Course Syllabus

PS Number: 82511  Semester: Spring  Year: 2017

Faculty Name: Dwight P. Smith  Title: Professor of Mathematics

Course Prefix and Number: MAT 285  Course Credit Hours: 3

Course Prerequisites: MAT 275 or consent of instructor.

Course Title: Differential Equations

Catalog Course Description: Examines ordinary differential equations emphasizing first and second order equations and applications. Includes series solutions of second order equations and Laplace transform methods.

Instructor Contact Information:

Campus Location: Prestonsburg  Building & Room: Pike 112D

Office Hours: 8:00–10:40 AM MW; 9:25–11:25 AM T (Viral); 12:25–1:40 PM MW (ACE)

Office Phone Number: 606–889–4754  Alternate Number: 855–GO–BSCTC

Best Times to Call: During Office Hours

KCTCS Email: Dwight.Smith@kctcs.edu

Special Instructions: N/A

Supervisor Contact Information:

Name: Dr. Lisa J. Music

Campus Location: Prestonsburg  Building & Room: Pike 107F

Office Phone Number: 606/889–4760

KCTCS Email: lisa.music@kctcs.edu
**Text and Supplies:**

**Required**  
MyMathLab Key (You must have this to get into the course website.) You log into the course via the website [http://portal.mypearson.com/cclogin.jsp](http://portal.mypearson.com/cclogin.jsp). The course ID is **smith49029**.


**For the Proctored Final Exam:** A TI-30Xa or TI-30 XIIS Scientific Calculator is required, or any other scientific (non-graphing) calculator, subject to my approval. Cellphones, tablets, and all other technology must be shut off when you take your Final. Only the MyMathLab website is allowed to be visible on your computer as you take your Final. The use of unapproved technology will earn you a “0” for the Final, and hence an *E* for the course.

**NOTE:** You can get an e–book by going to [www.cengage.com](http://www.cengage.com) and then going to “Higher Education.” You can then enter the author or ISBN number to get you to the website.

**KCTCS General Education Competencies**

Students should prepare for twenty–first century challenges by gaining:

A. Knowledge of human cultures and the physical and natural worlds through study in the sciences and mathematics, social sciences, humanities, histories, languages, and the arts.

   Method to Achieve Competency: **N/A**

B. Intellectual and practical skills, including
   - inquiry and analysis
   - critical and creative thinking
   - written and oral communication
   - quantitative literacy
   - information literacy
   - teamwork and problem solving

   Method to Achieve Competency: Final Exam

C. Personal and social responsibility, including
   - civic knowledge and engagement (local and global)
   - intercultural knowledge and competence
   - ethical reasoning and action
   - foundations and skills for lifelong learning

   Method to Achieve Competency: **N/A**

D. Integrative and applied learning, including synthesis and advanced accomplishment across general and specialized skills.

   Method to Achieve Competency: **N/A**
Course Specific Competencies:

Upon completion of this course, the student can:
1. Solve differential equations with separable variables.
2. Solve homogeneous, exact, and linear differential equations.
3. Solve Bernoulli’s equations.
5. Solve differential equations with constant coefficients.
6. Solve differential equations using reduction of order, annihilator operators, and variation of parameters.
7. Solve differential equation problems involving simple and damped harmonic motion.
8. Solve Cauchy-Euler equations.
10. Find the Laplace transforms of common functions, and use Laplace Transforms to solve differential equations.

Lab Competencies:  N/A

Course Outline:

I. First-Order Differential Equations
   A. Separable variables
   B. Homogeneous equations
   C. Exact equations
   D. Linear equations
   E. Bernoulli’s equations

II. Applications of First Order Differential Equations
   A. Applications of linear equations
   B. Applications of non-linear equations

III. Linear Differential Equations of Higher Order
   A. Equations with constant coefficients
   B. Undetermined coefficients
   C. Differential operators and the annihilator approach
   D. Variation of parameters

IV. Applications of Second Order Differential Equations
   A. Simple harmonic motion
   B. Damped harmonic motion

V. Differential Equations with Variable Coefficients
   A. Cauchy-Euler equations
   B. Power series solution around ordinary and singular points

VI. Laplace Transforms
   A. Laplace transforms of common functions
   B. Using Laplace Transforms to solve equations

VII. Systems of Linear Differential Equations
   A. Laplace transform method
   B. Matrices
Course Structure:
The course is available on its MyMathLab website. You log into the course via the website http://portal.mypearson.com/cclogin.jsp. The course ID is smith49029.

At the beginning of every Unit, you will receive an Announcement on the KCTCS BLACKBOARD website listing the availability dates for the Graded Work for that Unit. (There will also be an Announcement on the MyMathLab website.)

By clicking “Calendar” on the side menu of the Blackboard website, you can access the following:
1. READING ASSIGNMENTS A suggested reading schedule along with a list of practice problems is given as a Word attachment. The practice problems will not count towards your grade. You can access most of them on the MyMathLab Study Plan. These will stay visible throughout the Semester.
2. GRADED WORK The list of availability dates for the Unit’s graded work is provided here, as well as on the Announcements.
3. EXAM STUDY GUIDE A list of the topics covered on the Exam (if any) for the current Unit is given as a Word attachment.

You will have three kinds of non–proctored graded work: Homework, Quizzes, and Exams. Press “Homework” on the Course Menu to access the current Homework Assignments, and “Quizzes/Exams” to access the current Quizzes and Exams. On the MyMathLab site, “Test” means “Exam.”

You will also have a comprehensive Final at the end of the Semester, available during the period of May 1–5, 2017. This Exam must be proctored at the Testing Center at your nearest KCTCS school, with arrangements made between you and the proctor to take the Final during the period of May 1–5, 2017. This is your responsibility. You may bring your books and notes. A TI-30Xa or TI-30 XIIS Scientific Calculator is required, or any other scientific (nongraphing) calculator, subject to my approval. Cellphones, tablets, and all other technology must be shut off when you take your Final. Only the MyMathLab website is allowed to be visible on your computer as you take your Final. The use of unapproved technology will earn you a “0” for the Final, and hence an E for the course. Most of the Testing Centers do not take walk–ins, so please do not delay in signing up.

IMPORTANT NOTES
1. It is required that you have a working knowledge of computers and how to access and navigate through Internet websites. This is NOT a course in learning how to use computers. Please realize that I cannot fix your computer or teach you how to use it. That is not my responsibility. I also cannot be responsible for any breakdowns you might have. You should refer all problems to the Tech Support on the MyMathLab website.

2. Be sure you know how to enter the answers with the mathematical symbols on your Assignments. The MyMathLab website provides links to tutorials.

Technology/Media Component:
The course is available via the MyMathLab website: http://portal.mypearson.com/cclogin.jsp. The course ID is smith49029.

Service-Learning:
N/A
Course Requirements and Evaluation:

I reserve the right to adjust course timelines when necessary.

HOMEWORK
Each Homework assignment will be online. The Homework assignments will add up to 100 possible points. As long as a Homework Assignment is available, you can save it and resume your work later. Please note the availability dates of the Homework Assignments.

QUIZZES
A total of 12 online Quizzes will be given during the Semester, each worth 10 points. The scores of your 10 highest Quizzes will be totaled at the end of the Semester. Altogether, your Quizzes will add up to 100 possible points. WARNING! Once you open a Quiz, you must take it during the allotted time. Please note the availability dates of the Quizzes.

EXAMS
There will be 4 Exams during the Semester. All Exams count for 100 points. WARNING! Once you open an Exam, you must take it during the allotted time. Please note the availability dates of the Exams.

FINAL EXAM
The Final Exam will be available during the period of May 1–5, 2017. It will be comprehensive and worth 400 points (40% of the total class grade). If you do not take the Final, you will fail the course with an E. The Final Exam must be proctored, with arrangements made between you and the proctor during the period of May 1–5, 2017. You may bring your books and notes. A TI-30Xa or TI-30 XIIS Scientific Calculator is required, or any other scientific (nongraphing) calculator, subject to my approval. Cellphones, tablets, and all other technology must be shut off when you take your Final. Only the MyMathLab website is allowed to be visible on your computer as you take your Final. The use of unapproved technology will earn you a “0” for the Final, and hence an E for the course. WARNING! Once you open the Final, you must take it during the allotted time.

PARTIAL CREDIT
There is no partial credit on the Homework Assignments, but I will assign partial credit for the Quizzes, Exams, and Final Exam. If you wish to submit scanned work for the Quizzes, Exams, or Final, you must do so on the day you submit the Quiz, Exam, or Final, to be assured of my consideration.

ADDITIONAL COMMENTS (PLEASE READ)
1. To access your grades and submitted work, press “Gradebook” on the Course Menu.

2. When submitting online work, be sure to hit the "Submit" key, or it will not show up in the grade book, and will be counted as a "zero." On Quizzes and Exams, once you press the "Submit" key, that's it. There can be no turning back or "do-overs." As I mentioned before, be sure to note the availability dates for online work.

3. In case of computer malfunction, please let me know as soon as possible (preferably by KCTCS email), so I can reset your work. PLEASE, do not procrastinate on doing your online work. Do not assume that I am always by a computer to assist you!
**Grading Policy:**
Your Final Class Grade by the scores of your Homework, Quizzes, Exams, and Final Exam.
The grading scale is based on your overall score percentage as follows:

90% – 100% assures you of an A
80% – 89% assures you of a B
70% – 79% assures you of a C
60% – 69% assures you of a D
0% – 59% assures you of an E

A student who does not take the Proctored Final Exam will automatically receive an E in the course, regardless of the other grades.

Your work during the Semester will be weighted as follows:

**NON–PROCTORED WORK** (Can be done in your home, school, office, etc.)
14 Homework Assignments 10% of your total grade
10 Highest Quizzes 10% of your total grade
4 Exams 40% of your total grade

**PROCTORED WORK**
Final Exam (Period of May 1–5, 2017) 40% of your total grade

**Attendance Policy:**
1. We are required to submit the names of “No Show” students, starting January 13, 2017. To be assured of being prevented being listed as a “No Show,” you must answer “True” to the Syllabus Agreement on the Blackboard website by January 12, 2017, 11:55 PM (ET). I will be able to track who has agreed to the Syllabus (by answering “True” to the Syllabus Agreement) via the Grade Center. If you are a “No Show,” you and your advisor will receive a “Starfish” notice.
2. At various times during the Semester, we are required to designate those students who are "not actively participating." You must have attempted at least two Exams by March 3, 2017 to be considered as "Actively Participating" in the course. If not, you and your advisor will receive a “Starfish” notice.
3. When calculating the Final Class Grades, we are required to list the "last day of attendance" for those students receiving an "E" grade for the course. In this class, "last day of attendance" means the latest day that a graded assignment (Homework, Quiz, Exam, or Final Exam) was submitted.

**Missed Exam Policy:**
It is your responsibility to know and adhere to the availability dates on the Exams and Quizzes. Any extensions will be at my discretion and are not automatic. (In fact, the answer will usually be “No.”)

**Late Assignment Policy:**
It is your responsibility to know and adhere to the availability dates on the Homework assignments. Any extensions will be at my discretion and are not automatic. (In fact, the answer will usually be “No.”)

**Withdrawal Policy:**
1. The last day you can drop this class without a grade is January 13, 2017, 2016.
2. The last day you can withdraw from this class without my permission is March 3, 2017. (Midterm)
3. The last day you can withdraw from this class with a W with my permission is April 28, 2017.

Additional information can be found at the following site:
http://www.bigsandy.kctcs.edu/en/Academics/Office_Hours_Schedules_and_Syllabi.aspx