

WFSC 447 Aquaculture II – Aquatic Animal Nutrition, Feeding and Disease Management

Instructor: Delbert M. Gatlin III, Ph.D.
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Office hours: By appointment

Class schedule: Lecture - TTh 12:45 – 2:00
Lab – W 3:00 – 5:00 (Nagle 308 or Aquacultural Research and Teaching Facility)

Course objectives:

Provide scientific perspectives on major aspects of nutrition, diet formulation and feeding of aquatic species in aquaculture.

Provide an overview of the major disease-causing organisms encountered in aquaculture and means of disease prevention and control.

Learning Outcomes:

Students will be able to formulate prepared diets and devise appropriate feeding strategies for prominent fish and shrimp species produced in aquaculture.

Students will be able to identify prominent disease agents of aquacultured organisms and prescribe appropriate treatment methods.

Test dates:

Mid-term – October 13, 2016

Final – December 14, 2016; 8 – 10 a.m.

Grading

| | | | |
|---------------------|-----|-------------------|----|
| Mid-term exam | 30 | Laboratory quiz 1 | 10 |
| Final Exam | 30 | Laboratory quiz 2 | 10 |
| | | Laboratory quiz 3 | 10 |
| Class participation | 10 | | |
| Total points | 100 | | |

| | | |
|--------------|---|----------|
| Final grade: | A | 90 – 100 |
| | B | 80 – 89 |
| | C | 70 – 79 |
| | D | 60 – 69 |
| | F | < 60 |

Attendance and Make-up Policy

Attendance will be taken each day and be considered as part of the class participation grade. Policies regarding attendance, excused absences and make-up assignments will be consistent with Student Rule 7: <http://student-rules.tamu.edu/rule07>.

Americans with Disabilities Act (ADA) Policy Statement

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 979-845-1637. For additional information visit <http://disability.tamu.edu>.

Academic Integrity Statement

Aggie Honor Code

"An Aggie does not lie, cheat, or steal or tolerate those who do."

Please refer to Honor Council Rules and Procedures on the web: <http://aggiehonor.tamu.edu>.

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."

Signature of student

WFSC 447 Aquaculture II Lecture Schedule

1. Introduction to Nutrition – week 1
 - a. Nutrition defined; aquatic perspective
 - b. Digestive systems and their nutritional significance
 - c. Major nutrient groups and their proximate analysis
2. Energy-Yielding Nutrients and Metabolic Processes – week 2
 - a. Proteins and amino acids
 - b. Carbohydrates
 - c. Lipids
 - d. Final common pathway of energy metabolism and energy transfer system
3. The Vitamins - Their Nature and Roles in Metabolism – week 3
 - a. Vitamins - general
 - b. Fat-soluble vitamins
 - c. Water-soluble vitamin B complex
4. The Nutritionally Important Mineral Elements – week 4
 - a. Inorganic elements - general
 - b. Essential macro-elements
 - c. Essential micro-elements
5. Feed Formulation and Processing – week 5
 - a. Classification of feedstuffs
 - b. Feedstuff processing
 - c. Diet formulation

WFSC 447
Page 3

6. Feed Management in Aquaculture – week 6
7. Introduction to Diseases in Aquaculture and Fisheries Management – week 7
 - a. Disease ecology
 - b. Disease resistance and immunology
 - c. Disease pathogenesis and recognition
8. Diagnosis of Disease -- week 8
 - a. Epizootiology
 - b. Etiology
9. Virus and Rickettsiae – week 9
10. Bacteria – week 10
11. Fungi – week 10
12. Protozoa and Sporozoa – week 11
13. Metazoa, Helminths – week 11
14. Metazoa, Crustacea – week 12
15. Mycotoxins – week 12
16. Chemicals used to treat disease – week 13
17. Disease management – week 13
18. Quarantine and Disease Inspection – week 14

Reference Materials: These will include PowerPoint handouts and publications of the Southern Regional Aquaculture Center. Reference text are:

“Nutrient Requirements of Fish and Shrimp”. 2011. National Research Council, National Academies Press, Washington, DC. (ISBN-13: 978-0-309-16338-5).

“Fish Disease: Diagnosis and Treatment”. 1999. by E. J. Noga (Blackwell Publishers; ISBN 9780813825588).

WFSC 447 Aquaculture II Lab Schedule

Time and site: Wednesday 3:00 - 5:00. Laboratory exercises will take place in Nagle 308 or at the Aquacultural Research and Teaching Facility.

TA: Alton Burns; altonburns@tamu.edu; 201 Heep Laboratory Building, 979-847-9330.

Schedule: Each subject will be covered during one weekly laboratory period.

Grading: Three laboratory quizzes will be given during the semester. Each quiz will cover materials presented in four laboratory sessions. The laboratory grade will constitute 30% of the final course grade.

| Lab no. | TOPIC |
|---------|---|
| 1. | Introduction to nutrient groups and proximate analysis |
| 2. | Feedstuffs and diet formulation |
| 3. | Feed manufacturing |
| 4. | Feeding practices and feed management |
| 5. | Anatomy of fish and shrimp, gross & microscopic examination |
| 6. | Disease diagnostics |
| 7. | Bacterial examination, isolation, and biochemical characteristics |
| 8. | Administration of antibiotics, susceptibility tests |
| 9. | Internal helminthes |
| 10. | Protozoan parasites |
| 11. | Chemotherapeutic treatments |
| 12. | Biosecurity and regulations |