Computer Methods in Civil Engineering  
CGN 3421  Class numbers 11591 and 11592  
Computational Methods in Environmental Engineering  
ENV 3040  Class number 13619  

Class Periods:  
M, W, F Lecture period 5 (11:45 AM – 12:35 PM)  
W Lab Periods 9-11 (4:05 PM – 7:05 PM) for Class Numbers 11591, 13619  
R Lab Periods 9-11 (4:05 PM – 7:05 PM) for Class Number 11592  

Location:  
Lecture – FLG 230, W Lab - FLG 230, R Lab – RNK 220  

Academic Term:  
Fall 2019  

Instructor:  
Mr. Randal Switt  
randy.switt@essie.ufl.edu  
352-392-3533  
Office Hours:  
Fridays, 9:30 AM – 11:00 AM, 218 Black Hall (other hours may be arranged by appointment)  

Graders:  
Please contact through the Canvas website  
• Wilmer Carrion, mwcarriong@ufl.edu  
• Marisha Innis, mmarisha@ufl.edu  
• Anthony Splendor, asplendor1@ufl.edu  

Course Description  
CGN3421 - Review of computer programming. Numerical methods as applied to civil engineering problems and civil engineering software.  
ENV3040 - Numerical modeling techniques and their application to environmental engineering. Use of personal computers and spreadsheets to solve numerical models. Solution techniques include numerical methods and their implementation using Excel and Visual Basic for Applications (VBA).  

Course Pre-Requisites / Co-Requisites  
CGN3421  
Pre-Requisite - COP 2271  

ENV3040  
Pre-Requisite – MAC 2313  
Co-Requisite – MAP 2302  

Course Objectives  
This course will introduce the fundamentals of structured programming and numerical solution methods for solving natural and engineered systems. After initial familiarization with beginning programming concepts, we will apply those skills to developing programs to implement several numerical solution techniques.  

Materials and Supply Fees  
N/A  

Professional Component (ABET):  
The course introduces and reinforces computer and programming skills needed for Civil and Environmental Engineering practice, as well as introducing numerical methods applicable to a wide range of areas of research and practice in Engineering. These tools are applicable in subsequent laboratory, analysis and design classes in the required B.S. curriculum and potentially in graduate study. General problem-solving skills are also developed and refined.
### Relation to Program Outcomes (ABET):

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Coverage*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and mathematics.</td>
<td>Medium</td>
</tr>
<tr>
<td>2. An ability to apply both analysis and synthesis in the engineering design process, resulting in designs that meet desired needs.</td>
<td>High</td>
</tr>
<tr>
<td>3. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.</td>
<td>Low</td>
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<tr>
<td>4. An ability to communicate effectively with a range of audiences</td>
<td>Low</td>
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<tr>
<td>5. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.</td>
<td>Low</td>
</tr>
<tr>
<td>6. An ability to recognize the ongoing need for additional knowledge and locate, evaluate, integrate, and apply this knowledge appropriately.</td>
<td>Low</td>
</tr>
<tr>
<td>7. An ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty</td>
<td>Low</td>
</tr>
</tbody>
</table>

### Required Textbooks and Software
- Laptop Computer (preferably Windows based). **Bring to Class!**
- Microsoft Excel (for Windows!) 2010 or later.
  - Latest version (Office 365) available to all students via Office 365 Campus Agreement
  - Mac users can run MS Excel for Windows via Parallels, BootCamp or through [http://apps.ufl.edu](http://apps.ufl.edu)

### Recommended Materials
- Numerical Methods for Engineers
  - Chapra, S.C. and Canale, R.P.
  - 2nd edition or later
  - 978-0-07-340106-5

### Course Schedule
- **Weeks 1-7:** Introduction to Structured Programming
- **Week 8:** Exam 1 (10/9/2019 and 10/10/2019, exact format to be determined)
- **Weeks 9-16:** Introduction to Numerical Solutions
- **Finals Week:** Exam 2 (12:30 pm – 2:30 pm, 12/10/2019, all sections)
**Attendance Policy, Class Expectations, and Make-Up Policy**

Class attendance is not mandatory, however there will be lab assignments that will contribute towards your total class grade and are due as indicated in Canvas. It is expected that students will bring a *fully-charged* laptop to class meetings, and they will be utilized for the lab assignments and Exams.

Cell phones, laptops, and other external resources may not be used during class or exams except as otherwise directed by the assignment/exam instructions or the instructor.

Late assignments will be accepted as indicated in Canvas (in most cases the day prior to the following lab) past the due date for a maximum of 60% credit. If appropriate extenuating circumstances cause a student to miss a scheduled exam date, the student must obtain approval from and arrange (ahead of time whenever possible) with the Instructor for a make-up exam date.

Excused absences must be consistent with university policies in the undergraduate catalog (https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx) and require appropriate documentation.

**Evaluation of Grades**

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Total Points</th>
<th>Percentage of Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labs (13) and take-home assignments (3)</td>
<td>5 each</td>
<td>35%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>100</td>
<td>30%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>100</td>
<td>35%</td>
</tr>
</tbody>
</table>

**Grading Policy**

<table>
<thead>
<tr>
<th>Percent</th>
<th>Grade</th>
<th>Grade Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>93.4 - 100</td>
<td>A</td>
<td>4.00</td>
</tr>
<tr>
<td>90.0 - 93.3</td>
<td>A-</td>
<td>3.67</td>
</tr>
<tr>
<td>86.7 - 89.9</td>
<td>B+</td>
<td>3.33</td>
</tr>
<tr>
<td>83.4 - 86.6</td>
<td>B</td>
<td>3.00</td>
</tr>
<tr>
<td>80.0 - 83.3</td>
<td>B-</td>
<td>2.67</td>
</tr>
<tr>
<td>76.7 - 79.9</td>
<td>C+</td>
<td>2.33</td>
</tr>
<tr>
<td>73.4 - 76.6</td>
<td>C</td>
<td>2.00</td>
</tr>
<tr>
<td>70.0 - 73.3</td>
<td>C-</td>
<td>1.67</td>
</tr>
<tr>
<td>66.7 - 69.9</td>
<td>D+</td>
<td>1.33</td>
</tr>
<tr>
<td>63.4 - 66.6</td>
<td>D</td>
<td>1.00</td>
</tr>
<tr>
<td>60.0 - 63.3</td>
<td>D-</td>
<td>0.67</td>
</tr>
<tr>
<td>0 - 59.9</td>
<td>E</td>
<td>0.00</td>
</tr>
</tbody>
</table>

More information on UF grading policy may be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

**Students Requiring Accommodations**

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, https://www.dso.ufl.edu/drc) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.
Course Evaluation
Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

University Honesty Policy
UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Commitment to a Safe and Inclusive Learning Environment
The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:
• Your academic advisor or Graduate Program Coordinator
• Robin Bielling, Director of Human Resources, 352-392-0903, rbielling@eng.ufl.edu
• Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
• Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use
All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy
There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: https://registrar.ufl.edu/ferpa.html
**Campus Resources:**

### Health and Wellness

**U Matter, We Care:**
Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

**Counseling and Wellness Center:** [http://www.counseling.ufl.edu/cwc](http://www.counseling.ufl.edu/cwc), and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

**Sexual Discrimination, Harassment, Assault, or Violence**
If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the [Office of Title IX Compliance](mailto:title-ix@ufl.edu), located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

**Sexual Assault Recovery Services (SARS)**
Student Health Care Center, 392-1161.

**University Police Department** at 392-1111 (or 9-1-1 for emergencies), or [http://www.police.ufl.edu/](http://www.police.ufl.edu/).

### Academic Resources

**E-learning technical support**, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. [https://lss.at.ufl.edu/help.shtml](https://lss.at.ufl.edu/help.shtml).

**Career Resource Center**, Reitz Union, 392-1601. Career assistance and counseling. [https://www.crc.ufl.edu/](https://www.crc.ufl.edu/).

**Library Support**, [http://cms.uflib.ufl.edu/ask](http://cms.uflib.ufl.edu/ask). Various ways to receive assistance with respect to using the libraries or finding resources.

**Teaching Center**, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. [https://teachingcenter.ufl.edu/](https://teachingcenter.ufl.edu/).

**Writing Studio, 302 Tigert Hall**, 846-1138. Help brainstorming, formatting, and writing papers. [https://writing.ufl.edu/writing-studio/](https://writing.ufl.edu/writing-studio/).
