

## WFSC/NUTR 647 Nutritional Biochemistry of Fishes

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### Course objectives:

Provide a general overview of the chemistry of major nutrient classes along with their digestion, absorption and intermediary metabolism by fish.

Provide an overview of the principles associated with feedstuff selection, diet formulation, diet processing, and feeding practices in aquaculture.

### Lecture outline:

#### I. Introduction to Nutrition

- A. Nutrition defined; aquatic perspective
- B. Digestive systems and their nutritional significance
- C. Major nutrient groups and their proximate analysis

#### II. Energy-Yielding Nutrients and Metabolic Processes

- A. Proteins and amino acids
- B. Carbohydrates
- C. Lipids
- D. Final common pathway of energy metabolism and energy transfer system

#### III. The Vitamins - Their Nature and Roles in Metabolism

- A. Vitamins - general
- B. Fat-soluble vitamins
- C. Water-soluble vitamin B complex
- D. Other vitamins and vitamin-like compounds

#### IV. The Nutritionally Important Mineral Elements

- A. Inorganic elements - general
- B. Essential macroelements
- C. Essential trace elements
- D. Other inorganic elements

#### V. Quantitative Aspects of Nutrition

- A. Nutrient requirements of fishes
- B. Nutritional indices
- C. Nutrient digestibility determinations
- D. Energy values of feedstuffs

#### VI. Feed Formulation and Processing

- A. Classification of feedstuffs
- B. Feedstuff processing
- C. Diet formulation

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VII. Aquatic Animal Feeding Standards

- A. Salmonids
- B. Red drum
- C. Channel catfish
- D. Tilapia
- E. Penaeid shrimp

Grading:

	Percent of Final Grade	
Mid-term and final exams:	35% x 2 =	70
Quizzes	=	20
Class participation	=	10
	<b>TOTAL</b>	<b>100</b>

Term paper:

A term paper covering a topic selected by the student and agreed to by the instructor will be required for students taking this course for graduate credit. The term paper will constitute 10% of the final grade. Additional details and instructions about the term paper will be provided later in the semester.

Selected references:

National Research Council (2011) Nutrient Requirements of Fish and Shrimp, National Academy Press, Washington, DC.

Webster, C.D. and Lim, C.E. (2002) Nutrient Requirements and Feeding of Finfish for Aquaculture, CABI Publishing, New York.

R. T. Lovell (1989) Nutrition and Feeding of Fish. Chapman & Hall.

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For all assignments and exams you will be required to sign the following:

"On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work."

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Signature of student