# NRM F370 Introduction to Watershed Management

Fall 2017

3 Credits

**Instructor:**          Norman R. Harris
                         UAF Matanuska Experiment Farm
                         1509 South Georgeson Drive
                         Palmer, AK 99645

## Contact Information

Office Hours: 10:00 to 12:00 PM Mondays or by appointment.  I maintain an
open-door policy.  If I am in, I can usually talk.

E-mail: nrharris@alaska.edu  Please include "Watershed Class" in the subject
line, so you do not get buried in my email!

Phone: (907) 746-9475 (Leave a message if I am not in and I will get back to you)

**Prerequisites:** NRM F101 or permission of instructor. Recommended: NRM F375, F380

**Text:  Hydrology and the Management of Watersheds**, K.N. Brooks, P.F
Ffolliott, J.A. Magner. 4th Edition, Wiley-Blackwell Publishing, ISBN-
10: 0470963050, ISBN-13: 978-0470963050

## Course Objectives:

1) Introduce students to integrated watershed management as an applied ecological
   treatment of the complex relationships between soil, plants, animals and land use
   practices

there may (will?) be trying and frustrating periods involved, so please be patient. . Course materials will be transmitted using the Blackboard system (http://classes.uaf.edu/) and assignments will be turned in using email.

Ten short "pop" quizzes (10 points each) will be given, unannounced, during the term and two scheduled 1-hour exams (50 points each) will be given during the term.   A required 2-hour final exam (200 points) will be given at the end of the term.

The Watershed Assessment Team (WAT) Project (200 points) consists of the following components:

> Completion and submission of nine GIS exercises* (90 points)
> Individual assignment (fill role as facilitator/reporter for WAT meetings) (10 points)
> Contributions to watershed assessment report (100 points)

> * Computers with GIS software are available in O'Neill 359 and at any of the OIT computer labs in MBS, Bunnell (the Nook), or the library (Rasmussen 404).  GIS software is also provided to students for use on suitable personal computers.

The instructor will award 40 points based on class participation.  Your attendance at all lectures is expected and would be a great ego boost.  So remember,

**AN INSTRUCTOR WITH AN INFLATED EGO IS AN EASY GRADER!!!**

**Testing and grading:**

| | |
|---|---|
| "Pop" quizzes (10) | 100 points |
| Two 1-hour exams | 100 points (50 points each) |
| Final exam | 200 points |
| Watershed Assessment Project | 200 points |
| Class Participation | 40 points |
| Total | |

Fabrication – falsification or invention of any information

Tampering – altering or interfering with evaluation instruments and documents

Plagiarism – representing the words or ideas of another person as one's own

Assisting – helping another commit an act of academic dishonesty

Students participating in any of the above actions will be referred to the Dean of Student Affairs.

**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 (203 WHIT, 474-7043) to provide reasonable accommodation to students with disabilities.

# Session Schedule and Content
NRM F370   Introduction to Watershed Management
Lecture: 11:30 am – 12:30 pm, Tuesday and Thursday, AHRB 183 (Fairbanks) and
Distance Delivery Center (Palmer)

| Lecture | Date | Topic | Readings/Assign |
|---|---|---|---|
| 1 | Aug. 29 | Introduction and Class Logistics | Chapter 1 |
| 2 | Aug. 31 | Sustainability and Integrated Watershed Management | |
| 3 | Sept. 5 | The Hydrologic Cycle and Water Budget | Chapter 2 |

Lab: 8:30 – 11:30 am, Friday, AHRB 183 (Fairbanks) and DDC (Palmer)

| Laboratory | Date | Topic |
|---|---|---|
| 1 | Sept. 8 | **Project Initiation:** Watershed Assessment Team (WAT) section assignments, Develop Workflow and Data Requirements<br>**GIS Background** |
| 2 | Sept. 15 | **WAT Meeting:** Identify Watershed Problems, Develop Goals and Objectives<br>**GIS Lab 1** – Delineation of a Watershed Boundary<br>**Guest Lecture:** TBD |
| 3 | Sept. 22 | **WAT Meeting:**<br>**GIS Lab 2** – Extraction of Raster Layers using the Watershed Mask<br>**Guest Lecture:** Jeff Falke (UAF Assistant Professor School of Fisheries and Ocean Sciences/Assistant Leader, AKCFWRU) |
| 4 | Sept. 29 | **WAT Meeting:**<br>**GIS Lab 3** – Extraction of Hydrology Data, Editing of Shapefiles, and Determining and Entering the Strahler Order<br>**Guest Lecture:** Mark Clark (Retired NRCS Soil Scientist) |
| 5 | Oct. 6 | **WAT Meeting:**<br>**GIS Lab 4** – Terrain Analysis and Creation of Indices<br>**Guest Lecture:** Bill Collins (Alaska Dept. of Fish and Game Wildlife Biologist) |
| 6 | Oct. 13 | **WAT Meeting:**<br>**GIS Lab 5** – Landform Mapping<br>**Guest Lecture:** Dot Helm (Retired UAF Vegetation Ecologist) |
| 7 | Oct. 20 | **WAT Meeting:**<br>**GIS Lab 6** – Bringing Agency Data into GIS Database |
| 8 | Oct. 27 | **WAT Meeting:**<br>**GIS Lab 7** – Minimum Eroded Volume, Watershed Cross-sections and Display Using ArcScene<br>**Guest Lecture:** Alex Strawn (Matanuska-Susitna Borough Development Services Manager) |
| 9 | Nov. 3 | **WAT Meeting:**<br>**GIS Lab 8** – Image Processing, Aerial Photography and Satellite Imagery<br>**Guest Lecture:** Wayne Biessel (Alaska State Parks Superintendent – Mat-Su/Copper River Area) |
| 10 | Nov. 10 | **WAT Meeting:** Section reports, submission of rough draft<br>**GIS Lab 9** –Temporal Analysis of Satellite Imagery and Importing Geotagged Imagery<br>**Guest Lecture:** Fran Seager-Boss (Retired Matanuska-Susitna Borough Cultural Resources Specialist and Lead Archeologist) |
| 11 | Nov. 17 | **WAT Meeting:** Review and discussion of rough draft |
| 12 | Dec. 1 | **WAT Meeting:** Project wrap-up, submission of final report |