

**FDNS4550/6550: Nutritional Biodynamics**  
Spring Semester, 2008  
Room 264 Dawson Hall, 2:00-3:15 p.m., Tu/Th

Nutrients as precursors for organ and cell components and energy stores, emphasizing processes of turnover, growth, biosynthesis, and metabolism, as well as biodynamics of phytochemicals. Students will explore quantitative and dynamic issues using computer analysis and modeling and will read original articles and books to locate existing models and valid information. Main tools in 2008 will be Microsoft Excel 2007 and EndNote bibliographic software.

Prerequisite: FDNS 3100 or permission of instructor

Instructor: Dr. James L. Hargrove  
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Office Hours: One hour after class or by appointment

Textbook: None. All modules and readings will be posted on WebCT.

Grading:

1. Class participation (100 points)
2. Modeling exercises (100 points)
3. One exam (100 points)
4. Classroom presentation (100 points)
5. Research paper (200 points)

Total of 600 points

Quantitative ideas in nutrition will be explored by implementing mathematical models from the nutritional literature using Microsoft Excel 2007. Topics will include calculations of energy expenditure, body composition, allometric scaling, growth processes, and dynamics of change in nutrients as a function of rates of intake and usage. The latter topic includes a technique called compartmental analysis as it applies to developing Dietary Reference Intakes. Students will choose a topic in a specific area of nutritional research and use modeling to help evaluate current literature. The aim is to identify dynamic aspects of the topic for which the student can start developing a simple simulation model. Appropriate topics include intake of specific vitamins, minerals, protein, carbohydrate, fats, or phytochemicals in relation to a specific health concern such as a deficiency, weight gain or loss, diabetes, or cardiovascular disease.