Family Medicine  
 College of Osteopathic Medicine**

- 515. Health Care in Underserved Areas**  
*Fall of even-numbered years. 2 to 3 credits.*  
*Interdepartmental with Family Practice. Administered by Family Practice.*  
*R: Graduate-professional students in colleges of Human and Osteopathic Medicine.*  
 Professional, economic, and personal issues confronting the physician practicing in medically underserved areas. Impact of practice location, federal programs, changing patterns of practice, health maintenance organizations.
- 516. Migrant Worker Health Care**  
*Summer. 1 to 2 credits. A student may earn a maximum of 8 credits in all enrollments for this course.*  
*Interdepartmental with Family Practice. Administered by Family Practice.*  
*R: Open only to graduate-professional students in colleges of Human and Osteopathic Medicine.*  
 Health beliefs, patient attitudes, economic situations and medical problems of migrant agricultural workers. Introduction to occupational medicine in the agricultural sector.
- 517. Introduction to Sports Medicine**  
*Fall. 2(2-0) Interdepartmental with Family Practice. Administered by Family Practice.*  
*R: Graduate-professional students in colleges of Human and Osteopathic Medicine.*  
 Causes, diagnosis, treatment, and prevention of common sports injuries. Drugs, nutrition, exercise physiology and sports psychology. Emphasis on family practice approach to sports medicine.
- 590. Special Problems in Family Medicine**  
*Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 48 credits in all enrollments for this course.*  
*R: Open only to graduate-professional students in the colleges of Osteopathic and Human Medicine. Approval of department.*  
 Each student works under faculty direction on an experimental, theoretical, or applied problem.
- 601. Clinical Practicum in Family Medicine**  
*Fall, Spring, Summer. 1 to 9 credits. A student may earn a maximum of 9 credits in all enrollments for this course.*  
*R: Open only to graduate-professional students in the College of Osteopathic Medicine upon completion of Units I and II.*  
 Direct involvement in a family practice emphasizing patient, office, and personnel management.
- 620. Directed Studies**  
*Fall, Spring, Summer. 1 to 30 credits. A student may earn a maximum of 30 credits in all enrollments for this course.*  
*R: Open only to graduate-professional students in the colleges of Osteopathic Medicine and Human Medicine upon completion of Units I and II.*  
 Individual or group projects on special problems related to family medicine.