

Approval Chart for Curriculum Changes

A = Approval I = Information*

Course Number MATH 497 - Mathematics Capstone or Degree Plan(s) _____

State the requested change and reason. A memo may be attached if more space is necessary.

The Department of Mathematics has taught a senior capstone course since 1996: MATH 499, Senior Seminar from 1996 to 2006, then MATH 497, Mathematics Capstone, from 2007 to present. This course has been required of all mathematics majors. The primary component of the course has been a research project, supervised by a faculty mentor. The project is presented in oral form and a paper 10 to 15 pages in length. In addition, the students create a resume and write a reflective paper relating their faith and their experiences in mathematics. See attached syllabus from Fall 2011.

Circle the number that corresponds to the requested change. Degree plan changes are on the second page.

COUNCIL**

	Change to a Course	Dept./School	College Academic	Deans	TEC	UGEC	UUAC	GRAD	Provost	President
1.	Title (description unchanged)	A	A	A		I			I	I
2.	Description (not affecting content)	A	A	A		I			I	I
3.	Content (substantive change)	A	A	A		I			A	A
4.	Number of hours (lecture, lab, contact)	A	A	A		A			A	A
5.	Course number within the hundred	A	A	I		I			I	I
6.	Course number beyond the hundred	A	A	A		A			A	A
7.	Prerequisites	A	A	A		I			I	I
8.	Course fee(s)	A	--	A		--			A	I
9.	From U to G or G to U	A	A	A		A			A	A
10.	Cross list with another dept: U or G level	A	A	A		A			A	A
11.	Department of record	A	A	A		A			A	A
12.	Open or close a course	A	A	A		A			A	A
13.	New course — See Adams Center for packet. This change includes combining or splitting a course(s).	A	A	A		A			A	A

* Councils may request additional information about "Information" items. These items are approved as "Consent Agenda."

**Courses offered only to students seeking teacher certification must go through the Teacher Education Council.

Note: When an academic unit does not have a council, the UGEC and/or UUAC will serve as its academic council, depending on the nature of the issue.

Approval Chart for Curriculum Changes

A = Approval

I = Information

	Change to a Degree Plan	Dept./School	College Academic	Deans	TEC	COUNCIL			Provost	Faculty	President
						UGEC	UUAC	GRAD			
1.	University Requirements — Change in approved course content**	A	A	A		A			A	--	A
2.	University Requirements — Add or drop a required course from the University Requirements chart**	A	A	A		A			A	A	A
3.	University Requirements — Add or drop a course from a menu within the University Requirements**	A	A	A		A			A	--	A
4.	University Requirements — Change hours within a menu on the University Requirements chart**	A	A	A		A			A	A	A
4.	Major — Revision of major ♦ ‡	A	A	A		A			A	--	A
5.	Major — Adopt or change admission requirements	A	A	A		A			A	--	A
6.	Major — Add or discontinue	A	A	A		A			A	A	A
7.	GPA — Revise major or cumulative requirement	A	A	A		A			A	A	A
8.	Minor — Revise course selection	A	A	A		I			I	--	I
	Minor — Add or discontinue	A	A	A		A			A	--	A
9.	Degree — Add or discontinue	A	A	A		A			A	A	A
10.	Any change to a graduate degree program*	A	A	A		A			A	--	A

♦ A minimum of 30 hours is required for a major. A maximum is specified for each degree (e.g., BA, BS). The university minimum for elective hours is 6, unless the requirements of external accrediting bodies make it impossible.

‡ Program or course changes applying to any major that includes Teacher Certification will be reviewed by the college, the Teacher Education Council (TEC), and then the UUAC.

* All graduate degree plan changes must go through the Graduate Council.

** Courses that satisfy ACU's University Requirements (General Education) will normally have lower-level numbering, be free of prerequisites and corequisites, appeal to more than one or two majors, and "not narrowly focus on those skills, techniques, and procedures specific to a particular occupation or profession" (SACS 2.7.3). Departments may request exceptions to the first three criteria.

Note: The Board of Trustees is informed when a major or degree is added or discontinued.

Revised 4-18-12

Approval Chart for Academic Information Changes

	Change to the Catalog	Dept./School	College Academic	Deans	UGEC	UUAC	GRAD	Provost	Faculty	President	Board of Trustees
1.	General requirements for graduation including course requirements that are common to all majors for all degrees*	--	--	--		A		A	A	A	--
2.	Admission requirements	--	--	--		A		A	A	A	--
3.	Policies governing academic probation and suspension	--	--	--		A		A	A	A	--
4.	Requirements for graduating with honors	--	--	--		A		A	A	A	--
5.	Other academic policy changes	--	--	--		A		A	--	A	

* The UUAC approved the clarification that "general requirements for graduation" means the seventeen items in the "General Requirements for Bachelor's Degrees" section of the catalog.

Revised 3-2-11

Curriculum/Catalog Changes Signature Page

Department/School Chair(s)	
<u>M. W. B.</u>	<u>2-20-2013</u>
Signature	Approval date
Signature	Approval date

College Academic Council(s)	
Signature	Approval date
Signature	Approval date

Dean(s)	
Signature	Approval date
Signature	Approval date

Teacher Education Council	
Chair's signature	Approval date

General Education Council	
Chair's signature	Approval date

Undergraduate Academic Council	
Chair's signature	Approval date

Graduate Council	
Chair's signature	Approval date

Provost	
Signature	Approval date

Faculty	
Chair of faculty senate	Approval date

President	
Signature	Approval date

Course Policies and Syllabus

Abilene Christian University
Department of Mathematics

The mission of Abilene Christian University is to educate students for Christian service and leadership throughout the world.

The mission of the College of Arts and Sciences is to educate students for worldwide Christian service and leadership through programs of study and other learning experiences that blend a liberal arts education with professional and career education.

The mission of the Department of Mathematics is to educate students to be quantitative and analytic thinkers in preparation for Christian service and leadership throughout the world.

Course ID and Section: MATH 497-01
Course Title: Mathematics Capstone
Course Time and Room: MW 2:00–2:50 p.m., Foster Science Building, Room 239 (FSB 239)
Semester: Fall 2011 (August 29–December 16)
Course Credit: Two semester hours
Final Exam: Friday, December 16, noon–1:45 p.m.

Contact Information

Instructor: Dr. David Hendricks
Associate Professor of Mathematics
Email: david.hendricks@acu.edu
Office: Foster Science Building, Room 215A (FSB 215A)
Office Telephone: 325-674-2174
Office Hours: Tuesday 3:00–5:00 p.m.
Wednesday 3:00–5:00 p.m.
Thursday 3:00–5:00 p.m.
Friday 2:00–3:00 p.m.
Other hours by appointment

Course Resources

Online Resources: Blackboard will be used to manage course documents. The syllabus, class notes, assignments, due dates, etc. will be posted on the MATH 497 course page.

Help In the Course: It is important for you to seek immediate help when you feel that you need it. Do not assume that your problems or confusion will go away on its own. Often a delay causes more problems, more confusion, more frustration, and a much lower grade. I expect you to be confused and frustrated at times during the semester. This is normal. I also expect you to come in and ask questions. If you will come to my office and work with me, we can get you through the course successfully. Possible sources of help are the following:

- Come to my office or send me email. Ask for help. I can and will help you if you ask.
- Ask others in class. Work on problems with them. Many times this is the best way to learn.

Writing Assistance: The Writing Center at ACU, located in the Learning Commons, is a facility where any writer can come discuss writing tasks of any kind. Our tutors are experienced and trained writers, mostly graduate students from ACU's English department, who will consult with you regarding any writing task, at any stage of the writing process. Call 674-4833 for more information. All of our services are free.

Course Information

Catalog Description: Students explore the historical development of some of the basic concepts of modern mathematics; examine cultural, political, and religious issues; and explore important problems on which mathematicians have focused throughout history. Includes research and presentation of findings in both written and oral form. A writing intensive course.

Prerequisite: MATH 397 (Mathematics Seminar).

Writing Intensive: This course is the writing intensive course for MASC, MATH, MATM, and MATT majors.

Course Goal and Competencies: At the end of this course, the student will be able to research and prepare a mathematics paper and presentation and to describe how mathematics influenced and was influenced by society.

The competencies for the course include

Competencies	Measurement Instrument	Measurement Standard
The student will be able to demonstrate competence in the independent reading of mathematics	senior project literature search	- locates appropriate references for senior project paper - describes the references and explains their relationship to senior project topic - uses appropriate terminology and notation
The student will be able to organize and deliver a mathematical presentation	senior project presentation	presentation rubric
The student will be able to review, structure, and apply mathematical knowledge	senior project outline, symbolism writing assignment	writing assessment rubric

Competencies	Measurement Instrument	Measurement Standard
The student will be able to apply the history of mathematics to explain how mathematics progresses from concrete applications to abstract generalizations	senior project paper and presentation	• writes a complete background to the topic in the introduction to the senior project paper • presents appropriate examples and special cases • describes historical context of problem
The student will be able to characterize and discuss his/her personal journey in the study of mathematics and articulate how their values, philosophies and learning processes will impact their contribution to their own future and to society.	reflective writing assignment	• presents confidently • applies self-stated values consistently • is able to identify and express frustration • appreciates personal learning process • demonstrates independence of thought • demonstrates appreciation for diversity

Integration of Faith and Learning: Mathematics is the language of the universe. Through mathematics one can gain insight to the Creator by studying the design of His creation. The quest for understanding is based on discovering the principles that God established in Genesis 1–2.

Mathematics is also a human endeavor. It is a record of humanity's attempt to understand and discover and the basis of our advancement from cave dwellers to explorers of space.

Evaluation Methods: Measurement of competencies will be conducted through exams, daily work, written assignments, and oral presentations.

Course Format: This is a seminar course. This means that most class activities will be discussion oriented. However, there will be times when lecture and group activities will be used.

Academic Integrity and Intellectual Honesty

Personal Philosophy: Because the majority of students are honest, I will take measures to protect the honest students from the few students who would attempt to obtain grades by fraudulent or deceptive means. The efforts to prevent cheating in this class are made out of respect and obligation to the honest students. Some examples of academic dishonesty are (a) giving or receiving answers during an exam, test, or quiz; (b) viewing the answers of a nearby classmate

during an exam, test, or quiz; (c) having unauthorized notes/practice work available during an exam, test, or quiz; (d) obtaining exam, test, or quiz questions before an exam, test, or quiz is given; (e) programming your calculator with formulas and/or notes to use during an exam, test, or quiz; and (f) submitting the work of others as your own.

Calculators: Calculator sharing is not permitted on quizzes or tests. Also because calculators can be programmed with formulas, notes, examples, etc., you may be asked to reset your calculator before quizzes and/or tests. The resetting process must erase all individually entered information. If you have programs or data you want saved, you should backup your calculator to another calculator or to a computer.

Collaboration: Although I encourage you to talk with each other, get ideas from each other, and help each other, all work you submit must be your own. *Any work that is substantially identical will be considered to be an act of academic dishonesty.*

University Policy: Violations of academic integrity and other forms of cheating, as defined in the university Academic Integrity Policy, involve the intention to deceive or misrepresent. They, therefore, are a form of lying and represent actions contrary to the behavioral norms that flow from the nature of God. Alleged violations will be addressed as described in the policy. While the university enforces the policy, the most powerful motive for integrity and truthfulness comes from one's desire to imitate God in her/his life. Every member of the faculty, staff, and student body is responsible for protecting the integrity of learning, scholarship, and research. The full policy is available for review at the campus life website (<http://www.acu.edu/campusoffices/campuslife>) or the provost's office website (<http://www.acu.edu/campusoffices/provost>) and the following offices: college deans, dean of campus life, director of student judicial affairs, director of residential life education, and academic departments.

Students found guilty of an act of academic dishonesty in this course will be subject to the following actions in this course:

First occurrence	A first violation in a class will result in a zero on the assignment, quiz, test, or exam. No make-up or retake will be allowed. Appropriate offices will be notified.
Second occurrence	A second violation in a class will result in an F in the course and a recommendation of immediate suspension from the university.

Students found guilty of an act of academic dishonesty may be subject to other disciplinary actions by the university. See the policy for specific details.

Grade Information

Grade Categories and Grading Scale: The grade categories and points that will be used to calculate your course average and the grading scale that will be used to calculate your course grade are listed below:

The total points earned will be scaled based on the following formula

$$\text{Scaled Points Earned} = (1 - 0.05n) \times (\text{Points Earned})$$

where n is the number of deadlines missed during the semester. (Fractional points will always be rounded up using the ceiling function.)

Grade Categories	Points
Final Exam	100
Writing Assignments	200
Senior Project	700

Scaled Points Earned	Course Grade
900–1000	A
800–899	B
700–799	C
600–699	D
0–599	F

Final Exam: The final exam will consist of questions concerning the presentations given by students. The final exam will be given at the time schedule by the university (Friday, December 16, noon–1:45 p.m.). I am prohibited from changing the time or date. Make your end-of-semester plans accordingly.

Writing Assignments: There will be several relatively short writing assignments during the semester. Writing assignments will be worth 20% (200 points) of your course grade.

SYMBOLISM I and II (30 points): You will be required to submit two short written assignments (one or two paragraphs each) that explains the development of a specific mathematical notation, symbolism, or term. Each symbolism paper will be worth 15 points.

For example, the first person to use π to represent the ratio of the circumference to the diameter (3.14159...) was William Jones (1675–1749) in 1706 in *Synopsis Palmariorum Mathesios*. It is believed he used the Greek letter pi because it is the first letter in perimetron (= perimeter).

RESUMÉ (50 points): You will be required to locate a current job posting in a field related to your major that you would like to have. You will need to submit a copy of the job posting, your resumé, and a cover letter.

EXPLANATION PAPER (50 points): You will be required to write a two page paper that explains a mathematical skill or technique to a person who has a limited background in mathematics.

REFLECTIVE WRITING ASSIGNMENT (70 points): You will be required to write a three page essay on your Christian perspective of mathematics. The purpose of this assignment is to have you reflect on your spiritual, personal, and academic growth while at ACU.

Senior Project: The major component of your course grade is the senior project. The senior project will be worth 70% (700 points) of your course grade.

FACULTY MENTOR: During the first week of class, you will select a faculty member from the list below with whom you will work in preparing your paper and presentation. This faculty mentor will assist you in selecting your topic (or honing your topic if you already have one), meet with you regularly to review your progress and give feedback on your paper.

Dr. Bolin
Dr. Ehrke

Dr. Hendricks
Dr. Holland

Dr. Karabegov
Dr. Riggs

Dr. Williams
Dr. Yarema

You are required to meet with your faculty mentor at least four times over the first 12 weeks of the semester. I will receive a brief report from your faculty mentor on each meeting. You should meet with your mentor at least once in each of the following three-week periods:

Period	Dates
1st three weeks	Aug 29 to Sep 16
2nd three weeks	Sep 19 to Oct 7
3rd three weeks	Oct 10 to Oct 28
4th three weeks	Oct 31 to Nov 18

It is your responsibility to schedule timely meetings, keep your appointment, and be prepared to discuss your project at your meetings. Failure to do so will adversely affect your course grade. Each period for which a meeting is not scheduled or the meeting is not productive will count as a missed deadline.

You should also consider having your faculty mentor review your senior project presentation before you give it and your senior project paper before you submit it. (This is not a course requirement but is highly recommended.)

PROOF OF CONCEPT PAPER/PRESENTATION (50 points): The student will prepare a short paper and presentation on a topic of interest that is connected to the mathematics curriculum. The paper must contain between 400 and 600 words. The student should make an argument for why this would be a good senior project topic. Questions which need to be answered include:

- Is this topic relevant?
- Is this topic interesting?
- Does this topic contain sufficient depth of mathematics?

The student must also prepare a 3–5 minute presentation defending the topic. The student should strive to do the following:

- Stay within the timeframe.
- Make a strong case for the relevance, interest, and depth of the proposed project.
- Utilize professional presentation tools.

LITERATURE, BACKGROUND, AND HISTORY PRESENTATION (50 points): The student will prepare a 3–5 minute presentation that provides the listeners information concerning the relevant literature associated to their project, the history behind the project, and any background information that is pertinent to the project. Hopefully, this will be molded into the beginning of your senior presentation and at the same time, provide you with adequate references for your writing.

OUTLINE, ABSTRACT, AND BACKGROUND (50 points): The student will turn in an outline of the paper. The outline will include the following items:

- An abstract.
- An outline of the major divisions of the paper.
- A complete introduction including the elements covered in the literature, history, and background.

This assignment if done correctly, will provide the student with an adequate framework, as well as the first few pages of their paper.

WRITTEN PAPER (300 points): The written paper is be between 10 and 15 pages in length. The paper should have an abstract; a clear introduction to your topic; a body that includes sufficient definitions, theorems, tables, formulas, etc. that make your paper understandable; and a strong conclusion. You should also include appropriate references in the body and a complete bibliography.

Papers will have at least two faculty graders: the instructor of the course and another faculty member (not your mentor) in the Department of Mathematics. Papers will be graded using the Writing Assessment Rubric.

Papers submitted after the deadline will not be given to the second faculty member during finals week. Instead, a grade of I will be assigned to the student for the semester and the maximum score possible on the paper drops to 149 points. At the start of the spring semester, the paper will be given to the second faculty member to be graded.

SENIOR PROJECT PRESENTATION (250 points): The presentation will not contain all the information in your paper. The presentation should be 20–25 minutes in length and at a level that allows your peers to follow along. The presentation will be given to the department during the last two weeks of the semester. Presentations will be graded by all faculty attending your presentation using the Presentation Assessment Rubric.

Date	Number of Presentations
Wednesday, November 30	2
Friday, December 2	4
Monday, December 5	2
Wednesday, December 7	2
Friday, December 9	3

Late Work and Extra Credit: No late work will be accepted. No work will be accepted for extra credit.

Withdrawal from the Course: If you withdraw from the course, your grade is W. If I withdraw you from the course, your grade is W or WF depending on your grade at the time I withdraw you. The last day you can withdraw from a Fall 2011 class is Friday, November 18. Remember that your advisor must sign your Withdrawal From Class form.

Attendance and Classroom Management

Attendance: Missing class has a detrimental effect on your learning. The instructor considers class attendance to be a requirement, however, attendance is the responsibility of the student. Attendance will be recorded at each class meeting.

The student is responsible for providing satisfactory evidence to the instructor to substantiate the reason for an absence. The instructor is under no obligation to provide an opportunity for you to make up work missed because of an unexcused absence.

Among the reasons absences are considered excused are the following:

1. Participation in a university sponsored activity. If you will miss class for a university sponsored activity, I must have seven (7) days advanced written notice and you must make arrangements with me before you leave. The sponsor of the activity is responsible for giving you the appropriately signed university form on time. If I do not have the Advanced Approval for Absence form seven days in advance, the absence will be considered an unexcused absence.
2. Death or major illness in your immediate family. Immediate family includes parents, siblings, grandparents, spouse, child, and others as deemed appropriate by the instructor.
3. Illness of a dependent family member.
4. Injury or illness that is too severe or contagious for you to attend class.
 - Injury or illness of three or more consecutive class days. For injury or illness that requires you to be absent from classes for three consecutive days, you should obtain a medical confirmation note from your medical provider. A health care professional may provide written confirmation only if he/she is involved in your medical care. The medical confirmation note must contain the date and time of the illness and medical professionals confirmation of needed absence.
 - Injury or illness less than three consecutive class days. An *Explanatory Statement for Absence from Class* form must be completed and submitted to the instructor. This form is available online at <http://math.acu.edu/hendricks> . This form must be submitted within one week of the last date of the absence.
 - An absence for a non-acute medical service does not constitute an excused absence.
5. Mandatory admission interviews for professional or graduate school which cannot be rescheduled.

You may be excused from attending class for a reason stated above or a reason deemed appropriate by your instructor. To be excused (for an absence other than a university approved absence), you must notify the instructor in writing (acknowledged email message is acceptable) prior to the date of absence if such notification is feasible. In cases where advance notification is not feasible (for example, an accident or emergency) you must provide written notification by the beginning of next class meeting after the absence. This notification should include an explanation of why notice could not be sent prior to the class.

If requested by the instructor, you must provide additional documentation substantiating the reason for the absence that is satisfactory to the instructor within one week of the last date of the absence.

If an absence is excused and you missed a test or exam, the instructor will provide you with an opportunity to make up the test to be completed within one week from the last day of the absence. If an absence is excused and you missed a daily work assignment, then the missed grade will be the maximum of the previous daily work assignment grade and the next daily work assignment grade.

You are allowed to miss a maximum of 20% of the class meetings during the semester for university approved absences. After 20%, the absences will be considered unexcused. If you have excessive absences (more than 20%), you may be dropped from the course with a grade of W or WF.

In any absence, you are responsible for all material covered and are expected to be prepared for the next class meeting.

Electronic Devices: I consider the time that we share in the classroom to be extremely valuable. Therefore, to minimize the disruptions and distractions that detract from and interrupt the learning environment, mobile phones, pagers, watch alarms, and other electronic devices should be disabled or turned off and kept in your book bag during class. If such a device is used, rings, or makes a noise or if you take a call or make a call, you will be asked to leave, will be counted absent (unexcused) for the class session, and will be subject to a grade penalty. If there is an urgent or emergency situation or there are extenuating circumstances and you must have a mobile phone or pager on during class, then you must inform me before class begins and (if possible) use silent notification.

Disruptive Behavior: If your actions disrupt the class, you will be notified by the instructor and possibly asked to leave and will be counted as absent. Any student that has been notified by an instructor and/or removed from class for disruptive behavior a second time will be dropped from the course. The grade will be W or WF depending on the student's current grade in the course.

Proper Dress: Please follow the university dress code when at ACU and in particular, this class. Inappropriate clothing may be treated as disruptive behavior.

Accommodations for Disabilities Abilene Christian University is dedicated to removing barriers and opening access for students with disabilities in compliance with ADA and Section 504 of the Rehabilitation Act. The Alpha Scholars Program facilitates disability accommodations in cooperation with instructors. In order to receive accommodations, you must be registered with Alpha Scholars Program, and you must complete a specific request for each class in which you need accommodations. If you have a documented disability and wish to discuss academic accommodations, please call our office directly at (325) 674-2667.

Dates and Schedule

Due Dates and Other Important Dates:

August 29, Monday	First day of class
September 5, Monday	Faculty mentor selection due, 2 p.m.
September 7, Wednesday	Resumé assignment due, 2 p.m.
September 19, Monday	Proof of concept paper due, 2 p.m.
October 3, Monday	Literature, background, history presentation due, 2 p.m.
October 17, Monday	Outline, abstract, and background due, 2 p.m.
October 21, Friday	Fall Break
October 24, Monday	Reflective writing assignment due, 2 p.m.
November 7, Monday	Explanation paper due
November 14, Monday	First draft of paper due, 2 p.m.
November 18, Friday	Last day to withdraw from a Fall 2011 class
December 1, Thursday	Senior project paper due, 4 p.m.
December 16, Friday	Final Exam, noon–1:45 p.m.

Daily Schedule: The tentative daily schedule for the semester is given below:

Week 1 Aug 29 Introduction to course Aug 31 Consultation day	Week 2 Sep 5 Sep 7
Week 3 Sep 12 Symbolism I presentations Sep 14 Consultation day	Week 4 Sep 19 Proof of concept presentations Sep 21 Proof of concept presentations
Week 5 Sep 26 Sep 28 Consultation Day	Week 6 Oct 3 Literature, history, background presentations Oct 5 Literature, history, background presentations
Week 7 Oct 10 Oct 12 Consultation day	Week 8 Oct 17 Oct 19
Week 9 Oct 24 Oct 26 Consultation day	Week 10 Oct 31 Practice presentations in-class Nov 2 Practice presentations in-class
Week 11 Nov 7 Nov 9 Consultation day	Week 12 Nov 14 Nov 16 Consultation day
Week 13 Nov 21 Symbolism II presentations Nov 23 Thanksgiving Holiday (no class)	Week 14 Nov 28 Nov 30 Senior Presentations Dec 2 Senior Presentations
Week 15 Dec 5 Senior Presentations Dec 7 Senior Presentations Dec 9 Senior Presentations	Finals Week Dec 12 — Dec 14 — Dec 16 Final Exam, noon–1:45 p.m.