Spring 2017 Projected Syllabus Schedule

FDSC …… (1 hr. credit)

Math Elements for Food Science and Technology

Instructor:
Name**: Griffiths G. Atungulu**
Title: Assistant Professor
Room #N222 Food Science
Food Science Department
Tel #4795756843
Email: atungulu@uark.edu
Office hours: Open Door Policy

Teaching Assistant(s):
Name. TBD; Email address: TBD
To be set by Assistants

Class Time/Place: TuTh 12:30-1:20(2nd 8-weeks:3/8/17-5/4/17)/FDSC D2

Pre- or Co-requisites: Math 2043 or Math 2554

Catalog Description: Basic data interpretation and analysis, problem interpretation and equation formulation, manipulation of algebraic functions representing applications in food science and technology, predictive models and curve fittings to determine model constants applied in food science and processing. Lecture 1 hours per week.

Text Book: Math Concepts for Food Engineering (2nd. Edition) R.W. Hartel, R.K. Connelly, T.A. Howel Jr., D.B. Hyslop, CRC Press Taylor & Francis Group, 6000 Broken Sound Parkway NW, Suite 300 Boca Raton, FL 33487-2742; Bioprocess Engineering Principles (2nd. Edition), P.M. Doran, 1995.

Supplemental Texts:

Course Objectives: Math Elements for Food Science and Technology is a one-hour credit course meant to instill foundational math concepts relevant to food science and processing engineering. Emphasis is placed on connecting math elements to food chemistry, food microbiology, food sensory science, and food process engineering principles. An introduction to modeling concepts helps the student appreciate extension of the studied math elements to support prediction of variables, constants, and parameters encountered in equations describing food properties or processes.

Class Procedures:

- Homework assignments are due at the beginning of the class period of the day in which they are due.
- Late homework or laboratory assignments will be penalized by deducting 50% of the point value of the assignment per late day.

- "Make-up" tests will be given for missed exams; ***however, please make every effort to take the exam during the assigned, class examination period.***
- University rules apply as to the consequences of misconduct: As a core part of its mission, the University of Arkansas provides students with the opportunity to further their educational goals through programs of study and research in an environment that promotes freedom of inquiry and academic responsibility. Accomplishing this mission is only possible when intellectual honesty and individual integrity prevail. Each University of Arkansas student is required to be familiar with and abide by the University's 'Academic Integrity Policy' which may be found at honesty.uark.edu/policy. Students with questions about how these policies apply to a particular course or assignment should immediately contact the instructor.

Laboratories: No labs are assigned for this course however demonstrations of software applications or running computer programs may be used to illustrate some math concepts.

Evaluation Methods: Problem sets will be assigned once/week (covering material in the lecture for each week), graded, returned, and counted toward the final grade tabulation. A total of three exams will be administered two exams evenly spaced for the first course module (Foundational math concept) and a third exam after the last module (introduction to modeling concepts). There is no final comprehensive exam.

Grading Structure:

Evaluation Method	**Final Grade Weight**
Exam 1	20%
Exam 2	20%
Exam 3	20%
Problem sets, possible quizzes	40%

Note: The 12-point grading system will be utilized.

Percentile	Letter Grade	4-point Scale
93-100%	A	4.00
90-92%	A-	3.67
87-89%	B+	3.33
83-86%	B	3.00
80-82%	B-	2.67
77-79%	C+	2.33
73-76%	C	2.00
70-72%	C-	1.67
67-69%	D+	1.33
63-66%	D	1.00
60-62%	D-	0.67
Below 60%	F	0.00

Students caught using unauthorized electronic equipment, or other disruptive behavior, will have test score deductions applied.

Students with Disabilities: *If any student needs accommodations due to a physical or learning disability, make arrangements to discuss this with the instructor within the first week of the semester.*

University of Arkansas Inclement Weather Policy:
See the University's Inclement Weather Policy at http://emergency.uark.edu/11272.php. You may check the University of Arkansas Weather Hotline (479) 575-7000 for recorded messages giving information about delays and University closings. *The policy for this class is that if the Fayetteville Public School System is cancelled due to inclement weather, FDSC 2111 lecture periods will also be cancelled or postponed. Laboratories will be held unless the University is closed or you receive an e-mail indicating that the lab has been cancelled or postponed.*

Disruptive Behavior:
"Disruptive behavior may best be defined as any of the following:
1. Generally, disruptive behavior is any behavior that inhibits a faculty member or TA's ability to conduct class or limits other students' ability to benefit from instruction.
2. Conduct, speech or activity that interferes with the learning activities of other students.

Behaviors that can be disruptive are chatting and whispering during class, the use of electronic equipment, reading the paper during class, preparing to leave before class is over, and consistently arriving late to class. ***Please*** keep these disruptions to an absolute minimum." ***Inappropriate behavior in the classroom may result in a request to leave the class and/or a referral to an appropriate administrative office.***
"Note: It is important to remember that emotional and/or mental distress, or psychological disorders are not legitimate excuses for disruptive behavior in the classroom or in an academic setting. Disability claims and accommodations should be discussed with the Center for Educational Access (CEA) at 575-3104. There are established procedures that should be followed if reasonable accommodations are required."

Emergency Procedures:

Many types of emergencies can occur on campus; instructions for specific emergencies such as severe weather, active shooter, or fire can be found at **emergency.uark.edu**.

Severe Weather (Tornado Warning):
Follow the directions of the instructor or emergency personnel. Seek shelter in the basement or interior room or hallway on the lowest floor, putting as many walls as possible between you and the outside. If you are in a multi-story building, and you cannot get to the lowest floor, pick a hallway in the center of the building. Stay in the center of the room, away from exterior walls, windows, and doors

Violence/Active Shooter (CADD):
CALL- 9-1-1. **AVOID-** If possible, self-evacuate to a safe area outside the building. Follow directions of police. **DENY-** Barricade the door with desk, chairs, or any items. Move to a place inside the room where you are not visible. Turn off the lights and remain quiet. Remain there until told by police it's safe. **DEFEND-** Use chairs, desks, cell phones or whatever is immediately available to distract and/or defend yourself and others from attack.

Projected Schedule for FDSC……

Unit 1, Foundational Math Concepts

Week 1	Interpretation and analysis of data Single and double interpolation of data in tables and charts Data entry and manipulation in spreadsheet Food science related problem solving exercise – (sensory science problems requiring statistical analysis and data interpretation)
Week 2	Review of algebra and application relevant to food science and process engineering Equation functions, manipulations, and rules applied to engineering units Food science related problem solving exercise – (food chemistry and food analysis problems involving ingredient formulation)
Week 3	Coordinate systems Linear and non-linear graph and curve fitting Logarithms and logarithmic transformations, semi-log graphs and log-log graphs Food science related problem solving exercise – (Food chemistry and microbiology problems involving reaction kinetics and microbial thermal inactivation) **Exam 1** Review of exam 1
Week 4	*Transitional* Calculus -1 (Differentiation) Derivatives, formal differentiation and rules Partial derivatives Time derivatives, maxima and minima applications Food science related problem solving exercise – (food processing engineering involving heat transfer applications)
Week 5	*Transitional* Calculus -2 (Integration)

	Integration, formal integration and rules Differential equations Food science related problem solving exercise – (food processing engineering involving heat transfer applications) **Exam 2** Review of exam 2

Unit 2, Introduction to modeling concepts

Week 6	Introducing modeling of biological (food) and physical systems Types of models and role of assumptions Examples of model and constant determination and curve fitting using simple techniques in excel Food science related problem solving exercise – (food processing and engineering problems involving curve fitting to determine empirical constants of equations e.g. for equilibrium moisture content)
Week 7	Introduction to finite difference approximation Food science related problem solving exercise – (food engineering - a heat conduction problem)
Week 8	Wrap up of introduction to modeling concepts Review of course material **Exam 3**