Nutrition and Wellness Syllabus
5 Hrs Credit

Catalog Description: Examination of nutrition principles using chemistry, biology, physics and mathematics. Content will include structure-function relationships of the food groups, energy and metabolism, regulatory processes, and health indices. Projects of real world application will be performed to gain hands on experience with the scientific method, data handling and interpretation, and scientific communications.

Goal: To study the concepts and rationale of nutrition in the context of personal, cultural and world aspects of human nutrition.

Learning Objectives

- Increase science and mathematics knowledge base as applied to nutrition.
- Apply the Scientific Method (the process of discovery)
- Develop Data acquisition, presentation and interpretive skills
- Think Critically
- Explore how science and society are interwoven
- Improve Communication Skills (listen, speak, write)

Instructors: LaRhee Henderson, Charisse Buising, Dan Alexander

Textbook Contemporary Nutrition, Wardlaw, McGraw Hill Publishers, 1999, Ed. 4
College Algebra and Trigonometry, Rockswold, Addison Wesley Longman

Grading
Exams: 4 exams = 500 points
Labs: 200 points
Project: 100 points
Total = 800 points

Grading Scale: 90-100% = A
80-89% = B
70-79% = C
60-69% = D
less than 60% = F

Series of Topics

Week	Nutrition Topic
1	An Overview of Nutrition; Homeostasis:
2	Dietary Guidelines & Food Labels Nutrition facts
3	Overview of Physiology
4	Energy
5	Nutrient Fuels: Structure-Function Relationships
6	Carbohydrates
7	Proteins
8	Fats
9	Integration of Metabolism
10	Vitamins, Minerals, Water
11	Cardiovascular Disease
12	Alcohol
13	Cancer
14	Projects
15	**Final**

The Iowa Environment Syllabus

5 cr.

Catalog Description: This course examines both the science of local issues and the tools that policy makers apply to them. Students will explore topics such as the effects of agriculture on Iowa's environment, air quality in cities like Des Moines and Chicago, the chemistry of hog lots, genetic engineering, and alternative energies. Through the study of some of Iowa's environmental issues, students will gain an understanding of the ways in which scientists and policymakers think about complex, dynamic systems.

Goal: To study the concepts of complex, macroscopic systems, and, through the in-depth study of these issues, gain an understanding of how scientists and policy makers can approach difficult questions.

Learning Objectives:

- Increase science and mathematics knowledge base as applied to public policy.
- Apply the Scientific Method (the process of discovery)
- Foster an appreciation for the capabilities and limitations of numerical modeling
- Think Critically
- Explore how science and society are interwoven
- Improve Communication Skills (listen, speak, write)

Instructors: David Courard-Hauri, Dan Alexander, Charisse Buising

Textbooks: Course materials will be developed by instructors

Grading:

Take-home exams: 2 exams = 200 points
Final exam: 200 points
Quizzes: 100 points
Lab: 200 points
Total = 700 points

Grading Scale:

90-100% = A
80-89% = B
70-79% = C
60-69% = D
less than 60% = F

Week	Science Topic	Mathematics Topic	Lab
1	Introduction, overview of environmental issues, water quality	Algebraic manipulation	none
2	Hog lots: efficiency and size	Dynamic Modeling	Introduction to computer modeling
3	Hog lots: nature and size	Dynamic Modeling	Nutrient uptake model
4	Monocropping: efficiency and size	Begin Probability	Begin bacterial resistance experiment
5	Monocropping: pest resistance and agrochemicals	Probability II	Finish bacterial resistance experiment
6	Pesticides and risk assessment	Probability III	Risk model I
7	Finish risk assessment; soil chemistry	Curve fitting	Risk model II
8	Genetic Engineering	Curve types and extrapolation	Model refuge sizes
9	Genetic Engineering	Statistical methods	Visit Pioneer Hibred
10	Alternative Energy	Logarithms and log graphs	Visit Biomass Energy Conversion Facility
9	Wind farming in Iowa	Exponential growth, interest rates	Ecological Footprint assessment
10	Ethanol	Future discounting and dimensional analysis	Life-cycle assessment
13	Urban Air Pollution: chemistry	Nonlinear functions	Local Air Quality analysis
14	Urban Air Pollution: policy	Feedbacks and autocatalysis	MTBE roleplaying exercise
15	Complex systems	Chaos	Forest pest model

About the relation of the mathematics in this course to the mathematics in SMEC:
Some students may have already taken the first SMEC course and some may not have. Since some mathematical tools are used in both classes (data analysis, exponential functions, and algebraic manipulation) students who take both classes will be exposed to the same concepts more than once. This is not a bad thing rather it is a strength of the SMEC sequence: first of all, we will attempt to minimize overlap by covering similar concepts from different angles. In addition, we feel that multiple exposures to the same concept but in different contexts deepens your understanding of that concept and increases your ability to apply the concept in new and unfamiliar circumstance.