FOR 240

Introduction to Computing in Natural Resources

Spring, 2020

Instructor: Dr. Jingxin Wang   317E Percival Hall
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                                     jxwang@wvu.edu

Credit Hours: 3

Time and Location: 9:00 – 9:50 M, W in Room 332 Percival Hall
                       2:00 – 4:00 W in Room 317 Percival Hall (Section 1)
                       2:00 – 4:00 R in Room 317 Percival Hall (Section 2)

Prerequisite: Basic knowledge of computers, MS Office, and Internet Access.

Office Hours: 11-12 M or by appointment.

Teaching Assistants: Mr. Xufeng Zhang, xz0017@mix.wvu.edu, 206B Percival
                       Ms. Yuxi Wang, yxwang@mix.wvu.edu, 206B Percival
                       Mr. Wanhe Hu, wh0030@mix.wvu.edu, 218 Percival

Course Objectives

This course is designed for undergraduate students in natural resources and will prepare them ready for higher-level courses which are related to computation in the Davis College of Agriculture, Natural Resources, and Design. The students will be introduced to data acquisition, data manipulations, data analysis, basic programming techniques, Internet concepts and applications, and other related issues. Upon successful completion of this course, the students will have a better understanding of:

- Computer operations and resources
- Web page development using HTML
- Elementary data manipulations, statistical computing and mathematical programming using MS Excel
- Basic database management with MS Access
- Data acquisition using handheld computer and its applications in natural resources
- Introduction to geospatial technology applications
- Introductory programming with Visual Basic .NET

Textbook

There is a required textbook for this course, which is "Introduction to Computing Applications in Forestry and Natural Resource Management" published by CRC Press Taylor & Francis Group (ISBN 9781138626300). This textbook, and other handouts distributed by the instructor will be mainly used for reading assignments and background materials.

Labs and Course Project

One class per week will be devoted to lab or course project. Labs will be conducted in computer lab and allow the students to practice what they have learnt. A project will be assigned to the students. In the project, groups of about two students will develop an application of natural resources in three distinct modules:

Module 1: Data Storage – Design and build a simple database to store the field data using MS Access

Module 2: Data Acquisition – Collect field data using handheld PC

Module 3: Data Manipulation - Design an interface and implement business functions to transfer field data from handheld to desktop PC and manipulate/analyze the data to generate desired reports.

Each module of the project will concentrate on a specific application topic. The previous modules or components must be integrated to accomplish the current module. The students need to provide a combined report that must be accumulated from module 1 to module 3 over the course of the semester, which needs to be posted on the web. A USB drive is required to store the project and lab data and files.

Grading

Participation in class is strongly recommended. The attendance will be 5% in the final grade. However, percent(s) will be deducted for absences based on a number of random checking of your attendance through the semester. Students are encouraged to raise questions in class, labs, or during office hours. There will be two midterm tests and a final exam in the class, which account for 50% of the students' final grade.

Lab Reports and Homework Assignments	30%
Course Project	15%
Term Exams	30%
Final Exam	20%
Class Attendance	5%

Grading Scale:
>= 90   A
80 – 89   B
70 – 79   C
60 – 69   D
< 60   F

Late Assignment and Missed Exam Policy

University policy for missing quizzes or examinations states:
"Students absent from regularly scheduled examinations because of authorized University activities will have the opportunity to take them at an alternate time. Such make-up examinations should be of comparable difficulty to the original examination."

Attendance Policy

Attendance will be taken at the beginning of lecture periods. Students are permitted no then two lecture absences; additional absences need to be permitted, otherwise, they will result in a 1 percent deduction from the course grade for each absence up to a total of 5 percent of the grade. The WVU Catalog contains the full Attendance Policy.

Academic Policies

Academic policies are those that are at the institutional level and exist in the WVU Catalog. Syllabus statements are Faculty Senate approved and provide guidance to students in negotiating other aspects of course experience. Students are responsible for reviewing and understanding these polices if they are referenced in the syllabus. Students are responsible for reviewing policies on inclusivity, academic integrity, incomplete grades, sale of course materials, sexual misconduct, adverse weather, as well as student evaluation of instruction, and days of special concern/religious holiday statements. See https://tlcommons.wvu.edu/syllabus-policies-and-statements#13

Academic Integrity Statement

The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, instructors will enforce rigorous standards of academic integrity in all aspects and assignments of their courses. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the West Virginia University Academic Standards Policy (http://catalog.wvu.edu/undergraduate/coursecreditstermsclassification). Should you have any questions about possibly improper research citations or references,

or any other activity that may be interpreted as an attempt at academic dishonesty, please see your instructor before the assignment is due to discuss the matter.

Inclusivity Statement

The West Virginia University community is committed to creating and fostering a positive learning and working environment based on open communication, mutual respect, and inclusion. If you are a person with a disability and anticipate needing any type of accommodation in order to participate in your classes, please advise your instructors and make appropriate arrangements with the Office of Accessibility Services. (https://accessibilityservices.wvu.edu/). More information is available at the Division of Diversity, Equity, and Inclusion (https://diversity.wvu.edu/) as well.

Social Justice Statement

West Virginia University has expressed a commitment to social justice. I concur with that commitment and expect to foster a nurturing learning environment based upon open communication, mutual respect, and non-discrimination. Our University should not discriminate on the basis of race, sex, disability, veteran status, and religion.

Useful Web Sites

This Course
https://jingxinwang.forestry.wvu.edu/teaching

WVU eCampus
https://ecampus.wvu.edu/ - online assignment submission, and course materials

MS Office
http://www.microsoft.com/office/
https://support.office.com/en-us/office-training-center - Many Products

Visual Basic .NET
https://docs.microsoft.com/en-us/visualstudio/releases/2019/release-notes - Visual Studio 2019, 2017, 2015-2010.
http://msdn.microsoft.com/en-us/vstudio/ff606383 - Learn Visual Studio 2013
and .NET Framework 4 Training Kit
http://www.vbwm.com/learnvb/   - Learn VB
http://visualbasic.about.com/ - About Visual Basic
http://www.vbcode.com/

Mobile Devices and Programming
http://en.wikipedia.org/wiki/Mobile_operating_system - Mobile operating systems

https://developer.microsoft.com/en-us/ - Microsoft Developer Center

HTML
https://www.learn-html.org/

ASP.NET and others
http://msdn.microsoft.com/en-us/library/ms972337.aspx - ASP.NET Tutorial
https://w3schools.sinsixx.com/vbscript/default.asp.htm

Additional References

Barwell, F., R. Case, B. Forgey, B. Hollis. 2003. Professional VB.NET. Wiley Publishing, INC. Indianapolis, IN 46256.

Excel Macros & Programming. 2010. Excel Macros (VBA). http://www.excel-vba.com/.

Groh, M., J. Stockman, G. Powell, C. Prague, M. Irwin, and J. Reardon. 2007. Access 2007 Bible. Wiley Publishing, Inc. Indianapolis, IN.

Microsoft Corporation. 2013. Learning Visual Studio 2013. http://msdn.microsoft.com/en-us/vstudio/ff606383. Accessed on January 8, 2016.

Microsoft Corporation. 1998. Visual Basic 6.0 – Programmer's guide. Microsoft Press. Redmond, WA.

Oliver, D. 2001. Sams Teach Yourself HTML and XHTML in 24 Hours. Sams Publishing, Indianapolis, Indiana, USA.

Roof, L. 1998. Professional Visual Basic Windows CE Programming. Wrox Press Ltd., Birmingham, UK.

Silberschatz, A., P.A. Galvin, and G. Gagne. 2013. Operating System Concepts (9th Edition). John Wiley & Sons, Inc. New York. 919 pp.

Walkenbach, J. 2007. Microsoft Excel 2007 Bible. Wiley Publishing, Inc. Indianapolis, IN.

Tentative Class Schedule

Week	Date	Lectures and Labs
1	1/13	Introduction to FOR 240 Computer operating system concepts
	1/15	Computer operating system concepts (cont'd) Computer resources
	1/15 or 1/16	File system, programming languages Introduction to HTML
2	1/20	Holiday – no class
	1/22	More HTML (cont'd)
	1/22 or 1/23	Lab 1: Creating your own web pages with HTML
3	1/27	Excel formulas, functions and charts
	1/29	Excel formulas, functions and charts (cont'd) Homework assignment 1
	1/29 or 1/30	Lab 2: Using Excel formulas and functions to create timber sale report
4	2/3	Excel analysis tools
	2/5	Excel analysis tools (cont'd)
	2/5 or 2/6	Lab 3: Analysis of DBH and merchantable height with Excel regression and chart tools
5	2/10	Mathematical programming
	2/12	Mathematical programming using Excel Solver Homework assignment 2
	2/12 or 2/13	Lab 4: Forest management planning using Excel Solver
6	2/17	Introduction to MS Access
	2/19	Exam 1
	2/19 or 2/20	Lab 5: Timber cruising database application – tables and queries
7	2/24	Introduction to MS Access
	2/26	Access tables and queries Homework assignment 3
	2/26 or 2/27	Lab 6: Timber cruising database application – forms and reports
8	3/2	Access tables and queries (cont'd)
	3/4	Handheld computer and Windows Mobile

	3/4 or 3/5	Lab 7: Using handheld to collect timber cruising data
9	3/9	Introduction to geospatial technology
	3/11	Exam 2
	3/11 or 3/12	Lab 8: Using GPS to collect spatial data of timber cruising
10	3/16	Spring Recess – no class
	3/18	
	3/18 or 3/19	
11	3/23	Handheld applications in forest resource management
	3/25	Introductory VB concepts
	3/25 or 3/26	Lab 9: Using GIS to create maps and conduct spatial analysis of timber cruising
12	3/30	Introductory VB concepts (cont'd)
	4/1	VB controls Homework assignment 4
	4/1 or 4/2	Lab: Project Module 1
13	4/6	VB Project, Menu and Interface design
	4/8	VB Programming Fundamentals – variables and data structure
	4/8 or 4/9	Lab: Project Module 2
14	4/13	VB Programming fundamentals – functions and procedures Homework assignment 5
	4/15	VB Programming fundamentals – input and output
	4/15 or 4/16	Lab: Project Module 3
15	4/20	VB Programming fundamentals – data access objects Homework assignment 6
	4/22	VBA in production analysis of forest operations
	4/22 or 4/23	Lab: Project Module 3
16	4/27	Mobile devices programming and applications
	4/29	VB Application Examples in Natural Resources Final Project/Review
	4/29 or 4/30	Final Project/Demos and Presentations
17	5/5	Final Exam (Tuesday, 2-4PM)