Texas A&M University
Departmental Request for a Change in Course
Undergraduate • Graduate • Professional
• Submit original form and attachments •

1. This request is submitted by the Department of _______________________________

2. Course prefix, number and complete title of course: FRSC 601, Forest Ecosystems and Global Change

3. Change requested
   a. Prerequisite(s): From: Approval of instructor To: Graduate classification
   b. Withdrawal (reason): 
   c. Cross-list with: Cross-listed courses require the signature of both department heads.
   d. Change in course title and description. Enter complete current course title and current course description in item 4; enter proposed course title and proposed course description in item 5.
   e. Change in course number, contact hours (lab & lecture), and semester credit hours. Complete item 6. Attach a course syllabus.

4. Complete current course title and current course description: FRSC 601. Forest Ecosystems and Global Change. Focus on the physical and biological principles governing the structure and function of forests and terrestrial ecosystems; examine how plants, animals, and microorganisms control water, carbon and nutrient cycling; evaluate ecosystem response to global change, including climate and human impacts.

5. Complete proposed course title and proposed course description (not to exceed 50 words): ESSM 624. Terrestrial Ecosystems and Global Change. Identify the physical and biological principles governing the structure and function of terrestrial ecosystems in an earth-system context; analyze how plants and microorganisms respond to environmental change and affect global carbon, nutrient, and water cycles; evaluate ecosystem response to global change, including rising carbon dioxide, climate warming, and human impacts.

6. a. As currently in course inventory:

<table>
<thead>
<tr>
<th>Prefix</th>
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<th>Title (excluding punctuation)</th>
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<tbody>
<tr>
<td>FRSC</td>
<td>601</td>
<td>FOREST ECO SY T GLOB AL CH G</td>
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<tr>
<td>Lec.</td>
<td>Lab</td>
<td>SCH CIP and Fund Code</td>
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<td>0 0 3 0 5 0 2 0 0 5 0 4 1 0 3 6 3 2</td>
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b. Change to:

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Course #</th>
<th>Title (excluding punctuation)</th>
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<tbody>
<tr>
<td>ESSM</td>
<td>624</td>
<td>ECOSYSTEMS GLOB AL CHANGE</td>
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<tr>
<td>Lec.</td>
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Approval recommended by:

Head of Department ________________________________
Date 8/7/08

Chair, College Review Committee ________________________________
Date 9/11/08

Dean of College ________________________________
Date 10/4/08

Submitted to Coordinating Board by:

Associate Director, Curricular Services ________________________________
Date ________________________________

Effective Date ________________________________

Questions regarding this form should be directed to Sandra Williams at 845-8201.
Curricular Services — 11/07
SUMMARY

Individual faculty members in related fields in the College of Agriculture and Life Sciences and College of Geosciences were contacted for advice and consent. Responses were received from faculty in the Departments of Atmospheric Sciences, Geography, and Wildlife and Fisheries Sciences. Based on the support received for a broader proposed title and concerns raised, we opt for the course title of ESSM 624 "Terrestrial Ecosystems and Global Change." This more restrictive title appropriately reflects the content of the course and fully satisfies the concerns raised.

CORRESPONDENCE SENT

Dear Faculty member,

Our Department is planning to renumber its graduate courses in Forestry and Rangeland Ecology and Management under our new merged Department's designation (ESSM). The faculty has been asked to consider revisions to course titles and descriptions. Consequently, I am seeking to rename my graduate course FRSC 601 "Forest Ecosystems and Global Change" to ESSM 624 "Global Change Ecology". In many ways this proposed name more closely fits the course as I have taught it in the past. Although the course is a terrestrial ecosystem ecology course, it covers more than trees and forests.

I am seeking advice and consent from a range of faculty in related fields. I would like to request your support for the name change. Please see the attached draft syllabus that includes the catalog description. Of course, I welcome any other comments or concerns you might have.

If you could reply with a brief email response in support of the name change, I would appreciate it and likely include it in supplemental documentation to be submitted through the various college and university program committees.

Best regards,

Mark

Mark Tjoelker, Ph.D.
Department of Ecosystem Science and Management
Texas A&M University, 2138 TAMU
College Station, Texas 77843-2138
phone: 979-845-8279 fax: 979-845-6049
CORESPONDENCE RECEIVED

Dr. Charles Lafon, Department of Geography, College of Geosciences

From: clafon@geog.tamu.edu
Subject: Re: Input on revised course title
Date: July 18, 2008 10:53:56 AM CDT
To: m-tjoelker@tamu.edu

Mark,

Thanks for the invitation to respond. I support the name change for this course. By linking forest ecology and climate change, the course plays an important role in the curricula of graduate students in our department and others.

Charles

Dr. Gunnar Schade, Department of Atmospheric Sciences, College of Geosciences

From: schade@ariel.met.tamu.edu
Subject: Fwd: Input on revised course title
Date: July 16, 2008 1:32:54 PM CDT
To: m-tjoelker@tamu.edu

Mark,

I feel honored that you ask for input on this. I certainly endorse the teaching of your class, and the name change. I hope that you have no trouble with that.

I made some comments in your syllabus that I hope can improve it further.

Best,
Gunnar
Mark,
I really like what your new merged department is doing. In fact, I'm envious of the move towards more of an ecosystem-based approach! The proposed course title is great. However, I'd expect to see as much of an aquatic/oceanic emphasis as I would terrestrial. This becomes important when thinking about it from a potential student's or from an outside advisor's perspective.

Given that much of the globe is ocean, the implications of climate change on marine physical processes (e.g., sea level rise, upwelling, sea-surface temperature anomalies, ocean circulation and large-scale climate feedbacks), chemical dynamics and equilibria (e.g., salinification, oxygen dynamics, inorganic C dissolution, pH shifts, etc.), and biological responses (e.g., reef health, kelp, oyster, and seagrass dieoff, northward expansion of mangroves, coastal wetland transgression, algal blooms, submerged aquatic and wetland species invasions, etc.) are all as important if not more important from a global perspective. [These are just off the top of my head!]

Based on your syllabus, it appears that your course would not address any of these large-scale and well-documented coastal/nearshore/offshore topics to any depth. Without equal time afforded to the oceans and coastal zone, I think the best approach would be to title the course more appropriately to reflect your strong terrestrial emphasis. Personally, I don't see anything wrong with your existing title. Just add an ESSM course #.

Have you tried to bounce this off anyone in Geosciences (Oceanography, Atmospheric Sciences, or Geography)? You may want to solicit their input as well.

Cheers,
Steve
ESSM 624 TERRESTRIAL ECOSYSTEMS AND GLOBAL CHANGE
Spring 200X
Tuesday, Thursday 9:20 – 10:35 AM
Horticulture Forest Science Building (HFSB) 105

Course Description and Prerequisites

ESSM 624. Terrestrial ecosystems and global change (3-0). Credit 3.
Identify the physical and biological principles governing the structure and function of terrestrial ecosystems in an earth-system context; Analyze how plants, animals, and microorganisms respond to environmental change and affect global carbon, nutrient, and water cycles; evaluate ecosystem response to global change, including rising carbon dioxide, climate warming, and human impacts in arctic, temperate, and tropical ecosystems. Prerequisite: Graduate classification.

Through readings and discussions this course will introduce the critical issues underpinning global change and ecosystem ecology. The course will examine current scientific literature and evidence for human-caused global change and its potential effects on terrestrial ecosystems, emphasizing forest, grassland, and tundra ecosystems. The course will examine experimental data and model predictions of responses to global change factors at a range of scales from the leaf to ecosystem.

Prerequisites. Graduate student status. Prior undergraduate coursework in ecology, plant biology, or a related field is recommended, but not required.

Learning Outcomes

Upon completion of the course you will be able to:

• Identify the physical and biological principles governing the structure and function of terrestrial ecosystems in an earth-system context.
• Describe the major theories and concepts of global change ecology.
• Analyze how plants, animals, and microorganisms respond to environmental change and affect global carbon, nutrient, and water cycles.
• Evaluate ecosystem response to global change, including rising CO₂, climate warming, altered precipitation, nitrogen deposition, and human impacts in arctic, temperate, and tropical ecosystems.
• Interpret and evaluate the primary scientific literature related to the emerging science of global change ecology.

Instructor Information

Dr. Mark G. Tjoelker
Office: 324 HFSB (Horticulture Forest Science Building)
Phone: 845-8279
Email: m-tjoelker@tamu.edu

Office hours. Please feel free to send me email (or phone) anytime with questions or comments or to arrange a meeting in my office in room 324 Horticulture-Forest Science Building (HFSB). I will typically reply to email within 24 hours.

Textbooks and/or Resource Materials

A companion website for the course is located in Blackboard Vista. As a registered student, you will have access to the website through the worldwide web. The website is an essential course tool. The course page will have links to the required readings. The weekly readings are from the primary peer-reviewed literature. There is no required textbook, although supplemental texts and information are posted online.
As a registered student, the following steps will enable you to access the course website:

1. Use the following URL to access Blackboard Vista: http://elearning.tamu.edu/
2. Click on the “TAMU” link
3. Login using your official TAMU user name and password. Click on “OK”.
4. Click on the ESSM 624 link to find course information and readings and to post your assignments.

Useful Textbooks (not required)


Assignments and Grading Policies

1. Required reading and discussion posting
Each student will be expected to read assigned material before each class period and participate in discussions. The assigned readings are posted on the course website in Blackboard Vista. Attendance at all class sessions is expected. The lectures will usually focus on the same topics, but may address either the specific reading or completely different materials, depending on the comprehensiveness or importance of the reading, its difficulty, and the total information that needs to be covered. Therefore, do not assume that materials in the readings will be covered in class. Usually they will, sometimes not.

Discussion question or comment
For each assigned reading, prepare one question or comment. These daily questions or comments should be brief (several sentences) and posted online on Blackboard Vista or handed in at the start of class if computer problems arise. The objectives of these required "daily questions" are:

- To increase the likelihood that required reading will be completed on time.
- To provide practice at critical thinking.
- To provide feedback on your understanding.
- To move classroom focus to issues you find interesting and important.
- To engage your colleagues in online and classroom discussion.

What types of questions?
A good question indicates some depth of thought. A question could be something you don't understand (e.g., "What is soil nitrogen mineralization and why should it vary with climate warming?")], or that seems to contradict something else we've read or covered in lecture (e.g., "How can we reconcile these results with those of Sarah Smith who found opposite results in the arctic tundra?") or something that was not clarified. Comments could for instance, indicate what you think is an important policy implication or linkage to other aspects of ecology, public perception, etc.

2. Presentation leader
Each student will be responsible for presenting and leading discussions on papers from the primary literature on topics related to global change ecology. In general, for each class session, the instructor will lead a brief presentation and discussion on the scheduled topic of the day. In addition, time will be reserved for a scheduled student-led presentation. The purpose of the presentation is to complement and expand upon the assigned readings and topic of the day by communicating new information to the class from a related paper or papers in the form of a presentation, interactive talk, or other exercise. The complementary papers should be selected in consultation with the instructor. Each student will be responsible for leading three 20 to 30 minute presentations/discussions on topics of their choice throughout the course. A handout on the presentation leader assignment will provide further details and tips for a successful presentation.
3. **Midterm exam**  
There will be one mid-term exam. The format of the midterm exam will be a series of essay questions that emphasize basic concepts and test your ability to synthesize and evaluate course topics.

4. **Final exam**  
There will be one final comprehensive exam. The format of the midterm exam will be a series of essay questions that emphasize basic concepts and test your ability to synthesize and evaluate course topics.

### Evaluation and course grades*

<table>
<thead>
<tr>
<th>Course component</th>
<th>Weighting (%)</th>
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<tr>
<td>1. Discussion postings</td>
<td>20</td>
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<tr>
<td>2. Presentations</td>
<td>30</td>
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<tr>
<td>3. Mid-term exam</td>
<td>25</td>
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<tr>
<td>4. Final exam</td>
<td>25</td>
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<td><strong>Total</strong></td>
<td><strong>100</strong></td>
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*The letter grade scale is as follows: “A” ≥ 90; “B” ≥ 80; “C” ≥ 70; etc.

**Late Assignments**  
Credit on late assignments will be granted only for University authorized and excused absences.

**Make-up Exams**  
Make-up exams are not permitted except for extenuating circumstances (e.g. illness) and with prompt notification and proper proof (i.e. a physician’s note). If you are not able to take the exam, please contact me **before** the scheduled exam time or within a 24-hour period after the scheduled exam period at the latest.

**Course Incompletes**  
The official TAMU regulations are: “The instructor shall give this grade only when the deficiency is due to an authorized absence or other cause beyond the control of the student.”

For any other questions or concerns, please refer to [http://student-rules.tamu.edu](http://student-rules.tamu.edu)

**Academic Integrity Statement and Policy**

"An Aggie does not lie, cheat or steal or tolerate those who do."

Scholarship depends upon open and honest inquiry. Students have an ethical and moral responsibility to avoid cheating and to help prevent others from cheating. Texas A&M University expects academic integrity and strictly enforces policies against any form of scholastic dishonesty (see the Honor System website: [http://www.tamu.edu/aggiehonor/](http://www.tamu.edu/aggiehonor/)). Please review the Student Rules at [http://student-rules.tamu.edu](http://student-rules.tamu.edu) for more information regarding these policies. Sanctions range from grade penalties (e.g. F*, 0 on an assignment), probation, and expulsion from the University. The Texas A&M University Student Rules and Honor System define several forms of academic dishonesty, these include:

1. Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. Fabrication: Making up data or results, and recording or reporting them; submitting fabricated documents.
3. Falsification: Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.
4. Multiple Submission: Submitting substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. Plagiarism: The appropriation of another person’s ideas, processes, results, or words without giving appropriate credit.
6. Complicity: Intentionally or knowingly helping, or attempting to help, another to commit an act of academic dishonesty.
ESSM 624 TERRESTRIAL ECOSYSTEMS AND GLOBAL CHANGE
Spring 200X
Tuesday, Thursday 9:20 – 10:35 AM
Horticulture Forest Science Building (HFSB) 105

Course Topics and Calendar of Activities

<table>
<thead>
<tr>
<th>Week*</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Global changes and perspectives</td>
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<td>Introduction to global change ecology in an earth-system context</td>
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<td>2</td>
<td>Coupled global terrestrial nitrogen and carbon cycles and human impacts</td>
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<td>3</td>
<td>Long-term ecosystem change</td>
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<td>Does climate control species range limits? Forest tree biogeography and ecological genetics</td>
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<td>4</td>
<td>Ecotones, lagged responses, and biophysical feedbacks to climate in forest, grassland, and tundra ecosystems</td>
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<td>5</td>
<td>Climate and terrestrial ecosystem function: Tree rings, El Niño, and rising CO₂</td>
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<td>6</td>
<td>Integrative case studies: leaf to ecosystem scale responses to global change drivers</td>
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<tr>
<td>7</td>
<td>Arctic tundra: rising CO₂, climate warming, and nitrogen deposition</td>
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<td>8</td>
<td>Midterm exam</td>
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<td>9</td>
<td>Savannas: drought, tree encroachment, and carbon cycling</td>
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<td>10</td>
<td>Grasslands: plant biodiversity, nitrogen deposition, and CO₂</td>
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<td>11</td>
<td>Temperate forests: carbon balance in under elevated CO₂: FACE studies</td>
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<td>12</td>
<td>Tropical forests: land-use change and net carbon exchange</td>
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<td>13</td>
<td>Deserts: altered precipitation and elevated CO₂</td>
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<td>14</td>
<td>Modeling global change effects on plants and terrestrial ecosystems</td>
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<td>15</td>
<td>Plant functional types and modeled responses</td>
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<tr>
<td>16</td>
<td>Ecosystem physiology: The theory of metabolic ecology</td>
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<tr>
<td>17</td>
<td>Global change and disturbance ecology: Interactions</td>
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*Each week includes an assigned set of required readings from the primary literature posted on the Vista course website.

Americans with Disabilities Act (ADA)

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 contact the Department of Student Life, Services for Students with Disabilities, in Cain Hall or call 845-1637.