

RECEIVED APR 27

FORMAT 1

Submit original with signatures + 1 copy + electronic copy to UAF Governance.  
See <http://www.uaf.edu/uafgov/faculty/cd> for a complete description of the rules governing curriculum & course changes.

TRIAL COURSE OR NEW COURSE PROPOSAL

SUBMITTED BY:

Department	Fisheries Division	College/School	SFOS
Prepared by	Keith Criddle	Phone	796-5449
Email	kcriddle@sfos.uaf.edu	Faculty Contact	Keith Criddle

1. ACTION DESIRED  
(CHECK ONE): Trial Course ☐ New Course ☒

2. COURSE IDENTIFICATION: Dept FISH Course # 645 No. of Credits 3

Justify upper/lower division status & number of credits:

3. PROPOSED COURSE TITLE: Bioeconomic Modeling and Fisheries Management

4. To be CROSS LISTED? YES/NO No If yes, Dept: Course #  
(Requires approval of both departments and deans involved. Add lines at end of form for such signatures.)

5. To be STACKED? YES/NO No If yes, Dept. Course #

6. FREQUENCY OF OFFERING: Spring, Alternate Years  
Fall, Spring, Summer (Every, or Even-numbered Years, or Odd-numbered Years) - or As Demand Warrants

7. SEMESTER & YEAR OF FIRST OFFERING (if approved) Spring 2012

8. COURSE FORMAT:

COURSE FORMAT: (check all that apply) ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☒ 6 weeks to full semester

OTHER FORMAT

Lecture/discussion

9. CONTACT HOURS PER WEEK: 3 LECTURE hours/weeks LAB hours /week PRACTICUM hours /week

OTHER HOURS (specify type) none

10. COMPLETE CATALOG DESCRIPTION including dept., number, title and credits (50 words or less, if possible):

FISH F645 Bioeconomic Modeling and Fisheries Management  
3 credits Offered Spring Even-numbered Years  
An introduction to analytic and computational models of discrete-time representations of bioeconomic systems, including comparative static and optimal control approaches to optimizing unitary and multiple criteria subject to deterministic and stochastic dynamic processes. Particular attention is given to bioeconomic models of optimal management of exploited populations of fish and shellfish. Prerequisites: STAT F401 and MATH F200, MATH F262, or MATH F272; graduate standing or permission of instructor. (3+0)

**11. COURSE CLASSIFICATIONS:**H = Humanities ☐S = Social Sciences ☐Will this course be used to fulfill a requirement  
for the baccalaureate core? YES ☐NO ☐

IF YES, check which core requirements it could be used to fulfill:

O = Oral Intensive,  
Format 6 ☐W = Writing Intensive,  
Format 7 ☐Natural Science,  
Format 8 ☐**12. COURSE REPEATABILITY:**Is this course repeatable for credit? YES ☐NO ☐Justification: How many times may the course be repeated for credit? 

TIMES

If the course can be repeated with variable credit, what is the  
maximum number of credit hours that may be earned for this course? 

CREDITS

**13. GRADING SYSTEM: Specify only one.**LETTER: ☒PASS/FAIL: ☐**RESTRICTIONS ON ENROLLMENT (if any)****14. PREREQUISITES** STAT 401 and MATH 200, 262, or 272

These will be required before the student is allowed to enroll in the course.

**15. SPECIAL RESTRICTIONS,  
CONDITIONS**

Graduate standing or permission of instructor

**16. PROPOSED COURSE FEES**

\$0

Has a memo been submitted through your dean to the Provost & VCAS for  
fee approval? Yes/No ☐**17. PREVIOUS HISTORY**Has the course been offered as special topics or trial course  
previously? Yes/No ☐

Yes

If yes, give semester, year,  
course #, etc.:

Spring 2007, FISH 694; Spring 2009, FISH 694; Spring 2011, FISH 694

**18. ESTIMATED IMPACT**

WHAT IMPACT, IF ANY, WILL THIS HAVE ON BUDGET, FACILITIES/SPACE, FACULTY, ETC.

Costs to the university include the use of classrooms at Lena Point in Juneau and costs associated with videoconference delivery of this course to Fairbanks and other sites as demand warrants. These costs will be offset, in part, by tuition. The instructor is a tenured faculty member and will teach this class as a component of his workload; the course will not require unusual classroom features or other facilities.

**19. LIBRARY COLLECTIONS**

Have you contacted the library collection development officer (kljensen@alaska.edu, 474-6695) with regard to the adequacy of library/media collections, equipment, and services available for the proposed course? If so, give date of contact and resolution. If not, explain why not.

No ☐Yes ☒

The library collection development officer was contacted on 03-16-11. On Anne Christie responded on behalf of the library on 04-05-11 (see attached). With a few minor exceptions, the library has the reference materials listed as required readings for this class. I have copies of the materials that the library does not have and can place them in electronic reserve.

## 20. IMPACTS ON PROGRAMS/DEPTS

What programs/departments will be affected by this proposed action?

Include information on the Programs/Departments contacted (e.g., email, memo)

FISH will bear the bulk of costs and reap the bulk of benefits associated with offering this class. Joshua Greenberg (Dept Head, Resource Management) and Joe Little (Director of MS in Resource & Applied Economics) were contacted on 3/16/11. Dr. Greenberg expresses support for this course and notes that it will be a valuable option for students in the NRS PhD program (see attached). Dr. Little concludes that this course will positively impact the MS Resource and Applied Economics program by serving as an elective for interested students (see attached).

## 21. POSITIVE AND NEGATIVE IMPACTS

Please specify positive and negative impacts on other courses, programs and departments resulting from the proposed action.

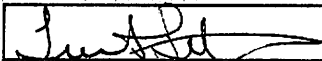
The principle benefit of this class is that it meets the need that Fisheries graduate students have for exposure to bioeconomic models that are an increasingly important component of ecosystem-based models of fisheries resources. This course does not duplicate any existing UAF courses and does not have any other negative impacts but instead offers potential positive impacts for the NRS PhD and the RAE MS programs.

## JUSTIFICATION FOR ACTION REQUESTED

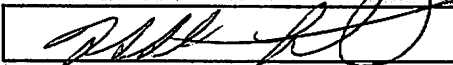
The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. Use as much space as needed to fully justify the proposed course.



Although this topic is touched on in various courses offered by ECON and NRM, none of the current courses provide an in-depth treatment of the topic. Moreover, Fisheries graduate students do not have sufficient background in economics to be successful in graduate-level economics courses. The National Marine Fisheries Service has reported that there is a nationwide shortage of scientists trained in fisheries bioeconomics. This course is an entry point for students wishing to become proficient in fishery bioeconomics and provides a helpful overview for biometricians and population modelers who need to interface their models with bioeconomic models in an ecosystem modeling framework. Enrollments in the trial version of this course averaged 7 graduate students per semester.

## APPROVALS:

 Date 04/07/2011  
Signature, Chair,  
Program/Department of: Fisheries Division

 Date 04/07/2011  
Signature, Chair, College/School  
Curriculum Council for: SFOS Curricular Committee

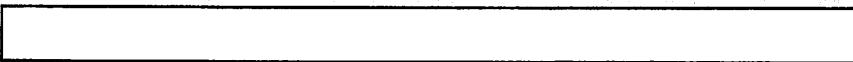

 Date 4/11/11  
Signature, Dean, College/School  
of: JSR

 Date 

Signature of Provost (if applicable)

Offerings above the level of approved programs must be approved in advance by the Provost.

ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE

 Date   
Signature, Chair, UAF Faculty Senate Curriculum  
Review Committee

**ADDITIONAL SIGNATURES: (As needed for cross-listing and/or stacking)**

		Date	
Signature, Chair, Program/Department of:			
		Date	
Signature, Chair, College/School Curriculum Council for:			
		Date	
Signature, Dean, College/School of:			

**ATTACH COMPLETE SYLLABUS (as part of this application).**

Note: The guidelines are online: <http://www.uaf.edu/uafgov/faculty/cd/syllabus.html>

The department and campus wide curriculum committees will review the syllabus to ensure that each of the items listed below are included. If items are missing or unclear, the proposed course change will be denied.

**SYLLABUS CHECKLIST FOR ALL UAF COURSES**

During the first week of class, instructors will distribute a course syllabus. Although modifications may be made throughout the semester, this document will contain the following information (as applicable to the discipline):

**1. Course information:**

- ☐ Title, ☐ number, ☐ credits, ☐ prerequisites, ☐ location, ☐ meeting time  
(make sure that contact hours are in line with credits).

**2. Instructor (and if applicable, Teaching Assistant) information:**

- ☐ Name, ☐ office location, ☐ office hours, ☐ telephone, ☐ email address.

**3. Course readings/materials:**

- ☐ Course textbook title, ☐ author, ☐ edition/publisher.
- ☐ Supplementary readings (indicate whether ☐ required or ☐ recommended) and
- ☐ any supplies required.

**4. Course description:**

- ☐ Content of the course and how it fits into the broader curriculum;
- ☐ Expected proficiencies required to undertake the course, if applicable.
- ☐ Inclusion of catalog description is *strongly* recommended, and
- ☐ Description in syllabus must be consistent with catalog course description.

**5. ☐ Course Goals (general), and (see #6)**

**6. ☐ Student Learning Outcomes (more specific)**

**7. Instructional methods:**

- ☐ Describe the teaching techniques (eg: lecture, case study, small group discussion, private instruction, studio instruction, values clarification, games, journal writing, use of Blackboard, audio/video conferencing, etc.).

**8. Course calendar:**

- ☐ A schedule of class topics and assignments must be included. Be specific so that it is clear that the instructor has thought this through and will not be making it up on the fly (e.g. it is not adequate to say "lab". Instead, give each lab a title that describes its content). You may call the outline Tentative or Work in Progress to allow for modifications during the semester.

**9. Course policies:**

- ☐ Specify course rules, including your policies on attendance, tardiness, class participation, make-up exams, and plagiarism/academic integrity.

**10. Evaluation:**

- ☐ Specify how students will be evaluated, ☐ what factors will be included, ☐ their relative value, and
- ☐ how they will be tabulated into grades (on a curve, absolute scores, etc.)

**11. Support Services:**

- ☐ Describe the student support services such as tutoring (local and/or regional) appropriate for the course.

**12. Disabilities Services:**

The Office of Disability Services implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials.

- ☐ State that you will work with the Office of Disabilities Services (208 WHIT, 474-5655) to provide reasonable accommodation to students with disabilities."

# FISH 645: Bioeconomic Modeling and Fisheries Management (3 credits)

**Instructor:** Dr. Keith R. Criddle  
**Contact Information:** [kcriddle@sfos.uaf.edu](mailto:kcriddle@sfos.uaf.edu) 796-5449 LP 203  
**Office hours:** TR 10-12 or by appointment  
**Time/Location:** TR 3:40-5:10 Juneau (LP 212) and by video conference to Fairbanks and other sites as demand warrants.

**Course Description:** An introduction to analytic and computational models of discrete-time representations of bioeconomic systems, including comparative static and optimal control approaches to optimizing unitary and multiple criteria subject to deterministic and stochastic dynamic processes. Particular attention is given to bioeconomic models of optimal management of exploited populations of fish and shellfish. *Prerequisites:* STAT F401 and MATH F200, MATH F262, or MATH F272; graduate standing or permission of instructor. (3+0)

**Course Goals and Learning Objectives:** Students who successfully complete this course will have a basic background in the development of analytic and computational bioeconomic models. In particular, students will be trained in the development of discrete-time simulation models of deterministic and stochastic processes from the perspective of comparative static and dynamic frameworks evaluated under unitary and multiple criteria. Students who successfully complete this course will:

- Be familiar the differences between renewable, recyclable, and exhaustible resources and the conditions that could lead to extinction of renewable resources.
- Be familiar with use, option and vicarious use benefits provided by biological resources and the ecosystems that sustain them.
- Be familiar with the sources of and consequences of market failure and governance failure.
- Understand differences between continuous and discrete time models, deterministic and stochastic models, static and dynamic models, stationary and nonstationary models, and optimization under unitary and multiple criteria.
- Understand the difference between consumption and capital value and the causes and consequences of stock externalities.
- Know how to structure simple single species deterministic discrete-time bioeconomic models, including parameter estimation, simulation, and sensitivity analysis.
- Understand the theory and practice of modeling the dynamics of natural populations.
- Understand the characteristics and implications of alternative resource governance regimes and how to represent those regimes in bioeconomic simulations.
- Be familiar with the principles of dynamic optimization and optimal control theory.
- Know how to structure single species deterministic discrete-time bioeconomic models with multiple competing users, including parameter estimation, simulation, and sensitivity analysis.
- Be familiar with methods used to estimate the value of recreation and other noncommercial uses and how to incorporate models of nonmarket demand into bioeconomic models.
- Be familiar with extensions of the basic bioeconomic model to account for multiple species, multiple optimization criteria, and risk aversion.

**Course Readings:** Seminal articles from the refereed literature will serve as the texts for this class. (See course outline for a list of articles to be reviewed. Required readings are denoted with asterisks.) Many of these articles are available through UAF's electronic journal collection; others are available for download from publisher's websites.

**Instructional Method:** A combination of lectures, facilitated discussions, and work sessions. UAF's Electronic Blackboard will be used to post readings, data sets, examples, and exercises.

**Evaluation:** Evaluation will be based on 6 computer modeling exercises (14% each) designed to reinforce topics covered in lectures and to allow you to demonstrate your ability to work with the analytic methods introduced in class. In addition, there will be a final exam (16%) designed to assess your ability to retain and integrate material covered in the lectures and homework assignments. Each modeling exercise is worth 100 points and will require several hours of effort. The final is worth 100 points and will include short answer and essay questions. Course grades will be assigned based on a weighted sum of scores on the exercises and exam:  $\geq 90 = A$ ;  $\geq 80$  but  $< 90 = B$ ;  $\geq 70$  but  $< 80 = C$ ;  $\geq 60$  but  $< 70 = D$ ; and  $< 60 = F$ .

**Course policies:** Plagiarism or cheating on the exam is automatic grounds for failing course grade. Students may work discuss the homework assignments with one another but are expected to do their own work.

**Disabilities Services:** The office of Disability Services implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials. I will work with the Office of Disabilities Services (208 WHIT 474-5665) to provide reasonable accommodation to students with disabilities.

**Other Support Service:** For a listing of other support services that may be useful, see: [www.uaf.edu/sssp/index.html](http://www.uaf.edu/sssp/index.html).

**Registration:** Registration can be completed at: [uaonline.alaska.edu](http://uaonline.alaska.edu).

## COURSE OUTLINE & READING ASSIGNMENTS:

1. The economics of production from natural resources Weeks 1&2
  - a. Types of Natural Resources: Exhaustible, Recyclable, Renewable
  - b. Types of Benefits Derived from Natural Resources: Use, Option, Vicarious
  - c. Market Failure: Externalities, Public Goods, Asymmetric Information, Market Power
    - \* Coase RH. 1960. The problem of social cost. *Journal of Law and Economics* 3: 1-44.
    - Buchanan JM Stubblebine WC 1962. Externality. *Economica* 29: 371-384.
    - Demsetz H. 1967. Toward a theory of property rights. *American Economic Review* 57: 347-359.
    - \* Anderson TL & PJ Hill. 1975. The evolution of property rights; a study of the American west. *Journal of Law and Economics* 18: 163-179.
    - \* Akerlof GA 1970. The market for "lemons": quality uncertainty and the market mechanism. *Quarterly Journal of Economics* 84: 488-500.
    - Randall A 1983. The problem of market failure. *Natural Resources Journal* 23:131-148
  - d. Governance Failure: Special Interests, Shortsightedness, Rent- Seeking, Inefficiency
    - \* Krueger AO. 1974. The political economy of the rent-seeking society. *American Economic Review* 64: 291-303
  - e. Allocation Systems: Voluntary vs. Involuntary Exchange: markets, queues, lotteries, etc.
2. A taxonomy of optimization models Week 3
  - a. Continuous vs. Discrete time
  - b. Deterministic vs. Stochastic
  - c. Static vs. Dynamic
  - d. Stationary vs. Nonstationary
  - e. Singular vs. Multiple Criteria
3. The economics of production from natural resources Week 4
  - a. Consumption value vs. capital value
    - \* Jarvis LS. 1974. Cattle as capital goods and ranchers as portfolio managers: an application to the Argentine cattle sector. *Journal of Political Economy* 82:489-520.
  - b. Stock externalities
    - \* Boyce JR. 1992. Individual transferable quotas and production externalities in a fishery. *Natural Resource Modeling* 6:385-408
4. A simple bioeconomic simulation/optimization model Week 5
  - \* Criddle KR. 1993. Economics of resource use: a bioeconomic analysis of the pacific halibut fishery. In Shaw (editor), *Proceedings of the Fourth International Symposium of the Conference of Asian and Pan-Pacific University Presidents*, Alaska Sea Grant, Fairbanks, AK

Homework 1 is due at end of this module.
5. The dynamics of natural populations Week 6
  - \* Quinn TJ. 2003. Ruminations on the development and future of population dynamics models in fisheries. *Natural Resource Modeling* 16:341-392.
  - \* Larkin PA 1977. An epitaph for the concept of Maximum Sustained Yield. *Transactions of the American Fisheries Society* 106: 1-11.
  - Criddle KR & AM Havenner. 1991. An encompassing approach to modeling fishery dynamics: modeling dynamic nonlinear systems. *Natural Resource Modeling* 5: 55-90.

Homework 2 is due at end of this module.
6. Alternative Governance Regimes for Common Pool Resources Weeks 7&8
  - Crutchfield JA. 1979. Economic and social implications of the main policy alternatives for controlling fishing effort. *Journal of the Fisheries Research Board of Canada* 36: 742-752
  - \* Schlager E Ostrom E 1992. Property-rights regimes and natural resources. *Land Economics* 68: 249-262
  - Grafton RQ et al. 2006. Incentive-based approaches to sustainable fisheries. *Canadian Journal of Fisheries and Aquatic Science* 63: 699-710
  - a. Common Property
    - \* Gordon HS. 1954. The economic theory of a common property resource: the fishery. *Journal of Political Economy* 62:124-142.
    - \* Hardin G 1968. Tragedy of the commons. *Science* 162:1243-1248.
    - Berck P. 1979. Open access and extinction. *Econometrica* 47: 877-882.



- \* Higgs R. 1982. Legally induced technical regress in the Washington salmon fishery. *Research in Economic History* 7:55-86.
- \* Anderson TL Hill PJ 1990. The race for property rights. *Journal of Law and Economics* 33: 177-197
- \* Dietz T Ostrom E Stern PC 2003. Struggle to govern the commons. *Science* 302: 1907-1912
- b. Limited Entry
  - \*JE Wilen. 1988. Limited entry licensing: a retrospective assessment. *Marine Resource Economics* 5: 313-324.
- c. IFQs
  - \*Hannesson R 1996. On ITQs. *Reviews in Fish Biology and Fisheries* 6:91-96.
  - National Research Council. 1999. *Sharing the Fish: Toward a National Policy on Individual Fishing Quotas*, National Research Council, National Academy Press. Washington DC. 422p.
- d. TURFS
  - \* Acheson JM. 1975. Lobster fiefs—economic and ecological effects of territoriality in the Maine lobster industry. *Human Ecology* 3: 183-207.
  - Gonzalez E. 1996. Territorial use rights in Chilean fisheries. *Marine Resource Economics* 11: 211–218.
  - \* Criddle KR, M Herrmann & JA Greenberg. 2001. Territorial use rights: a rights based approach to spatial management. Pages 573-590 in M Dorn, S Hills, G Kruse, & D Witherell (Editors). *Spatial Processes and the Management of Marine Populations*, Alaska Sea Grant, Fairbanks AK.
- e. CO-OPS/Enterprise Allocations
  - \* Criddle KR & S Macinko. 2000. A requiem for the IFQ in US fisheries? *Marine Policy* 24: 461-469.
  - \* Sylvia G, H Munro-Mann & C Pugmire. 2008. Achievements of the Pacific whiting conservation cooperative: rational collaboration in a sea of irrational competition. Pages 361-368 in R Townsend, R Shotton and H Uchida (editors). *Case Studies in Fisheries Self-Governance*. FAO Fisheries Technical Paper. No. 504. Rome, FAO
  - \* Wilen JE & EJ Richardson. 2008. Rent generation in the Alaskan pollock conservation cooperative. Pages 361-368 in R Townsend, R Shotton and H Uchida (editors). *Case Studies in Fisheries Self-Governance*. FAO Fisheries Technical Paper. No. 504. Rome, FAO.

Homework 3 is due at end of this module.

- 7. Single Criterion Optimal Control of Deterministic Dynamic Populations Week 9
  - Dorfman R. 1969. An economic interpretation of optimal control theory. *American Economic Review* 59: 817-831.
  - Clark CW Munro GR 1975. The economics of fishing and modern capital theory. *Journal of Environmental Economics and Management* 2, 92-106.
  - Berck P. 1979. The economics of timber: a renewable resource in the long run. *Bell Journal of Economics* 10:447-462.
  - \* Bjorndal T. 1988. The optimal management of North Sea herring. *Journal of Environmental Economics and Management* 15:9-29.
  - Williams BK. 1989. Review of dynamic optimization methods in renewable natural resource management. *Natural Resource Modeling* 3:137-216.

Homework 4 is due at end of this module.

- 8. Comparative Static Analysis of Stochastic Populations Weeks 10 & 11
  - Criddle KR. 1996. Predicting the consequences of alternative harvest regulations in a sequential fishery. *North American Journal of Fisheries Management* 16:30-40.
  - \* Criddle KR & AY Streletski. 2000. Multiple criterion management of a sequential fishery. *Annals of Operations Research* 94: 259-273.
  - \* Criddle KR, M Herrmann, JA Greenberg, & EM Feller. 1998. Climate fluctuations and revenue maximization in the eastern Bering Sea fishery for walleye pollock. *North American Journal of Fisheries Management* 18: 1-10.
  - \* Criddle KR & M Herrmann. 2008. A state space bioeconomic model of Pacific halibut. *Natural Resource Modeling* 21:29-60.

Homework 5 is due at end of this module.

- 9. Single Criterion Optimal Control of Stochastic Dynamic Populations Week 12
  - \* Criddle KR. 1993. Optimal control of dynamic multispecies fisheries. Pages 609-628 in G Kruse, D Eggers, R Marasco, C Pautzke, & TJ Quinn II (editors) *Management Strategies for Exploited Fish Populations*. Alaska Sea Grant Fairbanks, AK 99775.

Homework 6 is due at end of this module.

10. Comparative Static Analyses of Multiple Use Bioeconomic Systems Week 13  
 McConnell KE & JG Sutinen. 1979. Bioeconomic models of marine recreational fishing. *Journal of Environmental Economics and Management* 6: 127-139.  
 Bishop RC & KC Samples. 1980. Sport and commercial fishing conflicts: theoretical analysis. *Journal of Environmental Economics and Management* 7: 220-233.  
 \* Edwards SF 1991. Critique of 3 economics arguments commonly used to influence fishery allocations. *North American Journal of Fisheries Management* 11:121-130.  
 Easley JE Jr. 1992. Selected issues in modeling allocation of fishery harvests. *Marine Resource Economics* 7: 41-56.  
 \* Criddle KR. 2004. Economic principles of sustainable multi-use fisheries management, with a case history economic model for Pacific halibut. Pages 143-171 in D.D. MacDonald and E.E. Knudson (editors), *Sustainable Management of North American Fisheries*, American Fisheries Society. Bethesda, MD.
11. Model Extensions Week 14  
 a. Recreation and Other Non-commercial Uses  
 Henderson MM, KR Criddle, & ST Lee. 2000. The economic value of Alaska's Copper River personal-use and subsistence fisheries. *Alaska Fishery Research Bulletin* 6: 63-69.  
 Criddle KR, M Herrmann, ST Lee, & C Hamel. 2003. Participation decisions, angler welfare, and the regional economic impact of sportfishing. *Marine Resource Economics* 18:291-312.  
 b. Multiple Criterion Management  
 Merritt M & KR Criddle. 1993. Multiple criterion decision theory for judging management strategies and resolving conflict: a case study of the Kenai River recreational fisheries. Pages 683-704 in G Kruse, D Eggers, R Marasco, C Pautzke, & TJ Quinn II (Editors). *Management Strategies for Exploited Fish Populations*, Alaska Sea Grant College Program, Fairbanks AK, p. 683-704.  
 c. Risk  
 National Research Council. 2004. *Non-native Oysters in the Chesapeake Bay*. National Research Council, National Academy Press. Washington DC 325p.
- Final Exam.



**DEPARTMENT OF RESOURCES MANAGEMENT**

SCHOOL OF NATURAL RESOURCES AND AGRICULTURAL SCIENCES  
P.O. Box 757200  
Fairbanks, AK 99775-7200

907 474-7188  
FAX 907 474-6184  
[www.uaf.edu/salrm/rm/index.html](http://www.uaf.edu/salrm/rm/index.html)

**FROM:** Joshua Greenberg, Chair,  
NRS PhD Program

**DATE:** March 24, 2011

**SUBJECT:** Course contribution

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As Chair of the NRS PhD program, I would like to express our support for the three courses being offered by Dr. Keith Criddle: FISH 670 Quantitative Analysis and Marine Policy, FISH 645 Bioeconomic Modeling and Fisheries Management, and Fish 672 Law and Fisheries. These courses have great relevance and application to the NRS PhD program thematic areas of resource economics, and resource policy and sustainability science. We appreciate the broadening of the UAF course offerings to include human interaction with marine resources. Students in our program have taken advantages of these courses in the past and based upon student feedback will continue to participate in these courses in the future. Dr. Criddle is valued affiliate faculty with our program and we appreciate the contribution he has made to our program through these courses.

## Keith Criddle

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**From:** Joseph Little <jmlittle2@alaska.edu>  
**Sent:** Tuesday, March 29, 2011 9:21 AM  
**To:** kcriddle@sfos.uaf.edu  
**Subject:** Re: course impacts

Hi Keith,

I have reviewed the course syllabi you have sent but got delayed on the write up while finishing up some paper revisions. My apologies.

The proposed courses, Fish 670 (Quantitative Analysis for Marine Policy Decisions), Fish 645 (Bioeconomic Modeling and Fisheries Management, and Fish 672 (Law and Fisheries), would positively impact the MSRAE. The quantitative analysis courses (Fish 670 and Fish 645) provide additional elective opportunities which students could use to further hone their applied analysis skill sets. Fish 672 would also be useful to MSRAE students who are seeking to expand their knowledge of the laws and regulations which guide Fisheries management. The only limitation that I can see, is that Fish 672 is a two credit course. While this is a minor point, MSRAE students who opt to take the course may need to register for additional credits (e.g., project or thesis) to satisfy program requirements. Again, this is a small matter. Overall, each of the courses display a level of analytical rigor which is consistent with the MSRAE coursework. Expanded course opportunities would particularly benefit students who are conducting research in the area of Fisheries economics.

Again I apologize for the delayed response. I hope you are enjoying your spring semester. Take care. -Joe

On Tue, Mar 29, 2011 at 6:44 AM, Keith Criddle <kcriddle@sfos.uaf.edu> wrote:

> Hi Joe,

>

> Have you had a chance to review these syllabi for possible impacts?

>

> Keith

>

> -----Original Message-----

> From: Joseph Little [mailto:jmlittle2@alaska.edu]

> Sent: Wednesday, March 16, 2011 2:25 PM

> To: kcriddle@sfos.uaf.edu

> Subject: Re: course impacts

>

> Hi Keith,

>

> I'd be glad to help. Do you need the impact summaries prepared in a

> particular format? I hope you are enjoying some nice weather. Take care.

> -Joe

>

> On Wed, Mar 16, 2011 at 12:36 PM, Keith Criddle

> <kcriddle@sfos.uaf.edu>

> wrote:

>> Hi Joe,

>>

>> I am preparing paperwork for approval of three courses that have

>> hitherto been offered as trial courses. "Bioeconomic Modeling and

>> Fisheries Management" has been offered in Spring 2007, Spring 2009,

>> and

> Spring 2011.  
>> "Quantitative Analysis for Marine Policy Decisions" was offered in  
>> Fall 2008. "Law and Fisheries" was offered in Fall 2010. Would you  
>> please review the attached syllabi and comment on how these classes  
>> might affect the MS Resource & Applied Economics program? Regards,  
>>  
>> Keith Criddle  
>>  
>>  
>>  
>

## Keith Criddle

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**From:** Anne Christie <anne.christie@alaska.edu>  
**Sent:** Tuesday, April 05, 2011 12:57 PM  
**To:** kcriddle@sfos.uaf.edu  
**Subject:** Re: FW: library impact of proposed course offerings

Hello Keith,

Thank you for providing the syllabi for your classes. This is very helpful for the library in providing one way to assess whether our collection is meeting faculty and student needs.

I've looked through the reading lists for the 3 courses and am glad to find that the library is able to provide a good number of the sources. Some of this is due to our JSTOR subscription as well as to complete backfiles for the Canadian Journal of Fisheries and Aquatic Sciences and the AFS journals. We recently purchased backfiles for some Elsevier journals which added a couple of titles that are on your list. Of course, as you point out, a number of the sources are freely available on the web. Based on the reading lists, I think students should be able to locate many of the sources they might need for their papers through the library collection.

I did uncover a couple of gaps which I will work on trying to fill. The most prominent is Marine Resource Economics. The library dropped its subscription at the end of 1989. It has been picked up again with 2011 but there is a big gap. Unfortunately, as far as I can tell, there is no online institutional access available. Also, we do not have the first four volumes of Natural Resource Modeling. Do you have your own access to complete runs of these two journals?

Also, the library does not subscribe to Research in Economic History.

I also found a few books that we are missing.

Sustainable Management of North American Fisheries 2004.

Kalo -- Coastal and Ocean Law

Endangered Species Act: Law, Policy and Perspectives

Loomis and Helfand -- Environmental Policy Analysis for Decision Making.

I will follow up on these.

The library's Electronic Reserves (E-Res) service can be used to provide scans of articles and book chapters (not the entire book) so that students have 24/7 access. This could be an alternative to posting in Blackboard which might save you some time. Please let me know if you have questions about this.

I noted edits for a couple of listings.

1. FISH 645

Page 3 in d.

Spatial Processes and the Management of Fish Populations -- is Marine Populations

2. FISH 670

Page 2

Pub year for McDaniels TL is 1995 rather than 1994.

Page 5.

Sueng CK. 2005, A review of regional economic models for Alaska fisheries. AFSC processed report. 2005-01. (There is a link to a pdf of this report from the library catalog.)

Again, thank you for providing your syllabi. It is really appreciated.

Best regards,

Anne

On Mon, Apr 4, 2011 at 3:51 PM, Keith Criddle <[kcriddle@sfos.uaf.edu](mailto:kcriddle@sfos.uaf.edu)> wrote:

Thanks Anne. Tomorrow will be fine.

**From:** Anne Christie [<mailto:anne.christie@alaska.edu>]

**Sent:** Monday, April 04, 2011 3:49 PM

**To:** [kcriddle@sfos.uaf.edu](mailto:kcriddle@sfos.uaf.edu)

**Subject:** Re: FW: library impact of proposed course offerings

Hello Keith,

Apologies for getting wires somewhat crossed on and I am just back after being out of town. I have the syllabi and will get back to you by the end of tomorrow. Hope that's OK.

Best regards,

Anne

On Tue, Mar 29, 2011 at 6:42 AM, Keith Criddle <[kcriddle@sfos.uaf.edu](mailto:kcriddle@sfos.uaf.edu)> wrote:

Hi Anne,

Have you had a chance to look at these syllabi for possible library impacts?

Keith

**From:** Karen Jensen [<mailto:kljensen@alaska.edu>]

**Sent:** Tuesday, March 22, 2011 9:24 AM

**To:** [kcriddle@sfos.uaf.edu](mailto:kcriddle@sfos.uaf.edu)

**Subject:** Re: library impact of proposed course offerings

Okay!

Karen Jensen  
Collection Development Officer  
Rasmuson Library  
University of Alaska Fairbanks  
907-474-6695  
kljensen@alaska.edu

On Tue, Mar 22, 2011 at 9:19 AM, <[kcriddle@sfos.uaf.edu](mailto:kcriddle@sfos.uaf.edu)> wrote:

Hi Karen. Thank you for getting back to me. At this point, all I need is an okay to include with my request for course approval. Regards, Keith

Sent via BlackBerry by AT&T

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**From:** Karen Jensen <[kljensen@alaska.edu](mailto:kljensen@alaska.edu)>

**Date:** Tue, 22 Mar 2011 09:12:21 -0800

**To:** <[kcriddle@sfos.uaf.edu](mailto:kcriddle@sfos.uaf.edu)>

**Subject:** Re: library impact of proposed course offerings

Hi Keith

Sorry I'm delayed getting back to you; I was out on vacation last week. Do you need a full report of library materials for these course proposals? That can take a while but I'm certainly willing to do it. Otherwise if you only need an "ok" from us, I'll forward the syllabi to Anne Christie, our BioSciences Librarian and she can contact you with any concerns or questions.

Thanks,

Karen Jensen  
Collection Development Officer  
Rasmuson Library  
University of Alaska Fairbanks  
907-474-6695  
kljensen@alaska.edu

On Wed, Mar 16, 2011 at 11:58 AM, Keith Criddle <[kcriddle@sfos.uaf.edu](mailto:kcriddle@sfos.uaf.edu)> wrote:

Hi,

I have attached syllabi for three proposed courses. All three have been previously offered as trial or special topic courses. Please comment on the adequacy of library/media collections, equipment, and services available for the proposed courses. Thank you,  
Keith R. Criddle



Interim Administrative Director  
University of Alaska Fairbanks Fisheries Division  
[kcriddle@sfos.uaf.edu](mailto:kcriddle@sfos.uaf.edu)

## **Curriculum Committee SFOS**

Members: Trent Sutton (Chair)  
Katrin Iken  
Jeremy Mathis  
Andre Lopez

22 February 2011

### **New Course**

**Course Number:** FISH 645

**Course Title:** Bioeconomic Modeling and Fisheries Management

**Instructor:** Criddle

**First Time of Offering:** No

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### **General Recommendations:**

No general comments.

### **Faculty Senate Form:**

#### **Clarify and Address the following:**

- FISH 645 (this course) and FISH 670 are listed to be offered in alternate years starting in spring 2012. Are those two courses really to be offered during the same semester or are they to alternate (one in spring of odd years, one in spring of even years). This has been resolved. FISH 645 will be offered in even years and FISH 670 will be offered in odd years.
- For section 8, please select the box for 6 weeks to a full semester. Done.
- The catalog description (section 10) must appear as it will in the actual catalog; you must include the title, credits, prerequisites, and course format (e.g., 3+0); you only had the course description. Your course description is not very descriptive; please provide additional detail (note that this is a requirement of the UAF Curriculum Committee that is requiring more descriptive course descriptions). Done. The description includes as much detail as can be included in 50 words or less as specified on the form.
- Section 19. Even though this course has been offered previously, you still must contact the library to ensure that sufficient resources are available. Checking the box "no" is also not consistent with the attached email sent to the library, so there is some confusion here. Contacting the library also ensures that they maintain current subscriptions and book purchase relative to the material covered in this course. Done. See attached email from Anne Christie.
- Section 20. Were other programs contacted that might have interest or overlap with this course? SOM? NRM? If not, those programs need to be contacted. Done. See attached emails from Joshua Greenberg and Joe Little.
- Section 21. You list the positive impacts but state nothing potential negative impacts. Are there any? If not, then need to state something to this effect. Addressed.

**Syllabus:**

- FISH 670 lists a meeting time of TR from 3:40 to 5:10. If this course (FISH 645) and FISH 670 are to be offered in the same semester (starting spring 2012), then the days/time that the courses are offered cannot be the same. Addressed
- Office hours have to be provided and posted, cannot be just by appointment. Addressed
- Course goals and learning objectives need to be moved up to just below the first paragraph. Also, you only provide course goals and skills to be completed and do not provide any learning objectives. Please provide these as the UAF Curriculum Committee will look specifically for course learning objectives for outcomes assessment purposes. Addressed
- For course evaluation, the various grading criteria are very vague; please provide additional detail on each type of assignment. In addition, please note on the course outline when the various assignments will be due. You need to provide grading criteria – how many points each assignment is worth, total points in the course, how many points needed for each grade (A, B, C, etc.), and whether you are using a plus-minus system. If this is the case, need to provide specific criteria for each grade (e.g., number of points or percentile for an A, A-, etc.). Addressed