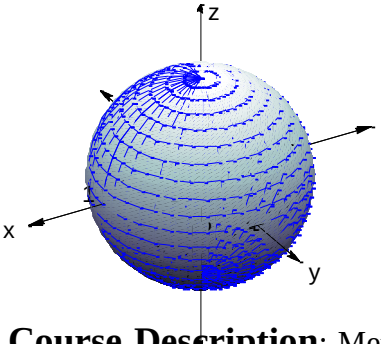
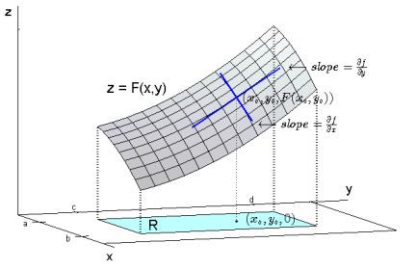
Calculus III: Math 2163-62553
Fall 2017

Instructor:	David Stapleton		
Office:	MSCS 436	**Office phone:**	744-2302
Classroom	CLBN 203	MWF 11:30-12:20	
Office hours:	Mon. 9:30-10:20, Wed. 12:30-1:20, Fri. 1:30-2:20* (*=the *Friday afternoon hour is held at the Mathematics Learning Success Center* (MLSC), 5th floor of the Edmon Low Library).		
Brightspace D2L material:	https://my.okstate.edu/ (click on *Online Classroom*)		
e-mail:	david.stapleton@okstate.edu		





$$\oint_{\partial\Sigma} \vec{F} \cdot d\vec{r} = \iint_{\Sigma} (\vec{\nabla} \times \vec{F}) \cdot \vec{n}\, dS$$

Course Description: Methods of solution of ordinary differential equations with applications. First order equations, linear equations of higher order, series solutions and Laplace transforms. Various applications are considered, especially for engineering and the sciences. Numerical approximations, existence and uniqueness, and qualitative analyses of solutions are considered.

Prerequisites: MATH 2153 (Calculus II) with a grade of C or better.

Text and Resources:

1. Calculus, 3rd Ed., by Jon Rogawski, W.H. Freeman & Co., required with WebAssign: http://www.webassign.net/v4cgi/selfenroll/classkey.html
2. D2L class notes and practice problems: https://my.okstate.edu/
3. Paul's Online Math Notes, http://tutorial.math.lamar.edu/Classes/CalcIII/CalcIII.aspx (optional)
6. TI-89 or TI-Nspire CAS (don't get it without the CAS!) or similarly equipped calculator (optional)
8. MLSC tutoring (times TBA) at the 5th floor, Edmon Low Library (optional).

Course Objectives:

To learn multivariable calculus, where notions from single-variable calculus are generalized to apply to functions of more than one variable. This includes analytic geometry in three dimensions and basic notions of vectors and vector calculus.

Evaluation Criteria:

There will be three midterm examinations, WebAssign homework, and a final examination, with the exams worth 100 points each, WebAssign worth 100 points, and the final exam worth 100 points, for a total of 500 points possible. The exam grades will be determined by A: 90-100%, B: 80-89%, C: 70-79%, D: 60-69% unless easier curves are announced in class for specific exams. If you must miss an examination other than the final exam then it may be made up, provided the reason for missing is approved by the instructor and the exam is made up within one class week. You should immediately enroll at http://www.webassign.net/v4cgi/selfenroll/classkey.html using the class code

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Dishonest Work: Participating in a behavior that violates academic integrity will result in an official academic sanction. Violations may subject you to disciplinary action including the following: receiving a failing grade on an assignment, examination or course, receiving a notation of a violation of academic integrity on your transcript, and being suspended from the University. You have the right to appeal.

Office of Student Disability Services (SDS) *315 Student Union/405-744-7116 http://sds.okstate.edu/* . According to the Americans with Disabilities Act, each student with a disability is responsible for notifying the University of his/her disability and requesting accommodations. If you think you have a qualified disability and need special accommodations, you should request verification of eligibility for accommodations from the Office of SDS.

Syllabus Attachment: For additional policies that apply to all courses at OSU see the University attachment: http://academicaffairs.okstate.edu, click on "Resources for Students" and then on "Current Syllabus."

Important Dates:

- **Monday, August 21**: First day of classes
- **Monday, August 28**: Deadline for dropping without a W (and full tuition refund)
- **Friday, September 1**: Deadline for dropping with a W (and partial tuition refund).
- **Monday, September 4**: No classes (Labor Day).
- **Wednesday, September 20**: **Exam 1**
- **Friday, October 20**: No classes (Fall Break)
- **Wednesday, October 25**: **Exam 2**
- **Friday, November 10**: W Drop/Withdraw deadline
- **Wednesday, November 22, to Friday, November 24**: No classes (Thanksgiving Break)
- **Wednesday, November 29**: **Exam 3**
- **Monday, December 4, to Friday, May 8**: Prefinals Week (a.k.a. Dead Week).
- **December 15, Friday, 10:00-11:50**: Final Exam

Course Outline:

CH 12	**Vector Geometry**	
12.1	Vectors in the Plane	1
12.2	Vectors in Three Dimensions	1
12.3	Dot Product and the Angle between Vectors	2
12.4	The Cross Product	2
12.5	Planes in Three Space	1
11.5	Conic Sections	1
12.6	A Survey of Quadric Forms	1
12.7	Cylindrical and Spherical Coordinates	1
Chapter 12 Total	10	
CH 13	**Calculus of Vector-Valued Functions**	
13.1	Vector-Valued Functions	1
13.2	Calculus of Vector-Valued Functions	1
13.3	Arc Length and Speed	1
13.4	Curvature	(Drop)
13.5	Motion in Three Space	1

13.6	Planetary Motion according to Kepler, Newton	(Drop)
Chapter 13 Total	4	
CH 14	**Differentiation in Several Variables**	
14.1	Functions of Two or More Variables	1
14.2	Limits and Continuity in Several Variables	1
14.3	Partial Derivatives	1
14.4	Differentiability and Tangent Planes	1
14.5	The Gradient and Directional Derivatives	1
14.6	The Chain Rule	1
14.7	Optimization in Several Variables	2
14.8	Lagrange Multipliers: Optimizing with constraint	1
Chapter 14 Total	9	
CH 15	**Multiple Integration**	
15.1	Integration in Two Variables	1
15.2	Double Integrals over more general regions	1
15.3	Triple Integrals	1
15.4	Integration in polar, cylindrical, and spherical	2
15.5	Applications of Multiple Integrals	1
15.6	Change of Variables	1
Chapter 15 Total	7	
CH 16	**Line and Surface Integrals**	
16.1	Vector Fields	1
16.2	Line Integrals	2
16.3	Conservative Vector Fields	2
16.4	Parametrized Surfaces and Surface Integrals	(Drop)
16.5	Surface Integrals of Vector Fields	(Drop)
Chapter 16 Total	5	
CH 17	**Fundamental Theorems of Vector Analysis**	
17.1	Green's Theorem	2