

# 1 Instructor and Course Information

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Advanced Academic Programs  
Zanvyl Kreiger School of Arts and Sciences  
Johns Hopkins University

Syllabus  
Global Land Use Change  
420.671.81

## Instructor Information

Instructor: Dr. Christiane 'Chrissy' Runyan  
Email Address: crunyan2@jhu.edu  
Office Hours: Email me to schedule a 'chat' session. Otherwise you can contact me directly by email.

## Course Description

This course provides a comprehensive examination of global land use change including the current spatial and historical extent of forests and grasslands, methods used to detect forest cover and its current and historical changes. Reviewing these patterns will lead to an understanding of the past and present drivers of land use change. In this course, we will consider the hydrological, and major biogeochemical cycles (i.e., carbon, nitrogen and phosphorus) and the impacts that forests and grasslands (and the loss of these ecosystems) have had on these cycles. The impact of forest loss on biodiversity, long term functioning of ecosystems and climate will also be discussed. After reviewing the effects of a loss of these environmental processes, we will bridge the physical and biological sciences with the social sciences by examining economic impacts and socioeconomic drivers of deforestation. Lastly, current policies and the potential effect of policies that aim to reduce deforestation such as REDD will be discussed. Discussion of these topics in threaded discussions as well as problem sets using the primary literature will highlight applications and areas of current hydrological research.

## Course Objectives

Following the completion of this course, students should be able to:

- Identify the global distribution of different land use types and understand why and how these patterns have changed historically.
- Explain the differences in the water cycle over forests, grasslands, agriculture and urban areas.
- Explain the differences in the carbon, phosphorus and nitrogen cycles between a forest and grassland and discuss how these cycles change following a disturbance.
- Identify the climatic impacts of land use change resulting from urbanization, agricultural intensification and deforestation and identify the types of evidence used to assess these impacts.
- Recognize the theory behind bistability, positive feedbacks, hysteresis and resilience and apply this knowledge to the effect that land use change can have on long-term ecosystem dynamics.
- Explain why a loss of biodiversity results from land use change and explain how biodiversity enhances resilience.
- Explain the proximate and underlying factors driving land use change as well as discuss the economic effects resulting from such change.
- Identify alternate policies to deforestation for deriving value from land and mitigating GHG's as well as explain the pros and cons of these policies.

## Course Prerequisites

Prior to taking this course, students need to have completed their quantitative requirements for this program, specifically Quantitative Methods for Environmental Sciences or at a minimum one semester of undergraduate Calculus. Problems on the midterm and final will require quantitative problem solving skills and might entail working with small datasets.

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## Course Materials

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### **Textbook**

Runyan, C.W., and P. D’Odorico (2016), *Global deforestation*, Cambridge University Press, 300 pages.

- The textbook can be purchased on Amazon, Barnes and Noble, the JHU bookstore and most internet textbook stores.

### **Other readings**

Other readings will be posted in the weekly content for the course when relevant.

### **Other software**

It is helpful for this course, if you are familiar with Microsoft Excel or some other graphing program such as Google Sheets.

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## Assessments and Grading Policy

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### Course Basics

Each unit will open on a Wednesday at 12:00 am and will close Tuesday of the following week at 11:59 pm. Apart from the midterm, student presentation and final weeks, students are expected to participate in threaded discussions and complete a problem set or quiz each week.

### Assignments

A weekly quiz or problem set will be assigned (with the exception of the weeks where we have the midterm, the final and the weeks where your projects are due and presented). Although there will be a 1 hour time limit for the quiz, these quizzes and problem sets will be open book. Assignments will be due prior to the close of the unit, which occurs on Tuesday at 11:59 pm EST. With the exception of emergency situations, late assignments will be penalized at 5% per day. In addition, each student will be expected to contribute two posts (see below for the grading policy) to the weekly threaded discussions (with the exception being test weeks). The midterm and final will incorporate material from these problem sets and key concepts presented during lecture. The midterm and final will be open-note and take home exams that you will have the whole week to work on. Each student will complete a final research paper that they will 'present' to classmates during the second to last week of class. Please refer to the table below for due dates.

### Grading

Problem Sets/Quizzes	(10@ 5 points each) = 50 points
Threaded Discussion Participation	(10@ 5 points each) = 50 points
Midterm	25 points
Final	25 points
Research Paper and Presentation	50 points

### Threaded discussion grades

Each student is expected to post at least twice to the weekly thread. One post should present an idea that is new to the thread, and the other post should be in response to a post made by another student. For weeks when there is more than one threaded discussion topic, you are free to choose which topic you would like to respond to. Each week's threaded discussion will be graded on a 0-5 point scale, which is described as follows,

4-5 points: Contributes in a timely, thoughtful, concise, and relevant manner. Includes references from the outside literature and/or lecture. Makes their first post by **Saturday** at midnight following the opening of the unit.

3-4 points: Contributes to the discussion, but needs improvement in one of the categories listed above.

2-3 points: Contributes to the discussion in a limited, infrequent, or poorly thought out

manner.

0-2 points: Makes minimal or no contribution to the discussion; comments are irrelevant or insignificant.

### **Final grades**

Final grades will be assigned based on the following scale:

A+ 98-100%

A 93-97%

A- 90-92%

B+ 87-89%

B 83-86%

B- 80-82%

C 70-79%

F <70%

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## Course Communication Policy

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### Contacting the Instructor

Please feel free to contact me, preferably by email with any questions that you may have. I will try my best to respond to you within 24-36 hours; however, it could be a little longer if I am travelling or busy with a work deadline. Also, I suggest that if you have a question relating to the course material, that you post the question under the thread group Syllabus so that classmates might be able to assist you.

**It is important that you regularly check your JHU email address or forward your JHU email to a different email address that you frequently use. Also, please make sure that all of your communications for this course are sent through your JHU email address.**

### Getting Help

You have a variety of methods to get help on Blackboard. Please consult the help resources listed in the online classroom for additional information. Important Note: If you encounter technical difficulty in completing or submitting any online assessment, immediately contact the [24-hour Help Desk](#) listed under the "Blackboard Help" tab. Also, contact your instructor at the email address listed atop this syllabus.

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## University Policies

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### General

This course adheres to all University policies described in the academic catalog. Please pay close attention to the following policies:

### Students with Disabilities

Johns Hopkins University is committed to providing reasonable and appropriate accommodations to students with disabilities. Students with documented disabilities should contact the coordinator listed on the [Disability Accommodations](#) page. Further information and a link to the Student Request for Accommodation form can also be found on the [Disability Accommodations](#) page.

### Ethics & Plagiarism

JHU Ethics Statement: The strength of the university depends on academic and personal integrity. In this course, you must be honest and truthful. Ethical violations include cheating on exams, plagiarism, reuse of assignments, improper use of the Internet and electronic devices, unauthorized collaboration, alteration of graded assignments, forgery and falsification, lying, facilitating academic dishonesty, and unfair competition. Report any violations you witness to the instructor.

Read and adhere to JHU's [Notice on Plagiarism](#).

During the first week of this course, you will have the option to complete a short course about plagiarism for extra credit. An announcement will be made during the first week.

### Dropping the Course

You are responsible for understanding the university's policies and procedures regarding withdrawing from courses found in the current catalog. You should be aware of the current deadlines according to the [Academic Calendar](#).

### Getting Help

You have a variety of methods to get help on Blackboard. Please consult the resource listed in the "Blackboard Help" link for important information. If you encounter technical difficulty in completing or submitting any online assessment, please immediately contact the designated help desk listed on the [AAP online support page](#). Also, contact your instructor at the email address listed in the syllabus.

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## Course Topics, Activities, Schedule and Objectives

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### Tentative Course Schedule

**Important Note:** *With the exception of weeks 6, and 12-14, the activity for each week will include lecture and an assigned reading as well as participation in the threaded discussions. There will also be a weekly problem set related to the material discussed during lecture. This schedule is subject to change with sufficient notice and will be announced accordingly.*

Week	Dates
1	09/05/18- 09/11/18
2	09/12/18- 09/18/18
3	09/19/18- 09/25/18
4	09/26/18- 10/02/18
5	10/03/18- 10/09/18
6	10/10/18- 10/16/18
7	10/17/18- 10/23/18
8	10/24/18- 10/30/18
9	10/31/18- 11/06/18
10	11/07/18- 11/13/18
11	11/14/18- 11/20/18
12	11/21/18- 11/27/18
13	11/28/18- 12/04/18
14	12/05/18- 12/11/18
15	12/12/18- 12/18/18

Sample  
Syllabus