

## AGRICULTURAL NONPOINT SOURCE POLLUTION BSE 5404 (Fall 2016)

**Time/Location:** Online Course/Weekly Schedule  
**Instructors:** Dr. W. Cully Hession  
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**Teaching Asst:** Stephanie Houston ([houston@vt.edu](mailto:houston@vt.edu))

### Course website(s):

- General Information on VT-CALS Online MS (OMALS) Program: <http://cals.vt.edu/academic-programs/online.html>
- Scholar: <https://scholar.vt.edu/portal> -- Log into Scholar and select "AgNPS 2016"

**Prerequisites:** Successful students should bring to this course a general knowledge of the physical, chemical, biological, and soil factors that affect the environment. They should also possess an adequate background in environmental regulations.

**Course Description:** Assessment and management of agricultural nonpoint source (NPS) pollution. Precipitation, runoff, erosion, pollutant fate and transport, and best management practices. Application of Total Maximum Daily Loads (TMDLs) and water-quality standards. Pre: Background in physical, chemical, biological, and soil factors affecting the environment and in environmental regulations. (3H, 3C)

**Learning Objectives:** Upon completion of the course, students will be able to:

- Generalize the Clean Water Act and explain how it relates to NPS pollution issues.
- Identify the major program and regulatory requirements of federal and state Total Maximum Daily Load (TMDL) programs.
- Interpret water quality standards, use attainability analysis, and apply them to the TMDL process.
- Illustrate the major components of the hydrologic cycle and discuss how they influence NPS pollution.
- Recognize and explain the major chemical, physical, and biological processes affecting the rate and transport of nutrients, sediments, pesticides, and other pollutants to surface and groundwater.
- Describe the principal components and requirements of a watershed management plan.
- Discuss the benefits and limitations of conventionally used best management practices (BMPs) for NPS pollution control.
- Develop a NPS pollution control plan for a farm, agricultural watershed, or urban development using appropriate BMPs.
- Estimate NPS pollution loads and effectiveness of BMPs using simple modeling techniques.

### Text, Teaching Aids, and Other Resources:

- Text Book: Novotny, V. 2002. **Water Quality: Diffuse Pollution and Watershed Management**, 2nd edition. John Wiley and Sons, New York, New York. 888 pp.
- Electronic handouts, online resources, and materials from recent journals and reports.

### Course Grading:

Annotated Reviews	15%
Homework Sets	30%
Midterm Exam	20%
Final Exam	20%
Project	10%
Class Participation	5% (See "Communication" & "Participation" below)

## Grading Scale:

A 93-100	B+ 87-89	C+ 77-79	D+ 67-69	F < 60
A- 90-92	B 83-86	C 73-76	D 63-66	
	B- 80-82	C- 70-72	D- 60-62	

## Assignments:

- Reading Assignments:** Readings will be assigned to reinforce the material covered in the online lectures. These readings will be from the course textbook (WQ), online sources, and various reports and journal articles. All readings should be done before the Monday of the week following when they are assigned.
- Quizzes:** There will be short quizzes for you to do online from time to time (TBD). These will NOT be included in your final grade, but will ensure that you keep up with the readings and lecture notes. The quizzes will be very brief (usually less than 10 min) and should be done before the Monday of the following week.
- Annotated Reviews and NPS Info Sheets:** Four ANNOTATED REVIEWS of professional journal articles will be submitted throughout the semester. An annotated review is typically a 1-2 page summary and analysis of an article. Guidelines and examples will be available on our class website (under Assignments in Scholar). The articles should be recent (since 2000 if possible) and can be on any topic related to NPS pollution. Throughout the semester, your selected articles should be related in some way to a specific focus area in NPS pollution of particular interest to the student. Toward the end of the semester, you will, therefore, be the expert amongst us concerning this focus area, and will develop a **NPS INFORMATION SHEET** on your topic area, which will be "published" as a resource to be linked to from our course web site. This information sheet will utilize the four annotated reviews assigned in class and at least 2 additional articles (6 total).
- Homework Sets:** There will be at least 4 homework sets throughout the semester. Homework must be prepared and presented in a professional manner. Due dates will be given on each assignment. Grades on late homework will be reduced by 20% of the total available points for that assignment, each day (24-hour period) that the assignment is late. All assignments must be submitted to complete the course.
- Exams:** There will be a midterm exam and a final exam. These exams will be online and be opened for a given time period (TBA). The final exam will be cumulative.

**Software and Hardware:** As a student of an online course you will need daily access to an up-to-date computer that meets minimum hardware and software requirements (See OMALS Homepage). Have a back-up plan for accessing a second computer should any technical problems arise. High-speed access is not required, but it does make it easier to view online presentations and download files.

**Communication:** This course will have a discussion FORUM. The forum serves two main purposes: 1) To provide a platform for the ENTIRE class to discuss current events related to NPS pollution (some posted by the instructor, but students are encouraged to post topics/articles/etc. as well); and 2) To provide a place for students to ask questions and discuss course content, homework, etc. with input from the instructor. Students can also use the Message tool to ask questions or promote discussion, but messages should be sent to ALL. Please ONLY send an email to the instructor for personal business only.

**IMPORTANT** - ALL students, even "local" students, must treat this as a totally online course and should use the FORUM; it isn't fair to treat "local" students differently from "remote" students in the class. We might use the Chat Room from time to time as well.

**Using Scholar:** For access to Scholar go to: <https://scholar.vt.edu/portal>. Also, please refer to the [Student's Guide to Using Scholar](#). Contact Scholar support by phone: (540) 231-HELP (231-4357) or by Internet: <http://www.4help.vt.edu/> if the online user guide does not answer your question.

**Participation:** This is a graduate course and you are expected to participate and be involved in the FORUM and Chat Room (if we use it). The papers or online reading materials should be read before the following class. **Since this is an online course, we expect you to check your email & course website frequently (daily if possible).**

**Special Needs:** If you need adaptations or accommodations because of a disability (learning disability, attention deficit disorder, psychological, physical, etc.), if you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please meet with me as soon as possible.

**Honor Code:** *"The Virginia Tech Honor code will be strictly enforced in this course. All assignments submitted shall be considered graded work, unless otherwise noted. All aspects of your course work are covered by the honor system. Any suspected violations of the honor code will be promptly reported to the honor system. Honesty in your academic work will develop into professional integrity. The faculty and students of Virginia Tech will not tolerate any form of academic dishonesty."*

Your attendance at a test or your submittal of any written or electronic materials shall be your pledge that you subscribe to and accept the Virginia Tech honor code and honor system. You are expected to:

- Do all written or electronic assignments independently and without assistance unless otherwise specified.
- Turn in all assignments on time or with a documented excuse if they are late.
- Report any Honor Code violations that you have directly observed, including cheating on exams.

[On-line Constitution of the Virginia Tech Honor System](#) (link)