

## **Syllabus AFS 440 - Philippine Aquatic Food Production 3-Credits Winter (J-Term) 2020**

### **GENERAL COURSE INFORMATION:**

*Course description:* **AFS 440: Philippine Aquatic Food Production** is a Winter term (J-Term) offered by Aquaculture and Fisheries Science program. The course will be primarily based at the Asian Fisheries Academy (AFA) at the Philippine Bureau of Fisheries and Aquatic Resources (BFAR) administered National Integrated Fisheries Technology Development Center (NIFTDC), located in the Bonuan Binloc District of Dagupan City, Pangasinan, Philippines (see Figures 1 & 2). Dagupan City Official Website: <https://www.dagupan.gov.ph/> The course will involve daily lectures on various cultured species in the Philippines. The course will include hands on work with various species of fish and invertebrates being cultured at the NIFTDC and field trips to various commercial and research aquaculture facilities in metro-Dagupan City, Alaminos, Sual, and Infanta, Pangasinan. As part of the program, students will be visiting the BFAR Lucap Marine Aquaculture Research Station (Figure 3) that is near the Philippines Hundred Islands National Park, a internationally recognized marine protected area that incorporates some aquaculture projects as part of its overall integrated management plan. Students will also visit historically significant spots from World War II along the coast of Pangasinan and in the nearby mountains.



**Figure 1.** *The Asian Fisheries Academy at the BFAR-NIFTDC at Bonuan Binloc, Dagupan City, Philippines. The AFA has dormitory rooms for students attending programs, a cafeteria, lecture hall and meeting rooms for breakout sessions.*

*Course instructor:* Dr. Michael A. Rice, Professor of Fisheries and Aquaculture

*Office phone:* (401) 874-2943 (at URI)    *E-mail:* [rice@uri.edu](mailto:rice@uri.edu) (best means of communication as I check my e-mail often)

*Course resource professionals:* The course will include lectures and activities led by researchers and training staff at the BFAR-NIFTC under the direction of Center Chief Dr.

Westly R. Rosario (E-mail: westlyrosario@ymail.com Tel: 011-63-75-635-5412); there will be an 3-day field trip to the BFAR Marine Station in Lucap, Alaminos, Pangasinan near Hundred Islands National Park hosted by BFAR Assistant Regional Director Ms. Rosario Secundina Gaerlan, and Ms. Antoinetta Evangelista, OIC of the BFAR Lucap Marine Station. We will also visiting the University of the Philippines, Marine Science Institute-Bolinao Marine Laboratory, hosted Dr. Cecelia Conaco, and also visiting the Aquaculture Research Farms of Feedmix Specialists Corporation, hosted by Dr. Joebert Toledo, the Aquaculture Research Director.



**Figure 2.** A Google Earth image of the Philippine Bureau of Fisheries and Aquatic Resources National Integrated Fisheries Training & Development Center that occupies 30 hectares (75 acres) along the South China Sea coast in Dagupan City, Pangasinan. Facilities for research into the pond culture of several species of finfish and invertebrates are available along with nearby access to estuaries for culture of molluscan shellfish & seaweeds as well as pen culture of marine and estuarine fish. NIFTDC on Facebook: <https://www.facebook.com/NIFTDC-National-Integrated-Fisheries-Technology-Development-Center-460895910630531/>

*Class meeting times and place:* Class will meet daily from 2 January to 18 January except on Sundays. Daily work will usually commence with a lecture or orientation for the daily activities at an 7:30am breakfast meeting at the Asian Fisheries Academy. There will be a 1.5 hour break for lunch on most days with activities on most days ending at 4pm. Specific hours will be listed in the class schedule.

*Highly recommended course materials:*

- 1) Each student should bring a laptop computer so that journal/travel reports can be written while on site. There are Wi-Fi connections available at the Asian Fisheries Academy.
- 2) A camera would be useful for documenting visits and collecting photos for student presentations & reports.

3) A useful overview of information about Aquaculture in Dagupan City can be found in:

- Rice, M.A. and A.Z. DeVera (1998). Aquaculture in Dagupan City. *World Aquaculture* 29(1):18-24.  
[https://works.bepress.com/michael\\_rice/8/](https://works.bepress.com/michael_rice/8/)
- Andelecio, M.N. and P.S. Cruz. (2010). Integrating aquaculture in coastal river planning: the case of Dagupan City, Philippines. In book: *Tropical Deltas and Coastal Zones: Community Environment and Food Production at the Land-Water Interface. Comprehensive Assessment of Water Management in Agriculture Series: No. 9., Chapter: Chapter 3*, Publisher: CABI International, Editors: C.T. Hoanh, B. Szuster, K.S. Pheng, A. Noble and A. Ismael, pp.33-47  
[https://www.researchgate.net/publication/264534401\\_Integrating\\_Aquaculture\\_in\\_Coastal\\_River\\_Planning\\_the\\_Case\\_of\\_Dagupan\\_City\\_Philippines\\_Chapter\\_3](https://www.researchgate.net/publication/264534401_Integrating_Aquaculture_in_Coastal_River_Planning_the_Case_of_Dagupan_City_Philippines_Chapter_3)
- Rice, M.A. (2014). Extension Programming in Support of Public Policy for the Management of Aquaculture in Common Water Bodies. The 4th International Conference of Aquaculture Indonesia (ICAI). University of Padjadjaran (UNPAD) Jatinangor Campus, Bandung, Indonesia. June 2014.  
[http://works.bepress.com/michael\\_rice/47](http://works.bepress.com/michael_rice/47)



**Figure 3.** The Alaminos Regional Mariculture Technodemo Center (RMatDeC) operated by BFAR Region I located in Lucap, Alaminos, Pangasinan. The Mission of the Center is research and demonstration of aquaculture methods of various fish and invertebrates. Three days will be spent by course participants at this facility.

### **COURSE REQUIREMENTS:**

- 1) Attendance at daily 7:30am breakfast meetings to discuss daily activities.
- 2) Maintenance of a journal of field notes and observations maintained on a daily basis and submitted electronically to Dr. Rice that will be worth 50% of the grade. The journal shall consist of an accounting of personal daily observations and field notes, photographs, as well as a set of personal reflections upon how and why certain practices developed the way they have.
- 3) A 20-minute oral presentation (powerpoint) by each student discussing a type of Philippine aquaculture or issue facing the industry constituting 50% of the final grade to be presented publicly in the AFA Auditorium at a formal closing seminar. Filipino hosts and students from local schools will be invited to your seminar, and the BFAR professional staff will be asked to participate in the judging your oral presentation.

## Activities and Lectures

- 1) **Dec 13, 2019 (Fri)** 11:00am-1:00pm Required pre-departure orientation session Woodward Hall Room 115
- 2) **Dec 29, 2019 (Sun)** TBA Depart URI by van to depart Boston, Logan to Philippines (Depart BOS TBA via Emirates Airways to Dubai, UAE)
- 3) **Dec 31, 2019 (Tue)** TBA Arrive Clark International Airport; travel to Dagupan City, Pangasinan; settle in at Asian Fisheries Institute dorms; In afternoon. initial shopping for supplies & orientation to Binuan Binloc neighborhood; evening New Year's Celebrations in Bonuan Binloc neighborhood.
- 4) **Jan 1, 2020 (Wed New Year's Day Observance, Philippine Official Holiday & 30am)** Breakfast meeting & Overview; Morning: Jeepney trip to Dagupan City; walking tour of downtown Dagupan City led by Dr. Rice, shopping & currency exchange, Visiting Gen. Douglas MacArthur's wartime headquarters; familiarization with public transportation options to & from Dagupan City Central to Bonuan Binloc; Afternoon: Visit fish landings, riverboat cruise narrated by Dr. Rice, visiting fish pens & oyster farms on the Pantal-Calmay Rivers.
- 5) **Jan 2 (Thur)** 8am Visit to office of Dr. Westly Rosario, OIC, NIFTDC; 9:30am Courtesy visit to City Agricultural Offices to meet CAO Ms. Emma Molina & meet with Mayor Brian Lim, Dagupan City;
- 6) **Jan 3 (Friday)** 8:30am Milkfish (bangos) culture overview & induced spawning of milkfish; afternoon visit extensive and semi-intensive bangus ponds around Bonuan.
- 7) **Jan 4 (Sat)** 8:00am Cultural Activity: Trip to Tondaligan Bonuan Blue Beach & Pangasinan Capitol Park at Lingayen Beach (WWII Japanese & later MacArthur Luzon landing sites); Visit to Lingayen fish sauce factory; Lunch at Kalesa Buffet Restaurant, Binmaley; afternoon, continue on to Lucap, Alaminos and settle in at dorms at BFAR-Lucap Marine Laboratory; evening seafood dinner at Maxine's Restaurant Lucap with RMaTDeC Staff.
- 8) **Jan 5 (Sun)** Visit BFAR Marine Sea Cages by boat, and visit Hundred Islands National Park hosted by Municipality of Alaminos.
- 9) **Jan 6 (Mon)** 7:30am breakfast; 8:30am Travel to downtown Alaminos to make courtesy call with Mayor Arthur Brian Celeste; Overview of activities at BFAR Lucap Lab (Asst. Dir. Gaerlan & Station Head Antonietta Evangelista) & tour facilities including seaweed & sea cucumber cultures; 12noon luncheon session at Lucap with with BFAR Region 1 Officials & Alaminos Municipal officials for discussion of Marine Protected Area status and aquaculture management in the park, including of enhancement of giant clam stocks. Evening: Dinner at RMaTDeC
- 10) **Jan 7 (Tue)** 6:30am breakfast; Day trip to University of the Philippines Marine Lab, Bolinao (host: Dr. Cecelia Conaco, UP-MSI). Inspect tridacnid and other projects; lunch in Bolinao Sungayan Grill; 3:00pm, Feedmix Specialists Marine Hatchery visit in (host: Dr. Joebert Toledo) at Infanta, Pangasinan; Evening dinner at RMaTDec.
- 11) **Jan 8 (Wed)** 7:30am breakfast; 8:00am Travel to Sual, morning: 9:00am visit electric power plant & meet with chief engineer & manager to discuss aquaculture impacts on the plant. Lunch at powerplant cafeteria; 2 pm boat trip to visit fish pens of Pangascasan Bay hosted by Sual Municipal Agricultural Officer, Ms. Florencia Guanzon; evening: dinner at Gorio's Restaurant Dagupan City & return to Asian Fisheries Academy dorms.



- 12) **Jan 9 (Thur)** 8:30am Native *Penaeus monodon* and the exotic *Litopenaeus vannamei* shrimp culture overview; afternoon visiting shrimp farms; Afternoon: Culture of freshwater prawns and sea cucumbers.
- 13) **Jan 10 (Fri)** 8:30am Tilapia hatchery overview, hands-on activities tilapia sex determination; Afternoon: Culture of tropical catfish
- 14) **Jan 11 (Sat)** 7:30am Cultural Activity: Day Trip to Baguio City (a nearby mountain resort city with WWII History)
- 15) **Jan 12 (Sun)** Free day
- 16) **Jan 13 (Mon)** 8:30am Oyster & mussel farming overview; afternoon hands-on w/ oyster & mussel gear at NIFTDC; 1:30pm in AFA Seminar Room, Aquaculture Water quality issues associated with fish cages & net pens & discussion with Ms. Emma Molina (Dagupan City Agricultural Officer) about fishpen management in Dagupan City
- 17) **Jan 14 (Tue)** Field day visiting a number of aquaculture farms hosted by Ms. Emma Molina and Dagupan City Agricultural Staff; afternoon open for preparing powerpoint presentations
- 18) **Jan 15 (Wed)** 8:30am Overview of seaweed farming (Dr. Rice) and integrated multi-trophic aquaculture (IMTA) projects in the Philippines (Dr. Pierre Morrissens, resident scientist from CIRAD, France); Afternoon open for report and powerpoint presentation preps.
- 19) **Jan 16 (Thur)** 8:30am Overview of fish marketing and processing in the Philippines & tour of RP-Korea cooperative fish processing facility at NIFTDC; Open afternoon for finishing journals and preparing powerpoint presentations; **Journals due electronically to Dr. Rice at or before 8:00pm (Philippine time).**
- 20) **Jan 17 (Fri)** 8:00am copies of completed powerpoints due by 11pm to Dr. Rice for loading onto laptop for presentation, 9:00am Student presentations in the AFA auditorium w/invited guests; BFAR-NIFTDC staff to serve as discussants of student presentations; afternoon wrap-up and final discussions. Evening: Seafood banquet at Silverio's Seafood Restaurant with BFAR & official hosts.
- 21) **Jan 18 (Sat)** TBA Departure from NIFTDC to Clark International Airport & return to PVD



**Figure 4.** J-term Class "Aquaculture in the Philippines" students.