**Important Note:** All items on this syllabus are subject to change. Any in-class announcement, verbal or written, is considered an official addendum to this syllabus.

**Instructor:** Scott Surgent  
**Office:** ECA 208  
**Office Hours:** 2-3 pm, T-W-Th, and by appt.  
**E-mail:** surgent@asu.edu  
**SLN:** 41241  
**Web Page:** math.la.asu.edu/~surgent

**Prerequisites:** MAT 271, or MAT 266 with a C or better.

**Class Time and place:**  
11:50 to 1:10, WXLR A-106

**Course Description:** Introduces differential equations, theoretical and practical solution techniques. Applications. Problem solving using MATLAB.


**Calculator:** A graphing calculator (e.g. TI-83) is recommended. CALCULATORS THAT PERFORM SYMBOLIC MANIPULATIONS (e.g. TI-89) WILL NOT BE ALLOWED FOR TESTS AND QUIZZES.

**Grading:** The semester grade will be computed based on the 2 tests (20% each), The Final Exam (25%), Labs (10%), and Webwork HW (15%), Quizzes (10%).

**Grading Scale:** A: [90,100]; B: [80,90); C: [70,80); D: [60,70); E: [0, 60). Plus/minus is used sparingly and only if it’s to your advantage.

**QUIZZES:** There will be daily quizzes based on the day’s lecture. The quizzes will be open note and sometimes collaborative. No make-up quizzes will be given.

**HOMEWORK:** The homework assignments will be done using the online system WebWork. No late assignments will be accepted. Due dates are posted in Webwork.

**MATLAB LABS:** Fridays or on your own time. MATLAB labs are especially important because they will help you develop skills to use Matlab for simulations and they are worth a big part of the course grade. Attendance is essential in order to pass the class. There will be labs, all meeting in ECA 221. Please check the Blackboard LAB site for more information about the MATLAB labs.

**Matlab Lab Hours:** the ECA 221 lab will be open Tue 2-6 pm and Thur 12-6 pm, hosted by Rohit Musalay. He is a “general” helper, not assigned to any specific course. Our specific course TA is Nathan Lanfear, and he will host hours on Tue 130-330 pm and Thur 4-5 pm.

**Exams:** Two midterm tests will be given in class. The best preparation for the exams is regular attendance and completion of all assignments. Your calculator program memory may be randomly viewed during any exam and will be cleared if anything suspicious is written therein.

**Final Exam:** [http://students.asu.edu/final-exam-schedule](http://students.asu.edu/final-exam-schedule) has the final exam schedule for all classes and will be strictly followed. If a conflict occurs, or a student has more than three exams in one day, the instructor may be consulted about an individual schedule adjustment. If necessary, the matter may be pursued further with the appropriate dean(s). This procedure applies to conflicts among any combination of ASU campuses, and/or off campus classes. Except to resolve those situations described below, no changes will
be made in this schedule without prior approval of the Dean of CLAS. The final exam is comprehensive but will consist approximately 50% from material covered after the second midterm test. Check schedule for the date and the room of your final exam.

**Course withdrawal deadline:** July 19, 2017

**Course Policies:** Students are responsible for the assigned material whether or not it is covered in class. Students are responsible for the material covered in class whether or not it is in the text. Working regularly on assigned problems and attending class are essential in order to do well. You are expected to read the text before the material is covered in class. Make-up exams are at the discretion of the instructor and only given in the case of verified medical or other emergency. The instructor must be notified before the exam is given, if at all possible. E-mail your instructor and call the Mathematics Department Office (480-965-3951) to leave a message.

Picture taking, talking or texting on your cell phone or any electronic device during class is prohibited and will be severely penalized. If you bring cell phones and/or any other electronic equipment to our classroom, make sure it/they is/are turned off before class begins. Any sounds produced by such devices are disruptive to the class and, as such, will not be tolerated and will be reported to the Office of the Dean of Students.

**ACADEMIC DISHONESTY:**

In the “Student Academic Integrity Policy” manual, ASU defines “Plagiarism” [as] using another's words, ideas, materials or work without properly acknowledging and documenting the source. Students are responsible for knowing the rules governing the use of another's work or materials and for acknowledging and documenting the source appropriately.”. Please see:

[http://www.asu.edu/studentaffairs/studentlife/judicial/academic_integrity.htm#definitions](http://www.asu.edu/studentaffairs/studentlife/judicial/academic_integrity.htm#definitions).

Academic dishonesty, including inappropriate collaboration, will not be tolerated. There are severe sanctions for cheating, plagiarizing and any other forms of dishonesty.

During quizzes and exams, all cell-phones and internet-capable devices must be turned off and made inaccessible. Accessing one for any reason will result in a score of 0 and possible sanctions at the Dean’s level.
<table>
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<tr>
<th>Wk # / dates</th>
<th>Book sections covered</th>
<th>Observations</th>
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| 1. June 29, 30| 1.1, Some Basic Models; Direction Fields  
1.2, Solutions of Some Differential Equation  
1.3, Classification of Differential Equations | Fri. 7/4: NO CLASS                                |
| 2. July 3, 5-7| 2.1, Linear Equations; Method of Integrating Factors (cont’d)  
2.2, Separable Equations  
2.3, Modeling with First Order Equations  
2.4, Difference between linear an nonlinear equations  
2.5, Autonomous Equations and Population Dynamics | Lab 1 due July 9                                  |
| 3. July 10-14 | **TEST 1 (Wednesday July 12)**  
2.7 Numerical Approximations: Euler's method  
3.1, Homogeneous Equations with Constant Coefficients  
3.2, Solutions of Linear Homogeneous Equations; The Wronskian  
3.3, Complex roots of the Characteristic Equation | Lab 2 due July 16                                  |
| 4. July 17-21 | 3.4, Repeated Roots, Reduction of Order  
3.5, Method of Undetermined Coefficients  
3.7, Mechanical and Electrical Vibrations  
3.8, Forced Vibrations  
**TEST 2 (Friday July 28)** | Lab 3 due July 23  
Course Withdrawal Deadline: 7/21               |
| 5. July 24-28 | 6.1, Definition of the Laplace Transform  
6.2, Solution of Initial Value Problem  
6.3, Step Functions  
6.4, Differential equation with Discontinuous Forcing Functions  
6.5, Impulse Function  
7.1, Introduction to Linear First Order Systems | Lab 5 due July 30                                  |
| 6. July 31-Aug 4| 7.2 Review of Matrices  
7.3, Linear Algebraic Equations; Linear Independence, Eigenvalues , Eigenvectors  
7.5, Homogeneous Linear Systems with Constant Coefficients  
7.6, Complex Eigenvalues  
7.8, Repeated Eigenvalues | Lab 4 due August 6                                 |
| 7. August 7-9 | **Final Exam (Wednesday Aug 9)**                                                   | Complete Withdrawal Deadline: 8/9  
Classes End 8/9                                      |

**Departmental and University Policies and Procedures.**

- For semester deadlines related to enrollment, withdrawal or payments, see the academic calendar available at [http://students.asu.edu/academic-calendar](http://students.asu.edu/academic-calendar)

- **Course Withdrawal:** A student may withdraw from a course with a grade of W during the withdrawal period. The instructor's signature is not required. It is a student’s responsibility to verify that they have in fact withdrawn from a class. The course withdrawal deadline is July 19, 2017.

- **The grade of Incomplete:** A grade of incomplete will be awarded only in the event that a documented emergency or illness prevents the student who is doing acceptable work from completing a small percentage of the course requirements. The guidelines in the current general ASU catalog regarding a grade of incomplete will be strictly followed.

- **Instructor-Initiated Drop:** At the instructor's discretion, any student who has not attended class during the first week of classes may be administratively dropped from the course. However, students should be aware that non-attendance will NOT automatically result in their being dropped
from the course. Thus, a student should not assume they are no longer registered for a course simply because they did not attend class during the first week. It is the student's responsibility to be aware of their registration status.

- **Honor Policy**: The highest standards of academic integrity are expected of all students. The failure of any student to meet these standards may result in suspension or expulsion from the University or other sanctions as specified in the University Student Academic Integrity Policy. Violations of academic integrity include, but are not limited to cheating, fabrication, tampering, plagiarism, or facilitating such activities. The grade of XE: A grade of XE is reserved for "failure for academic dishonesty."

- **Ethics**: Grades are based only on academic work and are calculated using the same criteria for all students. It is unethical to bring to your instructor's attention the possible impact of your mathematics grade on your future plans, including graduation, scholarships, jobs, etc. For the university's complete policy regarding ethics and other forms of academic dishonesty, see the Student Academic Integrity Policy at the following web address: [http://provost.asu.edu/academicintegrity](http://provost.asu.edu/academicintegrity)

- **Student Conduct Statement**: Students are required to adhere to the behavior standards of the Arizona Board of Regents Policy Manual Code of Conduct, Academic Affairs Manual ACD 125 Computer, Internet, and Electronic Communications, and the ASU Student Academic Integrity Policy