

Course Syllabus, Spring 2009
BE 4380 AQUACULTURAL ENGINEERING

Dr. Hall, Spring 2009, M,W,F 9:40-10:30, 115 E.B.Doran

Credit Hours: 3 (3 hours lecture, with design/project component)

Course Description: *Prerequisites: Senior Standing or Permission of Instructor.*
Engineering principles applied to aquacultural systems; water chemistry; fluid mechanics; aquacultural pumping plants; fish pond design; recirculating aquacultural systems; water filtration; disinfection; aeration and degassing; instrumentation in aquacultural systems; biological, ecological and environmental aspects of aquacultural engineering design.

Objectives: Teach students the unique aspects of engineering in aquacultural systems. Learn basics of design of aquacultural systems under a variety of theoretical and applied conditions. Recognize and include biological, economic and environmental aspects in design of aquacultural systems.

Instructor: Dr. Steven G. Hall, 143 E.B. Doran, 578-1049,
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TA Milton Saidu msaidu1@lsu.edu
Office hours: 10:30-11 AM M,W,F, or by appointment.

Required Text: Timmons and Ebeling, 2007. *Recirculating Aquaculture* Northeast Regional Aquaculture Center. 001-07, Cayuga Aqua Ventures 2007. 975pp.

References: See separate listing.

Criteria for determining grade:

Homework:	15%
Final project:	35%
Report, proj	25%
Presentation	10%
Midterm	25%
Final Exam	25%

Final course grade will be determined from the following scale:
A: 90-100%; B: 80-89%; C: 70-79%; D: 60-69%; F: 0-59%

Late policy: One letter grade reduction each late day after an assignment is due.

Missed exams: At the discretion of the instructor.

No Cheating: Absolutely no cheating will be tolerated on exams. Collaborative work is expected on projects.

BE 4380 Aquacultural Engineering Course Schedule
2009

<u>Date</u>	<u>Topic</u>	<u>Work Due</u>
1/12/2009	Introduction, Syllabus, Grading, Schedule	(First Assignment)
1/14	Culture and Biology of Aquatic Organisms (See Aqua Lab)	(Ch. 1 and 2, Timmons)
1/16	Biological Engineering in Aqua-systems	(assign 1 due)
1/19	No class: MLK day	
1/21	Water Quality Parameters	(Ch 2, Timmons)
1/23	Publications and Inventions, Aquaculture in Louisiana	(assign 2 due)
1/26	Recirc I: Mass Balances	(Ch 3, Timmons)
1/28	Aquaculture In Open Systems (ARS) (Ch 16 Timmons; Ref. Lekang)	{Choose Project Topics}
1/30	Fluid Mechanics: Open Channel Flow	(Ch 12, Timmons) (hw 3)
2/2	Fluid Mechanics: Pipe Flow	
2/4	Culture Units	(Ch. 4 Timmons)
2/6	Material Selection: Corrosion and Fouling	(hw due Fridays)
2/9	Equipment Selection: Filters	(Ch. 5)
2/11	Waste Management	(Ch 6)
2/13	Marine Systems	(Lekang)
2/16-18	No class: Dr. Hall at Aquaculture America 2009, Washington, Independent work on projects	
2/20	The cutting edge: Dr. Hall's review of Aquaculture America 2009	
2/23-25	Mardi Gras Holiday (go fishin' – no class!)	

BE 4380, Spring 2007 Aquacultural Engineering Course Schedule (Continued)

<u>Date</u>	<u>Topic</u>	<u>Work Due</u>
2/27	Biofiltration (Saidu)	(Ch. 7,8) {Prelim. Project Report}
3/2	<u>Midterm Examination</u>	
3/4	Biofilter Design (Saidu, Malone)	(Ch 8, 9)
3/6	Recirculating Systems II	
3/9	Gas Transfer	(Ch 10)
3/11	Environmental Issues Discussion Day	(Hutchinson)
3/13	Disinfection: Ozone, etc.	(Ch. 11)
3/16	System Monitoring and Control	(Ch. 13)
3/18	Building Environmental Control	(Ch 14)
3/20	Recreational Systems: Water Gardens, Aquaria	
3/23	{Preliminary Project Presentations}	
3/25	{Preliminary Project Reviews}	
3/27	System Management and Operations	(Ch 15)
3/30	Fish Health Management	(Ch. 16)
4/1	Economics and Management	(Ch. 17)
4/3	Processing Methods	(Lekang)
4/6-12	Spring Break – more fishin! (or ‘gator wrestlin’?)	
4/13	Fish Nutrition and Feeds	(Ch 18)
4/15	Aquaponics/Sustainable Aquaculture	(Ch 19)
4/17	Biological and Trophic Considerations Discussion Day (Hutchinson)	
4/20	Student Presentations	<u>(Final Projects Due)</u>

4/22 **Student Presentations**

4/24 **Student Presentations**

4/27 **Possible Field Trip**

4/29 **(Optional Exam 2)**

5/1 **Course Wrap-Up, Evaluations and Aqua-Fest**

5/4-9 **Official Date of Final Examination**
Monday May 4 7:30-9:30 AM , Room 115