NUTRITIONAL SCIENCES, DOCTORAL MINOR

The doctoral minor in nutritional sciences aims to articulate, critique, and elaborate the theories, research methods, and approaches to inquiry in nutritional sciences. Specific knowledge areas of focus include intermediary metabolism, functions and metabolism of vitamins and minerals, nutrition-related diseases such as obesity and diabetes, and fundamental principles of epidemiology and nutrition policy.

Those completing the doctoral minor in nutritional sciences are expected to identify sources and assemble evidence pertaining to questions or challenges in nutritional sciences, recognize the most appropriate methodologies and practices, evaluate or synthesize information pertaining to questions or challenges in nutritional sciences, communicate clearly in ways appropriate to the field of nutritional sciences, and recognize and apply principles of ethical professional conduct.

ADMISSIONS

Admissions:

Graduate Program Coordinator: Katie Butzen, MS.Ed. (kbutzen@wisc.edu) (jmking4@wisc.edu)

REQUIREMENTS

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>NUTR SCI/BIOCHEM 510</td>
<td>Nutritional Biochemistry and Metabolism</td>
<td>3</td>
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<tr>
<td>NUTR SCI/BIOCHEM 619</td>
<td>Advanced Nutrition: Intermediary Metabolism of Macronutrients</td>
<td>3</td>
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<td>Choose three of the following: 1</td>
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<tr>
<td>NUTR SCI/POP HLTH 621</td>
<td>Introduction to Nutritional Epidemiology</td>
<td>3</td>
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<td>NUTR SCI 623</td>
<td>Advanced Nutrition: Minerals</td>
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<tr>
<td>NUTR SCI 625</td>
<td>Advanced Nutrition: Obesity and Diabetes</td>
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<td>NUTR SCI/AN SCI 626</td>
<td>Experimental Diet Design</td>
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<td>NUTR SCI 627</td>
<td>Advanced Nutrition: Vitamins</td>
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<tr>
<td>NUTR SCI 881</td>
<td>Seminar-Topics in Human and Clinical Nutrition (presentation required)</td>
<td>3</td>
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<td>or NUTR SCI/BIOCHEM 901</td>
<td>Seminar-Nutrition and Metabolism (Advanced)</td>
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1 Appropriate NUTR SCI 875 Special Topics courses can be used to substitute for any of the 1-credit courses above with prior approval of the graduate program coordinator.

PEOPLE

FACULTY

MEMBERS OF THE INTERDEPARTMENTAL GRADUATE PROGRAM IN NUTRITIONAL SCIENCES WITHIN THE DEPARTMENT

Eide, Dave (Department Chair), Professor of Nutritional Sciences; Ph.D., 1987. Nutritional genomics and molecular responses to changes in nutrient status

Eisenstein, Richard, Professor of Nutritional Sciences; Ph.D., 1985. Iron metabolism; posttranscriptional control of proteins required for the uptake, storage, and use of iron

Fan, Jing, Assistant Professor of Nutritional Sciences, Ph.D., 2014. Cancer metabolism; metabolic regulation in dynamic mammalian systems

Groblewski, Guy, Professor of Nutritional Sciences; Ph.D., 1991. Intracellular signal transduction and membrane/protein trafficking in gastrointestinal epithelial cells

Kuchina, Adam, Assistant Professor of Nutritional Sciences; Ph.D., 2017; Muscle and Protein Metabolism; Understanding how disease affects muscle and protein metabolism and muscle assessment techniques

Lai, Huichuan, Professor of Nutritional Sciences; Ph.D., R.D., 1994. Epidemiological studies linking nutrition and disease outcomes in pediatric populations

Ney, Denise, Professor of Nutritional Sciences; Ph.D., 1986. Nutritional management of phenylketonuria and gastrointestinal physiology

Ntambi, James, Steenbock Professor of Nutritional Sciences (also Biochemistry); Ph.D., 1985. Mechanisms of fat cell differentiation; regulation of gene expression by dietary and hormonal factors

Olson, Beth, Associate Professor. Ph.D. – Nutrition, University of California at Davis. Breastfeeding support and improving infant feeding practices

Parks, Brian, Assistant Professor of Nutritional Sciences, Ph.D., 2008. Systems genetics, Gene-diet interactions, and molecular mechanisms of obesity and diabetes

Sunde, Roger, Professor of Nutritional Sciences; Ph.D., 1980. Selenium deficiency as a model for nutrient regulation of gene expression; molecular mechanism of selenium regulation and homeostasis; biochemical functions of selenium

Tanumihardjo, Sherry, Professor of Nutritional Sciences; Ph.D., 1993. Vitamin A assessment methodology; carotenoid bioavailability; and international nutrition

Yen, Eric, Assistant Professor of Nutritional Sciences; Ph.D. 2000. Intestine, assimilation of dietary fat, and energy balance

MEMBERS OF THE INTERDEPARTMENTAL GRADUATE PROGRAM IN NUTRITIONAL SCIENCES FROM OUTSIDE THE DEPARTMENT:

The department faculty above are also included in the trainers for IGPNS.
Anderson, Rozalyn, Assistant Professor, Ph.D., 2000. Nutrient sensitive regulatory pathways in aging and age-associated disease

Arriola Apelo, Sebastian I, Assistant Professor of Dairy Science; Ph.D., 2013. Mechanistic mathematical models of nutrient metabolism and cellular signaling, with the major goal of maximizing nutrient efficiency for a sustainable dairy industry

Attie, Alan, Professor of Biochemistry; Ph.D., 1980. Cell biology of lipoprotein assembly; genetics of obesity and diabetes

Binkley, Neil, Associate Professor of Medicine, M.D., 1979. Vitamin K insufficiency and osteoporosis

Bolling, Brad, Associate Professor of Food Sciences, Ph.D., 2007. Food chemistry and analysis, dietary phytochemicals, functional foods and prevention of chronic disease.

Carey, Hannah, Professor of Veterinary Medicine; Ph.D., 1983. Gastrointestinal physiology; intestinal adaptation; mammalian hibernation and its application to biomedicine; cellular and physiological responses to stress

Crenshaw, Thomas, Professor of Animal Science; Ph.D., 1980. Skeletal tissue growth and assessment; statistical approaches to establishment of mineral and amino acid requirements; swine nutrition

Davis, Dawn, Assistant Professor; M.D., Ph.D., 2003. Dissertation: “Changes in pancreatic beta cell gene expression in response to obesity and in the setting of beta cell proliferation”

Denu, John, Professor of Biomolecular Chemistry; Ph.D., 1993. Investigation of the proposed “Histone Code”; understanding the mechanisms of enzymes that reversibly modify proteins and the effects of these modifications on protein function

Engelmann, Corinne, Associate Professor of Population Health Sciences; Ph.D. (2006). Study design and data analysis of genetic, demographic, socioeconomic, behavioral, physiological and environmental factors of complex diseases, including biomarkers and preclinical traits related to Alzheimer’s disease, and also vitamin D deficiency

Engin, Feyza, Assistant Professor of Biomolecular Chemistry; Ph.D., 2007. Investigating the molecular mechanisms of organelle dysfunction and cellular stress responses in the pathogenesis of diabetes

Fenandez, Luis, Professor of Surgery, M.D., 1987. Islet cell transplantation and beta cell biology

Funk, Luke, Assistant Professor of Surgery. 2005 MD, Ph.D., FACS. Bariatric and metabolic surgery, esophageal and gastric disorders, abdominal wall hernias and gall bladder disorders

Galmozzi, Andrea, Assistant Professor; Ph.D., 2010. Trafficking of signaling metabolites.

Goldman, Irwin, Professor of Horticulture; Ph.D. Vegetable breeding and genetics, human health attributes of vegetable crops and breeding of vegetables for culinary quality

Hernandez, Laura, Assistant Professor of Dairy Science; Ph.D., 2008. Regulation of lactation and milk synthesis in relation to the autocrine, paracrine, endocrine and serotonin systems. Regulation of mammary gland calcium transport and maternal calcium homeostasis during lactation

Kanarek, Marty, Professor of Population Health Sciences and Environmental Studies; Ph.D., 1978. Environmental epidemiology; potential population health effects from consumption of fish contaminated with mercury, PCBs, and other chemicals

Karassov, William, Professor of Wildlife Ecology; Ph.D., 1981. Molecular mechanisms of intestinal enzyme adaptation, intestinal absorption, nutritional ecology of wild verterbrates

Kimple, Michelle, Assistant Professor of Medicine; Ph.D., 2003. Pancreatic beta-cell response to nutrient and hormonal stimulation

Kling, Pamela, Associate Professor of Pediatrics; M.D. 1985. Erythropoiesis, iron metabolism and roles of erythropoietin in early development

Knoll, Laura, Associate Professor of Medical Microbiology & Immunology; Ph.D., 1994. Using “omics technology to study host/ pathogen interactions and metabolism of the intracellular parasite Toxoplasma gondii

Kudsk, Kenneth, Professor of Surgery; M.D., 1975. Effect of route and type of nutrition on surgical outcome; mucosal immunity and response to infection

Lamming, Dudley, Assistant Professor of Endocrinology, Diabetes, and Metabolism; Ph.D., 2008. Protein regulation of cellular processes that affect growth, metabolism, and aging

Leone, Vanessa, Assistant Professor of Animal Biologics and Metabolism; Ph.D., 2009. Intersection of diet, gut microbes, circadian rhythms, and metabolism using preclinical models.

Mares, Julie, Professor of Ophthalmology; Ph.D., 1987. Epidemiological study of relationships between diet and age-related eye disease

Malecki, Kristen, Assistant Professor of Population Health Sciences, Ph.D. 2005. Epidemiological study of relationships between environment and health; system-science approaches to addressing health disparities, translational community base environmental health research

Merrins, Matthew, Assistant Professor of Medicine; Ph.D., 2008. Ability of pancreatic islet beta cells to trigger cell proliferation and release of insulin during periods of increased insulin demands


Reed, Jess, Professor of Animal Sciences; Ph.D. 1983. Flavonoids and other phytochemicals in animal and human health and nutrition

Reeder, Scott, Professor. M.D., Ph.D. Abdominal adiposity, liver fat, liver iron overload and other features of diffuse liver disease, quantification of perfusion in liver tumors, hemodynamics of portal hypertension, and the use of new contrast agents in liver and biliary diseases

Rey, Federico, Associate Professor of Bacteriology; Ph.D. 2006. Understand how variations in the gut microbiome modulate the effects of diet and host’s susceptibility to cardiometabolic disease

Schrage, William, Professor of Kinesiology; Ph.D., 2001 (Physiology). Human cardiovascular studies focused primarily on regulation of skeletal muscle or cerebral blood flow in response to exercise or environmental stress, and how obesity and insulin resistance alter this regulation.
Simcox, Judith, Assistant Professor of Biochemistry; Ph.D., 2014. Transcriptional Regulation of Nutrient Responsive Pathways in Thermogenesis

Simon, Philipp, Professor of Horticulture; Ph.D., 1977. Biochemical genetics and breeding of carrots, alliums, and cucumber; genetic improvement of vegetable culinary and nutritional value

Trentham-Dietz, Amy, Professor of Cancer Epidemiology, Ph.D. 1997. Modifiable lifestyle factors including obesity, physical activity, and environmental factors to better understand breast cancer etiology and reveal avenues for prevention

Van Pijkeren, Jan Peter, Assistant Professor of Food Science, Ph.D., Diet-Microbe-Phage interactions in the gut ecosystem.

Westmark, Cara, Assistant Professor of Neurology. Ph.D. Alzheimer’s disease and fragile X syndrome focuses on the synaptic function of amyloid beta protein precursor (APP) and amyloid-beta

White, Heather, Assistant Professor of Dairy Science; Ph.D. 2010. Nutritional Physiology – Focus on hepatic carbon flux specifically during the coordinated responses to the transition to lactation, nutrition, and stress in dairy cattle and during onset and progression of NAFLD and NASH in humans

SUPPORT STAFF
Graduate Coordinator: Katie Butzen MS.Ed., kbutzen@wisc.edu