INSTRUCTOR INTRODUCTION AND COURSE ORIENTATION

COURSE NAME: Advanced Aquaculture, Part 1

Course Outline

Welcome to Advanced Aquaculture, Part 1! This course is intended for the advanced continuing education student who has already taken Introductory Aquaculture, is taking the introductory course concurrently with this course, or has already taken an introductory course at another institution. Unlike Introductory Aquaculture, there are no self-tests in this course. Hopefully everybody will participate in the weekly Discussion Wikis, which are used as evidence of your participation for certification purposes. You are expected to participate in at least 10 weekly discussion wikis to receive a certificate of completion of this course. Always identify yourself when posting in the weekly Discussion Wikis!

Week 1: Pond Construction - We will begin the course with a few lessons on pond construction. While most producers hire professional pond builders to construct aquaculture ponds, a basic knowledge of their construction is very helpful to any aquaculturist. Be sure to make any comments or post any questions you may have on this week's discussion wiki.

Week 2: Pipe Flows I - In our second week, you will learn how to determine the proper size of pipes to use for delivering water from any source to its end use in an aquaculture facility. There is a little math involved here, but if you encounter problems we can discuss them in our weekly wiki discussion. For those of you that really want to test your skills at sizing water pipes for various applications, I have included two optional problem sets, with solutions. Try working the problems first before viewing the solutions!

Week 3: Pipe Flows II – Continuation of week 2.

Week 4: Pumps & Pumping I - This week you will learn about water pumps used in aquaculture. We will discuss the different types of pumps and how to select a pump for any given application. You will also learn how to properly size electrical wires to provide power from an electric source to a pump. Finally, we will cover various formulas used for estimating the cost of operation of electric as well as gasoline or diesel powered water pumps. As always, please post comments or questions on this week's discussion wiki. Again, for those of you that really want to learn how to size pumps and wiring, I have posted optional problem sets with solutions. The notes in this section refer frequently to figures and tables in Yoo and Boyd, and I have posted these as well, for those of you who have not purchased the book.

Week 5: Pumps & Pumping II – Continuation of Week 4.

Week 6: Recirculating Systems - This week we will discuss the major and minor components of recirculating aquaculture systems (RAS). We will cover the functions of each of these components within the system and where each should be placed within a system. We will also go over the different types of biofilters, particulate filters, etc. available and the pros and cons of each.

Week 7: Fish Nutrition I - This week we will discuss the basics of fish nutrition and the importance of a complete and balanced diet for the culture of aquatic organisms. We will also cover nutritional pathology, or nutritional diseases caused by an inadequate or unbalanced diet.

Week 8: Fish Nutrition II – Continuation of Week 7.

Week 9: Artificial Selection I - This week we will begin our discussion of genetics and breeding practices for fish. If you have no background in genetics, take a little time to study the pdf file at the following web address before continuing with this section: http://www.mcffa.com/uploads/4/4/8/0/4480777/00-genetics_pp.pdf

Week 10: Artificial Selection II - This week we will continue our discussion of Genetics and Breeding with two more lessons on artificial selection of fish. I have posted two problem sets for you to work on, in order to become familiar with artificial selection techniques. I have also posted solutions to the problems. Try working the problems first, before looking at the correct answers. If you have difficulty with the problems or have any questions, post them in the Discussion Wiki.

Week 11: Fish Hybridization I - This week we will continue our discussion of Genetics and Breeding with two lessons on the hybridization of fish. Fish are often hybridized in order to achieve increases in production through faster growth. This actually seldom works, but when it does, the results can be spectacular. Hybridization may also be used to improve the hardiness of fish, to produce sterile fish, or for other purposes, as we shall discuss over this week and next.

Week 12: Fish Hybridization II - This week we will continue our discussion of Hybridization with two more lessons, including information on inbreeding. I have posted another problem set for you to work on, in order for you to become familiar with the techniques for calculating effective breeding numbers. I have also posted solutions to the problems. Try working the problems first, before looking at the correct answers. If you have difficulty with the problems or have any questions, post them in the Discussion Wiki.

Week 13: Bacterial Diseases of Fish - This week's lessons provide a general overview of the important bacterial diseases of fish. We will cover the basics of disease prevention, as well as the pathogens (causative agents), clinical signs, and possible treatments of the major bacterial diseases of various species of fish.

Weeks 14: Viral and Fungal Diseases of Fish - This week we will discuss the causative agents of viral and fungal diseases of fish. While antibiotics are generally ineffective against viruses, we will talk about vaccination and other possible preventative methods. There are various chemical treatments that are effective against fungal diseases, and we will cover those in detail.

Week 15: Parasitic Diseases of Fish – This week we will cover the causative agents, clinical signs, and possible treatments of parasitic diseases of fish.

Week 16: Diseases of Crustaceans and Mollusks - This week we will cover the causative agents, clinical signs, and available treatments for various diseases of cultured crustaceans and mollusks. In addition, I have posted an excellent document explaining what to do when you have a fish disease problem on your farm.

1. Instructor information

Name: *Dr. Doug Holland, Director, Center for Aquaculture and Biotechnology*

Contact information – phone, email, office location:

Phone: (910)755-7432 email: hollandd@brunswickcc.edu
Office: H105 (room 105 in the Aquaculture Building)

2. Communication information

How to ask "personal" questions: *The best way to contact me is by email, but also by phone.*

Turnaround time for responses:

I check email and phone messages several times each day Monday-Thursday.

I also check email messages from home at night and on weekends.

How to request an appointment: *By phone or email.*

If an email is sent, what should the subject line contain? *Question from: (your name).*

3. Office hours

Monday 3-5pm, Tuesday 12noon-2pm, Wednesday 12noon-2pm

4. What to do if there is:

An emergency: *Contact me by email; that is what I check most often!*

A problem with an assignment: *Post on "Course Questions".*

5. General overview of how the course will operate:

This continuing education course is designed to be fully online, and take about 6 hours each week. There are two or more lessons each week, posted under "Study Materials", composed of written notes with embedded web links that will direct you to sites with further information on subjects of particular interest. You may study these notes and web links at your leisure, as the course is self-paced. Approximate time for study materials is 5 hours each week (assuming you also visit several web links).

Once you have read over the lessons each week, you may click on the weekly wiki discussion post. The instructor will begin the discussion with a question related to the week's subject matter. After that, the discussion may go anywhere the class wants to take it. The wiki is also an opportunity to ask questions of the instructor and other class members about the weekly lessons. Approximate time for the wiki discussions is 1 hour each week (although you may spend more time discussing the material and asking questions if you wish).

This is a non-credit course. However, Brunswick Community College will issue a Certificate of Successful Completion to each student who completes at least 60% of the course.

Completion of 60% of the course is defined as participation in 60% of the weekly wiki discussions (at least 10 out of 16 weeks).

Always be sure to check the "Latest News" (upper right-hand column) whenever you log on for any important announcements. News announcements will also be sent to your e-mail address.

6. How to submit assignments

Weekly wiki discussions are posted and submitted under "Items to Submit"

7. Any special requirements -

Microsoft Word or a comparable word processing program is required to read the course notes (lessons) under "Study Materials".

Additional posts may require Adobe Acrobat Reader.

8. What's next?

Go to Week 1, read the Study Materials, visit any of the embedded web links on subjects of particular interest, and then begin your first week's assignment under "Items to Submit".