

Human Medicine—HM

582 Mentor Program Year II
Fall, Spring, Summer. 1(0-2) A student may earn a maximum of 2 credits in all enrollments for this course. P:NM: Completion of 3 credits of HM 581. R: Open only to graduate-professional students in College of Human Medicine.

Continuing exploration of the dimensions of being a physician. Professional skills needed to interact with patients and medical workers. Current trends.

591 Special Problems in Human Medicine
Fall, Spring, Summer. 1 to 34 credits. A student may earn a maximum of 36 credits in all enrollments for this course. R: Graduate-professional students in College of Human Medicine.

Work under the direction of a faculty member on an experimental, theoretical, or applied problem that requires a broad, interdisciplinary approach.

605 Comprehensive Care Clerkship
Fall, Spring, Summer. 4 to 20 credits. A student may earn a maximum of 20 credits in all enrollments for this course. Interdepartmental with Family Practice. RB: (FMP 602) R: Open only to graduate-professional students in College of Human Medicine.

Comprehensive and longitudinal management of patients in ambulatory care settings.

608 Sub-Specialty Clerkships
Fall, Spring, Summer. 4 to 12 credits. Fall: Lansing, GR, Kalamazoo, Flint, Saginaw. Spring: (Same as above). Summer: (Same as above). A student may earn a maximum of 12 credits in all enrollments for this course. RB: (FMP 602) R: Open only to graduate-professional students in College of Human Medicine.

Hospital-and office-based clinical experiences in sub-specialties in medicine and surgery.

609 Laboratory Medicine Clerkship
Fall, Spring, Summer. 1 to 8 credits. Fall: Flint G.Rapids Kalamazoo Lansing Saginaw UP. Spring: Flint G.Rapids Kalamazoo Lansing Saginaw UP. Summer: Flint G.Rapids Kalamazoo Lansing Saginaw UP. A student may earn a maximum of 16 credits in all enrollments for this course. Interdepartmental with Osteopathic Medicine. R: Open only to graduate-professional students in College of Human Medicine or Osteopathic Medicine. SA: PTH 609

Laboratory procedures. Correlation of laboratory data with morphologic abnormalities in patients with pathophysiology.

610 Pathology Clerkship
Fall, Spring, Summer. 1 to 8 credits. A student may earn a maximum of 12 credits in all enrollments for this course. Interdepartmental with Osteopathic Medicine. R: Open only to graduate-professional students in College of Human Medicine or Osteopathic Medicine. SA: PTH 608

Anatomic and clinical pathology with emphasis on clinical-pathological correlation. Conducted in pathology departments of affiliated hospitals.

630 Emergency Medicine Clerkship
Fall, Spring, Summer. 2 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course. RB: (MED 608) R: Open only to graduate-professional students in the College of Human Medicine.

Clinical diagnosis and treatment of emergencies seen in community emergency departments.

635 Core Competencies I
Fall, Spring, Summer. 2(2-0) Fall: Flint-GR-Saginaw-Lansing-Kalamazoo-UP. Spring: same as above. Summer: same as above. A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with Family Practice; Medicine; Pediatrics and Human Development. R: Open only to graduate-professional students in College of Human Medicine.

Core knowledge and skills from an interdisciplinary perspective.

636 Core Competencies II
Fall, Spring, Summer. 2(2-0) Fall: same as below. Spring: Flint-Saginaw-GR-Lansing-Kalamazoo-UP. Summer: same as above. A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with Family Practice; Medicine. R: Open only to graduate-professional students in College of Human Medicine.

Core knowledge and skills from an interdisciplinary perspective.

637 Core Competencies III
Fall, Spring, Summer. 2(2-0) Fall: same as below. Spring: Flint-Saginaw-GR-Lansing-Kalamazoo-UP. Summer: Flint-Saginaw-GR-Lansing-Kalamazoo-UP. A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with Family Practice; Medicine; Obstetrics, Gynecology and Reproductive Biology; Pediatrics and Human Development; Surgery. R: Open only to graduate-professional students in College of Human Medicine.

Core knowledge and skills from an interdisciplinary perspective.

691 Research Clerkship
Fall, Spring, Summer. 2 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course. RB: (HM 690) or approval of community research director. R: Open only to graduate-professional students in the College of Human Medicine.

Biological, behavioral, or clinical research project.

820 Humanistic and Social Perspectives on Health
Fall. 3(3-0) R: Open only to students in the M.A. program in Bioethics, Humanities, and Society SA: AL 820

Multidisciplinary perspectives on health care and medicine. Linkages among the humanities, social sciences and the sciences.

898 Master's Research
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 3 credits in all enrollments for this course. R: Open only to students in the M.A. program in Bioethics, Humanities, and Society.

Directed research in support of master's program requirements.

899 Master's Thesis Research
Fall, Spring, Summer. 1 to 9 credits. A student may earn a maximum of 12 credits in all enrollments for this course.

Master's thesis research.

HUMAN NUTRITION AND FOODS HNF

Department of Food Science and Human Nutrition College of Agriculture and Natural Resources

150 Introduction to Human Nutrition
Fall, Spring, Summer. 3(3-0) Interdepartmental with Food Science.

Nutrition needs in life stages from a human ecological perspective. Domestic and international factors affecting the availability of a safe, nutritious food supply. Relationships of food choices to health and disease.

180 Preview of Nutritional Sciences
Spring. 1(1-1) R: Open only to freshmen or sophomores.

Overview of nutritional sciences as a pre-professional major. Introduces students to faculty nutrition research projects, enables students to participate in a directed research experience, and exposes students to various career opportunities.

300 Experimental Approaches to Foods
Fall, Spring. 4(2-4) P:M: Completion of Tier I writing requirement. RB: (CEM 143) R: Open to only to juniors or seniors in the Department of Food Science and Human Nutrition.

Effects of preparation methods and ingredient substitutions on chemical and physical properties of food constituents. Effects of changes in chemical and physical properties on functional and sensory attributes of foods.

311 Principles of Human Nutrition
Spring. 3(3-0) P:M: (BMB 200 or BMB401 or BMB 461 or PSL 250 or PSL 431)

Identification, function and food sources of nutrients required by humans. Normal metabolism. Effects of deficiencies or excesses of specific nutrients on metabolism.

320 Basic Skills in Dietetic Practice
Spring, Summer. 3(2-2) P:M: (HNF 150 or HNF 311) R: Open to sophomores or juniors or seniors in the Dietetics, Nutritional Sciences or Food Science majors. SA: HNF 220

Nutrient composition of foods to meet nutritional needs for meal planning. Sources of reliable food and nutrition information. Evaluation and communication of scientific and consumer information. Concepts in nutritional epidemiology.

375 Community Nutrition
Fall. 3(3-0) P:M: (HNF 150 or HNF 311)

Human ecological approach to dietary and anthropometric assessment, intervention and evaluation of population groups. Policies, programs and resources available to address community nutritional needs.

400 Art and Science of Food Preparation
Spring. 2(1-3) RB: (HNF 300 or concurrently) R: Open only to seniors in the Dietetics or Nutritional Sciences major or to graduate students in the Human Nutrition major.

Art and science of food preparation in relation to cost, health, and historical, regional, ethnic, and religious customs. Product evaluation using sensory techniques. Lecture offered full semester; laboratory offered half of semester.

- 406 Sociocultural Aspects of Food**
Fall, Spring. 3(3-0) P:M: (HNF 150 or concurrently) RB: ISS course or concurrently. R: Open only to juniors or seniors.
Factors impacting food consumption from a human ecological perspective. International and national food consumption patterns. Geographic, political, and economic aspects of food consumption. Food availability and distribution. Family structure, taboos, religion, and food-related health problems.
- 410 Sensory Assessment of Foods**
Spring. 2(1-2) RB: (HNF 300 or FSC 401) and (STT 200 or STT 201 or STT 315 or STT 421 or STT 464) R: Open only to majors in the Department of Food Science and Human Nutrition.
Discriminative, consumer and descriptive methods used to evoke, measure, analyze, and interpret sensory reactions to food characteristics.
- 440 Foodservice Operations**
Fall. 4(4-0) P:M: (FSC 342 or concurrently) RB: (HNF 150) R: Open only to juniors or seniors in the Dietetics or Nutritional Sciences major or to graduate students in the Human Nutrition major. SA: HNF 441
Principles, processes and control strategies in foodservice operations. Menu planning, procurement, and on-premise storage and issuance. Purchasing, budgets, human resources, control management, ethics, marketing, production, safety and sanitation.
- 444 Computerized Foodservice Management Laboratory**
Fall, Spring. 2(1-2) P:M: (HNF 440 or concurrently) RB: Competency in computer spreadsheet applications. R: Open only to juniors or seniors in the Dietetics or Nutritional Sciences major or to graduate students in the Human Nutrition major.
Use of prototype management computer software for inventory management, recipe adjustment, recipe and menu precosting, nutrient analysis, cost analysis, accounting procedures, and other foodservice applications.
- 445 Foodservice Management Experience**
Fall, Spring. 2 credits. Spring: Total for both half-semester. P:M: (HNF 440 or concurrently) RB: (MMG 205) R: Open only to seniors in the Dietetics or Nutritional Sciences major or graduate students in the Human Nutrition major. Approval of department.
Receipt, storage, preparation and service of foods. Safety and sanitation. Design, layout, and care of equipment. Costing. Meal tickets required. Offered half of semester.
- 453 Nutrition and Human Development**
Spring. 3(3-0) P:M: (HNF 150) and (PSL 250 or concurrently or PSL 431 or concurrently) SA: HNF 463, HNF 376
Role of nutrients in anatomical, physiological, and biochemical processes as related to human growth and development. Nutrition throughout the life cycle. Nutritional assessment and programs.
- 461 Advanced Human Nutrition: Carbohydrates, Lipids and Proteins**
Fall. 3(3-0) P:M: (BMB 200 or BMB 401 or BMB 461) and (PSL 250 or PSL 432) SA: HNF 460
Energetics and metabolism of carbohydrates, proteins, and lipids as related to dietary requirements and disease processes in humans. Recommended dietary allowances. Food sources of nutrients.
- 462 Advanced Human Nutrition: Vitamins and Minerals**
Fall. 3(3-0) P:M: (HNF 461 or concurrently) SA: HNF 460
Metabolism of vitamins and minerals in relation to dietary requirements and disease processes in humans. Food sources of nutrients. Nutrient interrelationships. Factors affecting bioavailability and stability of nutrients.
- 465 Nutritional Pathophysiology**
Fall. 4(4-0) P:M: (HNF 461 or concurrently) and (ANTR 350 or PSL 432) SA: HNF 473
Effects of specific pathophysiological states on the function of target organs. Assessment of nutritional and medical status using laboratory tests. Putative mechanisms of action, efficacy, and safety of relevant alternative and complementary therapies.
- 466 Medical Nutrition Therapy**
Spring. 4(3-2) P:M: (HNF 461 and HNF 462) and (HNF 465 or PSL 432) and completion of Tier I writing requirement. R: Open only to juniors or seniors. SA: HNF 470
Anatomical, physiological and biochemical changes associated with diseases. Nutritional assessment. Use of modified diets as adjuncts to other therapies.
- 467 Outcome Measurement and Documentation in Medical Nutrition Therapy**
Spring. 1(0-2) P:M: (HNF 461 and HNF 462 and HNF 465) RB: Senior dietetic majors. SA: HNF 379 C: HNF 466 concurrently.
Planning, implementation, outcome measurement, and documentation in medical nutrition therapy (MNT). Clinical, behavioral and functional outcomes resulting from interventions in clinical and outpatient settings.
- 475 Community Nutrition Applications**
Spring. 1(0-2) P:M: (HNF 375) R: Open to juniors or seniors.
Practice and evaluation of dietary and anthropometric nutritional assessment. Apply communication, advocacy and problem solving skills by identifying and addressing the nutrition needs and wants of a target population.
- 480 Concepts of Human Nutrition Research Methods**
Spring. 2(1-3) P:M: (HNF 461 and HNF 462) and completion of Tier I writing requirement. RB: (FSC 455)
Issues and techniques involved in nutrition research with humans and animals. Guided laboratory experience plus independent project.
- 490 Independent Study**
Fall, Spring, Summer. 1 to 10 credits. A student may earn a maximum of 10 credits in all enrollments for this course. R: Open only to juniors or seniors. Approval of department.
Individual study of selected topics in foods, foodservice management or nutrition.
- 490H Honors Independent Study**
Fall, Spring, Summer. 1 to 10 credits. A student may earn a maximum of 10 credits in all enrollments for this course. R: Open to juniors or seniors. Open only to honors students. Approval of department.
Individual study of selected topics in foods, foodservice management or nutrition.
- 494 Practicum**
Fall, Spring, Summer. 1 to 10 credits. A student may earn a maximum of 10 credits in all enrollments for this course. R: Open only to majors in the Department of Food Science and Human Nutrition. Approval of department.
Professional experience in selected settings and organizations under faculty supervision.
- 807 Advanced Food Toxicology**
Fall of even years. 3(3-0) Interdepartmental with Food Science; Animal Science. Administered by Department of Food Science and Human Nutrition. R: Approval of department.
Toxicology related to food safety. Metabolism of toxicants as influenced by food constituents, mutagenesis, and chemical carcinogenesis. Risk assessment.
- 811 Integrated Nutrient Metabolism**
Fall of odd years. 3(3-0) Interdepartmental with Animal Science. Administered by Department of Animal Science. RB: (BMB 200 or BMB 401) or approval of department.
Comparative physiology of the absorption and metabolism of carbohydrates, lipids, protein, minerals, and vitamins and their regulation and integration. Basis for applied nutrition of humans, livestock and companion animals.
- 840 Human Nutrition and Chronic Diseases**
Fall of odd years. 3(3-0)
Dietary intervention and treatment of chronic diseases: obesity, cardiovascular disease, diabetes, gastrointestinal disorders and cancer.
- 843 Community Nutritional Assessment**
Spring of odd years. 3(2-2)
Nutritional assessment of population groups in community settings. Interpretation of national and international health data.
- 890 Supervised Individual Study**
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 Food Science and Human Nutrition. Students are limited to a combined total of 10 credits in HNF 890 and HNF 894.
Faculty supervised study of nutrition areas of individual interest.
- 891 Topics in Human Nutrition**
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Open only to graduate students.
Current topics in applied and basic human nutrition.
- 892 Nutrition Seminar**
Fall, Spring. 1(1-0) A student may earn a maximum of 6 credits in all enrollments for this course.
Presentations by students on current topics in nutrition.
- 894 Human Nutrition Practicum**
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 graduate students in Food Science and Human Nutrition. Students are limited to a combined total of 10 credits in HNF 890 and HNF 894. Approval of department.
Experience in agencies or offices related to Human Nutrition. Field experience required.

Human Nutrition and Foods—HNF

898 Master's Project
Fall, Spring, Summer. 1 to 5 credits. R: Open only to master's degree students in Human Nutrition.

Directed scholarly participation in support of Plan B master's degree requirements in human nutrition.

899 Master's Thesis Research
Fall, Spring, Summer. 1 to 10 credits. A student may earn a maximum of 20 credits in all enrollments for this course. R: Open only to masters students in Human Nutrition and Foods.
Master's thesis research.

935 Nutrition: Lipid and Carbohydrate Metabolism
Fall of even years. 3(3-0) Interdepartmental with Animal Science.

Regulatory aspects of lipid and carbohydrate metabolism as influenced by nutritional status.

936 Protein Nutrition and Metabolism
Spring of even years. 3(3-0) Interdepartmental with Animal Science. Administered by Department of Animal Science.

Nutritional and endocrine regulation of protein synthesis and degradation, protein quality assessment, protein status, protein-energy malnutrition. Protein metabolism during exercise. Metabolism, digestion, and absorption of amino acids and proteins.

937 Mineral and Vitamin Nutrition and Metabolism
Spring of even years. 3(3-0) Interdepartmental with Animal Science. Administered by Department of Animal Science. P:M: (BMB 461 and BMB 462)

Forms and locations of mineral elements in the body, metabolic functions, deficiencies, and toxicities, interrelationships and quantitative requirements. Significant vitamins and mineral interrelationships relative to bone metabolism, antioxidant health and erythropoiesis.

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 Human Nutrition and Foods.

Doctoral dissertation research.

311 Systems Analysis and Design
Spring. 3(3-0) P:M: (BUS 309) R: Open only to students in The Eli Broad College of Business. SA: BUS 311

Structured analysis and design of information systems. Use of computer aided software engineering tools. Consulting issues associated with the design and implementation of information systems.

412 Marketing Technology and E-Commerce
Fall, Spring. 3(3-0) Interdepartmental with Marketing and Supply Chain Management. Administered by Department of Marketing and Supply Chain Management. P:M: (MSC 300 and MSC 317 and ITM 309) R: Open only to juniors or seniors in the Eli Broad College of Business, and to students in programs in which MSC 412 is a catalog-listed requirement.

Enabler technologies and their role in creating marketing opportunities, efficiencies, and innovations. Tools, applications, platforms, and infrastructures. Determination of business configurations that foster value creation from enabler technologies.

413 Fundamentals of Database Information Systems

Fall, Spring. 3(3-0) R: Open only to Juniors or seniors in The Eli Broad College of Business. Not open to students in The School of Hospitality Business. C: ITM 311 concurrently.

Semantic and syntactic modeling of business requirements for databases. Specification and navigational processing of databases. Database design parameters for business use.

414 Enterprise Resource Planning Systems
Spring. 3(3-0) P:M: (ITM 311 and ITM 309) R: Open only to students in The Eli Broad College of Business.

Analysis, design and use of enterprise systems. Importance of enterprise system fit and re-engineering of the enterprise. Implementation risks and organizational returns. Use of enterprise software.

444 Information Technology Project Management

Spring. 3(3-0) Interdepartmental with Computer Science and Engineering; Telecommunication. P:M: (ITM 311) R: Open only to seniors in the Specialization in Information Technology.

Practical training and experiences in design, testing, and launch of new information technologies and systems.

490 Independent Study in Information Technology
Fall, Spring, Summer. 1 to 4 credits. P:M: (ITM 309) R: Open only to students in The Eli Broad College of Business.

Directed study in information technology under faculty supervision.

491 Special Topics in Information Technology
Fall, Spring. 1 to 4 credits. P:M: (ITM 309) R: Open only to students in The Eli Broad College of Business.

Current topics in information technology.

814 Decision Support Systems in Business
Fall. 3(3-0) Interdepartmental with Marketing and Supply Chain Management. P:M: (MBA 823 or ITM 309)

Computer-based managerial decision support systems (DSS). Basic system architectures for DSS. Individual and group systems. Data-driven and intelligence (model) driven systems. Project analysis of a globally distributed system.

821 Enterprise Database Systems
Fall. 3(3-0) Interdepartmental with Accounting. Administered by Department of Accounting and Information Systems. Not open to students with credit in ACC 321.

Management of information in business organizations. Conceptual modeling of transaction processing systems, workflow systems, and enterprise-wide networks of value-added activities. Integration of decision support and policy level systems with economic event processing systems. Information system implementation.

822 Analysis and Design of Enterprise Systems

Spring. 3(3-0) Interdepartmental with Accounting. Administered by Department of Accounting and Information Systems. R: Open only to MBA students and master's students in Accounting or approval of department. Not open to students with credit in ITM 311.

Structured analysis and design of enterprise information systems. Use of computer-aided software design tools. Consulting issues associated with the design and implementation of information systems.

823 Advanced Enterprise Database Systems
Spring. 3(3-0) Interdepartmental with Accounting. Administered by Department of Accounting and Information Systems. P:M: (ACC 321 or ACC821 or ITM821) R: Open only to MBA students and master's students in Accounting or approval of department.

Enterprise information architectures. Semantic and syntactic modeling of enterprise economic phenomena. Relational database technology and database design for business systems. Business process analysis patterns and implementation compromises.

824 Digital Business Models and Processes
Spring. 3(3-0) Interdepartmental with Accounting. Administered by Department of Accounting and Information Systems. R: Open only to MBA students and master's students in Accounting or approval of department.

Frameworks for linking information technologies with business performance. Identification and valuation of key information technologies. Information Technology (IT) enabled business models, organizational processes, and knowledge management systems.

825 Object-Oriented Business Information Systems
Fall of even years. 3(3-0) Interdepartmental with Accounting. Administered by Department of Accounting and Information Systems. P:M: (ACC 823 and ITM 823) R: Open only to MBA students and master's students in Accounting or approval of department.

Analysis and design of object-oriented business systems. Unified modeling language descriptions of business phenomena and rules. Object-oriented programming. Use-case analysis and specification. XML tag sets for transactions and reporting.

INFORMATION TECHNOLOGY MANAGEMENT ITM

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

309 Business Information Systems and Technology
Fall, Spring, Summer. 3(3-0) P:M: (CSE 101 or concurrently) R: Open only to juniors or seniors in The Eli Broad College of Business. Not open to students in The School of Hospitality Business. SA: BUS 309

Role of information technology in shaping and supporting business processes in a global marketplace. Effects on organizations and individuals.