MARICULTURE (FAMA 5370.001)
Department of Life Sciences
FALL 2020

A. COURSE INFORMATION

Course number/section:  FAMA 5370.001
Class meeting time:  T & R, 9:30 AM - 10:45 AM
Class location:  ECMS 210 (distancing rules apply)
Course Website:  https://bb9.tamucc.edu/ (Blackboard Sign In page)

B. INSTRUCTOR INFORMATION

Instructor:  John Scarpa, Ph.D.
Office location:  TH 339
Office hours:  M, W, & F from 8:00-10:00 AM and by appointment
Telephone:  (361) 825-2369 (office)
e-mail:  John.Scarpa@tamucc.edu
Appointments:  If possible, make at least 24 hrs in advance by phone or e-mail.

C. COURSE DESCRIPTION

Catalog Course Description
3 sem. hrs. (3:0): Survey of physiological, behavioral, environmental and economic parameters governing the culture of selected aquatic species. Included are techniques and methods employed worldwide to produce various marine species. Prerequisite: Minimum of 8 cr. of biology.

Extended Course Description
Aquaculture is the controlled cultivation of aquatic organisms. Mariculture is specifically aquaculture in marine or estuarine waters. Aquaculture currently supplies about 50% of all seafood consumed by humans. Traditional capture fisheries landings worldwide have been flat for the past 25 years at approximately 90 million metric tonnes. An increasing world population and increasing global demand for seafood requires aquaculture to meet demand.

Global aquaculture production value in 2018 was about US $263 billion. U.S. aquaculture production value is about $1.5B (2017) with the U.S. importing approximately 91% of its seafood. This has resulted in a U.S. seafood trade deficit of about $16.8B (2017). Aquaculture is expanding globally necessitating the need for individuals trained in different aspects of the industry to provide food for human consumption, restoration, and recreation (i.e., stock enhancement and ornamental aquariums).

D. PREREQUISITES AND COREQUISITES

Prerequisites - Minimum of 8 cr. of biology.

Corequisites - None.
E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Required Textbook(s)
None, but reading may be required from website material, journals, newspapers, magazines, and library holdings.

Optional Textbook(s) or Other References

Supplies: None required.

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT

Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

By the end of this course, students should be able to:

1. Define mariculture and describe quantitatively the need for mariculture.
2. Describe desired characteristics of potential species for commercial culture.
3. List current commercially important culture species and describe in detail their culture methods.
4. Describe in detail commercial culture systems and compare their advantages and disadvantages for sustainability and profitability.
5. Define water quality variables and their typical ranges for aquaculture systems
6. Assimilate literature and produce a defensible stance for different aquaculture issues.
G. INSTRUCTIONAL METHODS AND ACTIVITIES
The course will be taught through traditional lectures with relevant topical discussions and individual reports on topical aquaculture issues.

H. MAJOR COURSE REQUIREMENTS AND GRADING
The learning outcomes stated earlier will be assessed through a variety of methods as noted in the following table.

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exams (2)</td>
<td>50</td>
</tr>
<tr>
<td>Comprehensive Final Exam (1)*</td>
<td>25</td>
</tr>
<tr>
<td>Mini-Papers (3)</td>
<td>4, 7, &amp; 9 (incr. value)</td>
</tr>
<tr>
<td>Class Participation &amp; Homework</td>
<td>5</td>
</tr>
</tbody>
</table>

* Entry to the classroom will be closed on the day of final exam after the first student has turned in the exam and left the room. Students absent or arriving after room closure will receive a zero for the exam.

Grading: There will be a total of three (3) written exams. Exams may be composed of any, or all, of the following: multiple choice, matching, fill in the blank, problem solving and short essay. The final exam is a comprehensive exam. All exams count toward your class grade. No exam grade will be dropped. No make-up exams will be given. If a regular class exam is missed with proper prior notification, the test may be taken as soon as possible after the exam date, but no later than the following class day. If the exam is not taken a grade of zero (0) will be entered. No extra credit assignments will be given. There will be three mini-papers on topical or environmental issues with different aquaculture species groups (Crustacean, Molluscan, and Piscine) that will be graded by your classmates and the professor. Class participation, discussion, and homework will also be factored into your final grade as noted in the table above.

The grading scale is: A=89-100%, B=79-88%, C=69-78%, D=59-68%, and F=0-58%. All grades will be rounded to the nearest whole number, therefore, a grade of 88.50% would be rounded to 89% (A) and a grade of 88.49% would be an 88% (B). Last day to drop class is 5 November. This must be done by the student.

- I will rectify any clerical, mathematical and/or other errors that you note. You have only one (1) week to notify me of such errors after an assignment or examination is returned.
- I will not change a legitimate course grade just because you “need” it either (for financial aid, to get into professional school or program, etc.). Be sure you earn the grade you want. I reserve the right to curve, but doing so is usually not necessary. (Curves are based on statistical analysis of the entire class’s performance, not on the needs of individual students.)
- The reasons for receiving a grade of an “I” (incomplete) are clearly defined in the University Catalog; this “grade” cannot be used simply to prevent you from receiving an unwanted grade for the class.
I only discuss grades in person (i.e., I do not discuss grades or matters relating to grades over the telephone or by e-mail). If you wish to know your final grade before the official grade report is mailed to you, please see me in person or provide me with a self-addressed, stamped envelope.

## I. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>Class #</th>
<th>Date</th>
<th>Topic</th>
<th>Readings/Assign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20-Aug</td>
<td>Introduction/Library Review/Metric Review</td>
<td>Metric H.W. assignment</td>
</tr>
<tr>
<td>2</td>
<td>25-Aug</td>
<td>Aquaculture Overview &amp; History</td>
<td>SRAC 005, 0441, 5005</td>
</tr>
<tr>
<td>3</td>
<td>27-Aug</td>
<td>Crustacean Culture</td>
<td>SRAC 0241, 0483</td>
</tr>
<tr>
<td>4</td>
<td>1-Sep</td>
<td>Crustacean Culture</td>
<td>SRAC 2600, 4306</td>
</tr>
<tr>
<td>5</td>
<td>3-Sep</td>
<td>Discussion - Crustacean Culture Papers</td>
<td>Papers due</td>
</tr>
<tr>
<td>6</td>
<td>8-Sep</td>
<td>Water Resources &amp; Quality</td>
<td>SRAC 4603, 4604, 4606</td>
</tr>
<tr>
<td>7</td>
<td>10-Sep</td>
<td>Aquatic System Design</td>
<td>SRAC 0101, 0102, 0160</td>
</tr>
<tr>
<td>8</td>
<td>15-Sep</td>
<td>Water Chemistry</td>
<td>SRAC 0462, 0463, 0464</td>
</tr>
<tr>
<td>9</td>
<td>17-Sep</td>
<td>Recirculating Systems</td>
<td>SRAC 0451, 0452, 0453</td>
</tr>
<tr>
<td>10</td>
<td>22-Sep</td>
<td><strong>Exam 1</strong></td>
<td>Exam study</td>
</tr>
<tr>
<td>11</td>
<td>24-Sep</td>
<td>Sustainability (&amp; 3rd Party Certification)</td>
<td>SRAC 4900, 6001, 7300</td>
</tr>
<tr>
<td>12</td>
<td>29-Sep</td>
<td>Molluscan Culture – Gastropod</td>
<td>SRAC 7203</td>
</tr>
<tr>
<td>13</td>
<td>1-Oct</td>
<td>Molluscan Culture – Bivalve</td>
<td>SRAC 0432, 0433, 4300, 4301, 4302, 4308</td>
</tr>
<tr>
<td>14</td>
<td>6-Oct</td>
<td>Molluscan Culture – Cephalopod &amp; Paper Discussion</td>
<td>Papers due</td>
</tr>
<tr>
<td>15</td>
<td>8-Oct</td>
<td>Macroalgae &amp; Microalgae Culture/ Live Feeds</td>
<td>SRAC 5004, 0701, 0702</td>
</tr>
<tr>
<td>16</td>
<td>13-Oct</td>
<td>Microalgae Culture &amp; Biofuels</td>
<td>SRAC 4309, 4310</td>
</tr>
<tr>
<td>17</td>
<td>15-Oct</td>
<td>Aquaculture and the Environment (Invasives)</td>
<td>SRAC 3902, 4303, 4304</td>
</tr>
<tr>
<td>18</td>
<td>20-Oct</td>
<td>Aquaponic &amp; IMTA Systems</td>
<td>SRAC 5006, 5007, 5010, 5011, 6004</td>
</tr>
<tr>
<td>19</td>
<td>22-Oct</td>
<td><strong>Exam 2</strong></td>
<td>Exam study</td>
</tr>
<tr>
<td>20</td>
<td>27-Oct</td>
<td>Finfish Culture</td>
<td>SRAC 0180, 0224, 0283</td>
</tr>
<tr>
<td>21</td>
<td>29-Oct</td>
<td>Finish Culture</td>
<td>SRAC 0300, 0320, 0421, 0424</td>
</tr>
<tr>
<td>22</td>
<td>3-Nov</td>
<td>Discussion - Finfish Culture Papers</td>
<td>Papers due</td>
</tr>
<tr>
<td>23</td>
<td>5-Nov</td>
<td>Genome Manipulation and AquaBounty</td>
<td>SRAC 5001</td>
</tr>
<tr>
<td></td>
<td>Date</td>
<td>Event</td>
<td>Location</td>
</tr>
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</tr>
<tr>
<td>24</td>
<td>10-Nov</td>
<td>Aquatic Animal Health/Biosecurity</td>
<td>SRAC 0260, 0472, 4701, 4703, 4707, 4708, 4712</td>
</tr>
<tr>
<td>25</td>
<td>12-Nov</td>
<td>Stock Enhancement/Ornamental</td>
<td>SRAC 0722, 7201, 7213</td>
</tr>
<tr>
<td>26</td>
<td>17-Nov</td>
<td>Open Topic Lecture</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>19-Nov</td>
<td>Science, Politics, Economics</td>
<td>Sci./Politics/Econ.</td>
</tr>
<tr>
<td>28</td>
<td>24-Nov</td>
<td>Marketing Analysis</td>
<td>SRAC 0350</td>
</tr>
<tr>
<td>29</td>
<td>26-Nov</td>
<td><strong>HOLIDAY (Thanksgiving) - no class</strong></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>1-Dec</td>
<td><strong>No Class</strong></td>
<td>Exam study</td>
</tr>
<tr>
<td>31</td>
<td>3-Dec</td>
<td>Final Exam - Comprehensive, <strong>note start time</strong></td>
<td>8:00-10:30 AM</td>
</tr>
</tbody>
</table>

**Note:** Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

**J. COURSE POLICIES**

**COVID-19 (Respiratory Diseases)**

**Face Coverings**—Face coverings (cloth face covering, surgical mask, etc.) must be properly worn in all non-private spaces including classrooms, teaching laboratories, common spaces such as lobbies and hallways, public study spaces, libraries, academic resource and support offices, and outdoor spaces where 6 feet of physical distancing is difficult to reliably maintain. Extra masks will be made available if needed. Extra masks will be made available if needed, but if not enough are available, those without masks may not enter the lecture or lab room. Be sure to keep a mask with you when coming to campus.

**Attendance/Tardiness**

Each student’s individual career experiences provide valuable perspective to their peers. Therefore, it is critical that you attend class regularly to be a partner in this learning environment. At each class meeting, attendance will be noted. It is each student’s responsibility to contact the instructor directly (phone or e-mail), in advance, if class will be missed. The instructor will not accept late work without valid reasons. It is your responsibility to find out what you missed, get notes, learn about changes in the syllabus, etc. Students with a university approved scheduled absence (athletics, military duty, etc.) must contact the instructor well in advance (>72 hrs) of a scheduled absence. Exams may be taken early (or late) in those specific cases. Students who do not arrange to take exams due to a scheduled absence will not be eligible for this special consideration. A written excuse note from the university department involved is required.

Students are encouraged to contact the instructor anytime they are not achieving their intended level of success, prior to taking any other action. Students who need to withdraw must complete an official form and submit it consistent with college policy no later than the official published date. “Incomplete” grades are awarded only when an emergency prevents a student from completing a minor portion of the course assignments. Active participation is a part of
your grade. It includes (1) asking questions; (2) answering questions with supportive evidence; (3) responding to other student’s comments, etc. Students are expected to be on time for class, to address others with respect, and to project an attentive and concerned demeanor.

**Late Work and Make-up Exams**
All exams count toward your class grade. No exam grade will be dropped. No make-up exams will be given. If an exam is missed with proper prior notification, the test may be taken as soon as possible after the exam date, but no later than the following class day. If the exam is not taken a grade of zero (0) will be entered.

**Extra Credit**
No extra credit assignments will be given.

**Cell Phone Use**
The use of cell phones and other personal electronic devices (PEDs) are prohibited during class. All cell phone ringers must be turned off (i.e., set to silent or vibrate) during the class period. If you are emergency personnel (i.e., EMT, fire, or police) you may set your device to vibrate. Any student who uses a cell phone to make or answer a call, send and read text messages or e-mails (other than TAMU-CC emergency text messages), or any other use of a personal electronic device during class may have that device confiscated and be asked to leave class, which will be considered an absence for that class. No student has the right to disturb the teaching and learning process. Voice recording of lectures is allowed, but no video or photography is allowed during class.

**Laptop Use**
Laptop computers and tablets may be used in the classroom for taking notes, as long as they are not a nuisance to other students. However, laptops shall not be used for items as noted above for cell phones or PEDs.

**Food in Class**
There is NO eating or drinking in the classroom. Appropriate breaks in class will be given.

**Missed Exam**
If an exam is missed with proper prior notification, the test may be taken as soon as possible after the exam date, but no later than the following class day. If the exam is not taken a grade of zero (0) will be entered.

**Participation**
Two or more absences, except for death in the nuclear family, sick child/spouse, or personal sickness may result in a failing grade at the discretion of the instructor. You must contact the instructor by phone message or e-mail before class to let the instructor know of your absence.

**Others**
Cheating is defined as:
- Copying to any extent the work of another student
• Intentionally assisting another student during an examination
• Having access to material related to an examination during an examination
• Possessing or having access to unauthorized copies of an examination
• Departing from any stated examination conditions

Cheating or other academic dishonesty for exams and assignments will not be tolerated and will result in a Failing (F) grade for the class and suspension.

Plagiarism: The Merriam-Webster Dictionary defines plagiarism as "To pass off as one’s own words or ideas of another."

Plagiarism involves:
• Submitting another person's work as one's own
• Submitting work from any source that is not properly acknowledged by footnote, bibliography, or reference within a paper
• Submitting work pieced together from phrases and/or sentences from various sources without acknowledgement
• Submitting work with another person's phrase(s) rearranged without acknowledgement
• Submitting work that uses any phrase, sentence, or stylistic mannerism without acknowledgement
• Omitting quotation marks from any directly quoted material
• Failure to use three dots (...) to indicate omission of one or more words
• Any other actions deemed to be plagiarism

K. COLLEGE AND UNIVERSITY POLICIES

• Academic Integrity (University)
  University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a failing grade. See Full University Policy at http://catalog.tamucc.edu/content.php?catoid=10&navoid=313#Academic_Integrity

• Classroom/Professional Behavior
  Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.
• **Statement of Civility**
  Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high-quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

• **Deadline for Dropping a Course with a Grade of W (University)**
  I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. **Please consult with your academic advisor, the Financial Aid Office, and me, before you decide to drop this course.** Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. **Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class, but will result in a failing grade.** Please consult the Academic Calendar ([http://www.tamucc.edu/academics/calendar/](http://www.tamucc.edu/academics/calendar/)) for the last day to drop a course.

• **Grade Appeals (College of Science and Engineering)**
  As stated in University Procedure 13.02.99.C0.03, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is required to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C0.03, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at [http://academicaffairs.tamucc.edu/rules_procedures/assets/13.02.99.c0.03_student_grade_appeals.pdf](http://academicaffairs.tamucc.edu/rules_procedures/assets/13.02.99.c0.03_student_grade_appeals.pdf). For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

• **Disability Services**
  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 call (361) 825-5816 or
visit Disability Services in Corpus Christi Hall 116.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.  [http://disabilityservices.tamucc.edu/](http://disabilityservices.tamucc.edu/)

• Civil Rights Complaints
Texas A&M University-Corpus Christi is committed to fostering a culture of caring and respect that is free from discrimination, relationship violence and sexual misconduct, and ensuring that all affected students have access to services. For information on reporting Civil Rights complaints, options and support resources (including pregnancy support accommodations) or university policies and procedures, please contact the University Title IX Coordinator, Sam Ramirez (Samuel.ramirez@tamucc.edu) or Deputy Title IX Coordinator, Rosie Ruiz (Rosie.Ruiz@tamucc.edu) x5826, or visit website at [Title IX/Sexual Assault/Pregnancy](http://www.tamucc.edu/title-ix/sexual-assault/pregnancy/).

• Limits to Confidentiality
Essays, journals, and other materials submitted for this class are generally considered confidential pursuant to the University's student record policies. However, students should be aware that University employees, including instructors, are not able to maintain confidentiality when it conflicts with their responsibility to report alleged or suspected civil rights discrimination that is observed by or made known to an employee in the course and scope of their employment. As the instructor, I must report allegations of civil rights discrimination, including sexual assault, relationship violence, stalking, or sexual harassment to the Title IX Coordinator if you share it with me.

These reports will trigger contact with you from the Civil Rights/Title IX Compliance office who will inform you of your options and resources regarding the incident that you have shared. If you would like to talk about these incidents in a confidential setting, you are encouraged to make an appointment with counselors in the University Counseling Center.

• Statement of Academic Continuity
In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

L. OTHER INFORMATION
• Academic Advising
The College of Science & Engineering requires that students meet with an Academic
Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

- Methods of Achieving Success
  Achieving success in this course will require a time commitment outside of class that averages three to six hours per week for reading and studying. Students benefit from actively participating in classroom discussion and other activities.

GENERAL DISCLAIMER
I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.