Course Number:	**MAR 530**
Course Title:	**Ecosystem-Based Fisheries Management**
Instructor:	Gavin Fay, Assistant Professor
Contacts:	School for Marine Science and Technology, SMAST II 325 (508) 910-6363 gfay@umassd.edu
Class Location:	**SMAST II** Fairhaven, Room 157
Class Time:	Fridays 10:30-1:00, 1 hr lecture, short break, 1.25 hr literature discussion
Office Hours:	by appointment
Website:	UMD myCourses

Course Description: This course will highlight the theory, challenges, and approaches for implementing Ecosystem-based Fisheries Management (EBFM). The course will examine the history and background of fisheries management, leading to why more holistic approaches are being considered. A series of operational methods being used to implement EBFM, emphasizing technical efforts and models, will be reviewed. The role of institutional structures and societal considerations in decision-making will be explored to identify situations where EBFM can be successful. The course will emphasize current literature and case studies as main learning elements.

Course Objectives:

1. Understanding of major issues facing global fisheries, fisheries science, and fisheries management
2. Familiarity with the theory, history, background, and socio-economic issues driving EBFM
3. Develop knowledge of major modeling and technical approaches for implementing EBFM.
4. Develop skills for critically evaluating current literature and contextualizing it and associated theory with real world case studies.

Prerequisites: General Ecology, General Fisheries Science; or permission of instructor.

Evaluation procedures:

1. Weekly assignments (25%) – eight brief (one page maximum) writing assignments that provide summary/synthesis of a piece of current literature relevant to the week's discussion topic, and one blog post that follows on the previous week's class discussion. Assignments are due prior to class.
2. Class project (25%) – a written report (20%) on either a case study where EBFM is being implemented, or an analysis/review of an emerging EBFM topic. Descriptions of project topics are due in week 4, and a 2-3 page project outline (5%), with key references, is due by the end of week 7. Projects may be carried out individually or in small groups (2-3 students). The scope of group projects should reflect the number of participants. Gavin Fay has a list of possible project topics.
3. Final Exam (10%) – A verbal presentation of the class project.
4. Participation, attendance, ethics (40%) – In addition to attending lecture and participating in discussions, students are required to lead at least one of the weekly class discussions of the

literature, find and distribute a piece of peer-reviewed literature relevant to the class topic each week, and post responses to the class blog in at least two weeks.
5. Note 10 points (out of a 100) will be deducted for each day that an assignment is late.
6. No academic dishonesty, including plagiarism, will be tolerated and the University Academic Integrity policy applies: http://www.umassd.edu/studentaffairs/studenthandbook/academicregulationsandprocedures/

Principal text:

Link, J. 2010. Ecosystem-based fisheries management: confronting tradeoffs. Cambridge Univ. Press, Cambridge.

To be supplemented by articles from the peer-reviewed literature.

Recommended reading list:

Charles, A. 2001. Sustainable fishery systems. Blackwell Science, Oxford.

Ecosystem Principles Advisory Panel (EPAP). 1999. A report to Congress by the Ecosystem Principles Advisory Panel. NMFS Silver Spring, MD.

FAO. 2003. The ecosystem approach to fisheries. FAO Technical Guidelines for Responsible Fisheries. No. 4, Suppl. 2. Rome, FAO. 112p.

Garcia, S.M, Zerbi, A., Aliaume, C., Do Chi, T. & Lasserre, G. 2003. The ecosystem approach to fisheries. Issues, terminology, principles, institutional foundations, implementation, and outlook. FAO Fisheries Technical Paper, No. 443, Rome, FAO. 71p.

Hall, S.J. 1999. The effects of fishing on marine ecosystems and communities. Blackwell Science, Oxford.

McLeod, K., & Leslie, H. (Eds.). 2009. Ecosystem-based management for the oceans. Washington, DC, USA: Island Press.

National Marine Fisheries Service 2009. Report to Congress: The State of Science to Support an Ecosystem Approach to Regional Fishery Management. U.S. Dep. Commerce, NOAA Tech. Memo. NMFS-F/SPO-96, 24 p.

NRC. 1999. Sustaining Marine Fisheries. National Academies Press, Washington DC.

Course outline and schedule of lectures and assignment

Date	*Session*	*Topic*	*Reading*
30-Jan	1	Introductory material; What is EBFM?	Chap 1
	2	Instructor led discussion of literature	Larkin 1996, Botsford et al. 1997, Pikitch et al. 2004
6-Feb	1	Challenges facing fisheries, origins & history of EBFM	Chap 1, 2
	2	Student led discussion of literature	Caddy 1999, Guerry 2005, Browman & Stergiou 2004
13-Feb	1	When to consider doing EBFM, case studies (guest lecture)	Chap 5, Link et al. 2011
	2	Student led discussion of literature	Christensen et al. 1996, Yaffee 1999, Arkema et al. 2006, Marasco et al. 2007
20-Feb	1	Types of advice, decision theories, goal setting ***Project topics due***	Chap 4
	2	Student led discussion of literature	Mangel et al. 1996, Francis et al. 2007, Tear et al. 2005, Garcia & Cochrane 2005
27-Feb	1	Bycatch, habitat, and spatial management	Hilborn et al. 2011
	2	Student led discussion of literature	Edgar et al. 2014, Hilborn et al. 2004, Lester et al. 2009, McCay & Jones 2011
6-Mar	1	Ecosystem Indicators	Chap 6
	2	Student led discussion of literature	Hall & Mainprize 2004, Jennings 2005, Link 2005, Halpern et al. 2012
13-Mar	1	Single- and multispecies assessment models ***Project outlines due***	Chap 7
	2	Student led discussion of literature	Hollowed et al 2000, Whipple et al. 2000, Keyl & Wolff 2008
20-Mar		No Class – Spring Break	
27-Mar	1	Aggregate and whole-of-system models	Chap 8
	2	Student led discussion of literature	Collie et al. 2014, Steele et al. 2013, Plaganyi et al. 2014
3-Apr	1	Ecological risk assessment	
	2	Student led discussion of literature	Fletcher 2005, Smith et al. 2007, Levin et al. 2009, Hobday et al. 2011
10-Apr	1	Societal and economic considerations	Chap 10
	2	Student led discussion of literature	Yaffee 1996, Endter-Wada et al. 1998, Browman & Stergiou 2005, Fulton et al. 2011
17-Apr	1	Governance and management institutions	Chap 11
	2	Student led discussion of literature	Costanza et al. 1998, Sainsbury et al. 2000, Sissenwine & Mace 2003
24-Apr	1	Evaluating tradeoffs	Chap 12
	2	Student led discussion of literature	Sainsbury & Sumaila 2003, de la Mare 2005, Worm et al. 2009, Fulton et al. 2014
1-May	1	Moving towards ecosystem based management ***Project reports due***	
	2	Student led discussion of literature	Leslie & McLeod 2007, Murawski et al. 2007, Berkes 2011, Bunnefeld et al. 2011
8-May	1	Final exam: *Student verbal presentations of class projects*	

Subject to change