Abilene Approval Chart for Curriculum Changes

A = Approve I = Information Item R = Respond In Writing

Course Number: MATH 371 - Combinatorics and Graph Theory or Degree Plan(s):

MATH 371 - Combinatorics and Graph Theory is a more foundational and modern course than MATH 334 which it is replacing. We are excited to offer this course to our students to better prepare them for modern topics in computational and numerical analysis that they will likely be exposed to in other disciplines or graduate school. We do not currently have any courses which touch on graph theory so this would be a welcome addition to our curriculum. MATH 334 will be closed and MATH 371 will be taught in its place - Fall Odd Years.

	Campus-Level Academic Review[1]	Science/ Technology	Education	Fine Arts/ Humanities
	Change to a Course Include signatures from all chairs/program directors for cross-listed courses.[1]			
1.	Title (description unchanged)	A	A	A	I	I	I
2.	Description (not affecting content)	A	A	A	I	I	I
3.	Course term(s)	A	I	A	I	I	I
4.	Content (change of course outcomes)	A	A	A	I	I	A
5.	Number of credit hours	A	A	A	A	A	A
6.	Course number within the hundred	A	A	I	I	I	I
7.	Course number beyond the hundred	A	A	A	A	A	A
8.	Prerequisites	A	A	A	I	I	I
9.	Course restriction (e.g., majors only, junior standing)	A	A	A	A	A	A
10.	Level change (U to G *or* G to U)	A	A	A	A	A	A
11.	Cross list course	A	A	A	A	A	A
12.	Department of record	A	A	A	A	A	A
13.	Open or close a course	A	A	A	A	A	A
	Change to a Degree Plan						
14.	Educational Program — Revise	A	A	A	A	A	A
15.	Educational Program — Adopt/revise admission requirements	A	A	A	A	A	A
16.	GPA — Revise program-required GPA	A	A	A	A	A	A
17.	Minor — Revise	A	A	A	A	A	A

	Full Review									
	Change to Catalog Information (for Campus)									
18.	General requirements for Bachelor's and Associate Degrees	–	–	–	–	A	A	A	A	I
19.	Policies governing academic probation and suspension	–	–	–	–	A	A	A	A	I
20.	Requirements for graduating with honors	–	–	–	–	A	A	A	A	I
	Change to a Degree Plan									
21.	Educational Program — Add or Discontinue[2] [3]	A	A	A	A	A	A	A	A	I
22.	Educational Program — Discontinue (Provost-proposed)	R	–	R	A	A	A	A	A	I
23.	Minor — Add or Discontinue	A	A	A	A	A	A	–	A	I
24.	Minor — Discontinue (Provost-proposed)	R	–	R	A	A	A	–	A	I
25.	Degree — Add or Discontinue	A	A	A	A	A	A	A	A	I
26.	Degree — Discontinue (Provost-proposed)	R	–	R	A	A	A	A	A	I

	Change to General Education Requirements for Undergraduates (System)									
27.	Change course outcomes of an included course	A	A	A	A	A	A	–	A	I
28.	Add or drop a required course from the General Education Requirements	A	–	A	–	A	A	A	A	I
29.	Add or drop a course from a menu within the General Education Requirements	A	–	A	–	A	A	–	A	I
30.	Comprehensive revision of General Education Requirements	–	–	–	–	A	A	A	A	I

Notes

[2] Any change to a cross-listed course requires the signature of both department chairs or program directors overseeing the course to ensure that the courses stay in sync. This includes courses taught at other campuses (e.g. BIBL 101 and BIBO 101).

[3] For undergraduate majors, a minimum of 30 hours is required. These programs must have a minimum of 6 elective hours, unless the requirements of external accrediting bodies make it impossible. Master's programs must include a minimum of 30 hours, and doctoral programs must include a minimum of 30 hours beyond the master's.

[4] When a department/school or dean proposes closing a program, approval routing follows the typical process beginning with the department/school. An administrative proposal by the provost or senior vice president for academic affairs would follow the "provost-proposed" routing on the chart.

Department/School(s)

John Ehrke 01/24/2025

Chair Signature Date

Chair/Program Director Signature Date

College Academic Council(s)

Charla S Mountcastle 2/3/2025

Chair Signature Date

Chair Signature Date

Dean(s)

Charla S Mountcastle 2/3/2025

Signature Date

Signature Date

Teacher Education Council

Signature Date

Campus Academic Council:
Abilene Undergraduate or Abilene Graduate

Signature Date

Provost

Signature Date

University General Education Council

Signature Date

University Faculty

Abilene Faculty Senate Chair signature	Date
Dallas Faculty Council Chair signature	Date

Senior Vice President for Academic Affairs

Signature	Date

President

Signature	Date

Abilene New Course Application

You may delete the preceding instructional pages before submitting an application.

Course ID (*Subject Code and Number)*	MATH 371

1. Systems and Catalog Information Complete each item.

A	Course Developer	Jordan Broussard
B	Course Instructor	Jordan Broussard
C	Course Title	Combinatorics and Graph Theory
D	Course Abbreviation for Banner if title is more than 30 characters	
E		OSE - Onstead Science and Engineering
F		MATH - Mathematics
G		3
G1		3
G2		0
H	Is the course for a fixed or variable number of credit hours?	Fixed If variable, explain rationale:
I	Is the course repeatable for additional credit?	No
J	Maximum total number of credit hours a student can earn for this course	3
K		Lecture (LEC) See Schedule Type definitions in the Reference section.

L		3
M		Standard
N	Maximum Enrollment	24
O	**Catalog Description** (50 words or less)	Introduction to combinatorial theory, including graph theory. Topics include counting methods for arrangements and selections, generating functions, recurrence relations, inclusion-exclusion principle, graph isomorphism, directed graphs, planarity, graph coloring, Eulerian circuits, Hamiltonian cycles, and trees.
P	List any prerequisites (course/s, test scores, class standing, major, etc.)	MATH 227
Q	List any corequisites (these *must* be taken at the same time; note that a single requirement cannot be both a prerequisite *and* a corequisite)	
R	If the course is cross-listed, specify the subject code and course number of the other course	
S	Does this course require any additional student course fees?	No If yes, attach a completed course fee form.
T1	Will the course be offered in **fall** terms?	Yes, odd years
T2	Will the course be offered in **spring** terms?	No
T3	Will the course be offered in **summer** terms?	No

U	First semester this course will be offered under new Course ID. *May not be earlier than the coming fall semester.*	Fall 2025
V	Is this course required for a program(s)?	No If yes, attach a completed curriculum proposal to change the program(s).
W	Should the addition of this course be retroactively applied to the degree plan it supports? *This is rare, and rationale should explain compelling extenuating circumstances.*	No If yes, provide rationale:
X	Has this course been offered as a Special Topics course? *New courses are not required to be taught as Special Topics courses prior to approval.*	No If yes, provide course ID, term, and enrollment:
Y	List any courses in which the content overlaps the proposed course. (Course ID and Name). *Attach a statement from the instructor/dept chair of the existing course justifying the new offering.*	

2. Curriculum

A. Explain any effects of this course on any degree plans. If the addition of the course alters program requirements, submit a separate Approval Chart for Curriculum Change to update the program.

This course is replacing MATH 334: Linear Programming in our degree plans. As MATH 334 was not a required course in any of our degree plans the impact on degree plans is minimal. Where 334 was mentioned in menus we will replace it with this course.

B. Justify the addition of this course to the current curriculum, explaining the gap it meets.

MATH 371 - Combinatorics and Graph Theory is a more foundational and modern course than MATH 334 which it is replacing. We are excited to offer this course to our students to better prepare them for modern topics in computational and numerical analysis that they will likely be exposed to in other disciplines or graduate school. We do not currently have any courses which touch on graph theory so this would be a welcome addition to our curriculum. MATH 334 will be moving to On Demand status and MATH 371 will be taught in its place - Fall Odd Years.

3. Course Design

A. Audience and Course Goal

1. Describe the intended audience, including prerequisite skills.

   Intended for junior or senior students in mathematics who need an advanced selection for their degree plans. Prerequisites include Calculus II and Discrete Mathematics. Students should have some background into basic counting and probability prior to the course. Knowledge of proof techniques is important as well.

2. State the overarching course goal(s) in performance terms.

   By the end of the course, students will be able to

   - Understand and prove basic properties of graphs, and solve problems relating to these.
   - Model a variety of situations using a graph.
   - Prove or disprove a variety of properties of graphs including isomorphism, planarity, and the existence of Euler circuits and Hamilton cycles.
   - Determine the chromatic number of a graph.
   - Understand and prove basic properties of trees.
   - Use a depth-first search and a breadth-first search on a graph.
   - Understand the basics of the traveling salesman problem.
   - Use network algorithms such as Dijkstra's, Prim's, and Kruskal's.
   - Solve problems using the pigeonhole principle.
   - Solve counting problems using a wide variety of techniques including permutations, combinations, generating functions, recurrence relations, and inclusion-exclusion
   - Write a proof using a combinatorial argument.

B. Student Learning Outcomes and Measurements

	Student Learning Outcome	**Measurement Instrument**
1	Understand and prove basic properties of graphs, and solve problems related to graphs.	Homework Exams
2	Prove or disprove a variety of properties of graphs including isomorphism, planarity, and the existence of Euler circuits and Hamilton cycles.	Homework Exams
3	Implement graph searches and network algorithms like Djikstra's, Prim's and Kruskal's methods.	Homework Exams

4	Solve counting problems using a wide variety of techniques including permutations, combinations, generating functions, recurrence relations, and inclusion-exclusion.	Homework Exams
5	Prove results using the methods of the course. That is, write a proof using a combinatorial argument.	Homework Exams

C. **Text and Resources**

Give the full publication information of the textbook/s and other required resources and outside readings. For **combined undergraduate/graduate** courses, make two lists:

A. full publication information; label **Undergraduate**.

Alan Tucker. (2006) Applied Combinatorics. 6th Edition, John Wiley & Sons, Inc., USA.

B. full publication information; label **Graduate**.

4. Supporting Documentation

Required of all applications	
1	**Approval Chart for Curriculum Changes**
2	**Syllabus** — **Attach** the syllabus for the course based upon the anticipated first-semester offering.
4	**Library** — Submit new course application and syllabus to the Library dean's office. **Attach** the Library's memo.
Attach if applicable	
5	**Content Overlap** — Include one document for each course you listed in Section 1Y. **Attach** statement from instructor/dept chair of existing course justifying the new offering.
6	**Departmental Resources** — List the resources that support the course and are available only through the department, if applicable. **Attach** the list of the holdings and the location(s).

7	**Resources** — List resources (other than library or departmental resources) that are needed to support this course (computers, lab equipment, other technology, etc.). **Attach** a complete list of all items and indicate possible sources or estimated cost of each. List the sources of any needed funds.
8	**Expenses** — List additional expenses needed to implement this course (full-time or part-time faculty, graduate or lab assistants, student employees, travel, special student costs, room renovation, storage facility, etc.). **Attach** a complete list of all items, the estimated cost of each and the source of the funds.
9	**Justification** — **Attach** any documents to which you refer in Section 2B.

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 Onstead College of Science and Engineering is to explore and understand God's creation in the natural world and apply the acquired knowledge and principles to address its issues and challenges.

The mission of the Department of Mathematics is to equip students with mathematical reasoning, communication, and problem-solving skills for effective quantitative and analytical reasoning in preparation for Christian service and leadership throughout the world.

Course ID and Section: MATH 371-01

Course Title: Combinatorics and Graph Theory

Course Time/Room: TBD

Course Credit: Three semester hours

Course Final Exam: TBD

Semester: Fall 2025

Instructor: Dr. Jordan Broussard

Office: Onstead Science Center, Room 169B (OSC 169B)

Office Hours: TBD. Stop by or email me to make an appointment outside of these hours. I am always happy to help!

Email: jordan.broussard@acu.edu

Office Phone: 325-674-4865

Time Commitment: For each hour of lecture equivalent, students should expect to have a minimum of three hours of work outside class.

Prerequisites: MATH 186 and a minimum grade of C in MATH 227

Course Material: The following are required.

Applied Combinatorics by Alan Tucker
(6^{th} edition)
Publisher: Wiley
ISBN: 978-0-470-45838-9

Stapler. Your submitted homework assignments MUST be stapled if you use more than one page. You will lose points if you do not staple.

Calculator: A TI-83 or TI-84 calculator would be handy but is not required.

Communication: Students should check their ACU email and Canvas every day for announcements, homework, schedule changes, etc. If you need to reach me outside of class and office hours, the best way to contact me is via email, which I regularly check during weekday daytime hours.

Course Description: Introduction to combinatorial theory, including graph theory. Topics include counting methods for arrangements and selections, generating functions, recurrence relations, inclusion-exclusion principle, graph isomorphism, directed graphs, planarity, graph coloring, Eulerian circuits, Hamiltonian cycles, and trees.

Topics:

Covers the following topics in Combinatorics:

- Pigeonhole Principle
- Permutations, combinations, binomial coefficients
- Generating functions, recurrence relations
- Inclusion-exclusion

Covers the following topics in Graph Theory:

- Graph models, isomorphism, planarity
- Paths, circuits, graph coloring
- Trees, searching, networks
- Other topics as time allows

Course Objectives: *In lower division mathematics courses, the emphasis is on computational problem-solving using derived procedures given in the text.* **This course, however, focuses on the concepts as much as computations.** The simple numerical exercises that begin each section are designed to make sure you understand the basic procedures while the remainder of each exercise set contains problems requiring written justification or short proofs. To master the concepts in this course, read and re-read the text, learn the definitions and theorems in each section, and learn to write good solutions to your homework exercises.

Student Learning Outcomes: By the end of the course, students will be able to

- Understand and prove basic properties of graphs, and solve problems relating to these
- Model a variety of situations using a graph
- Prove or disprove a variety of properties of graphs including isomorphism, planarity, and existence of Euler circuits and Hamilton cycles
- Determine the chromatic number of a graph
- Understand and prove basic properties of trees
- Use a depth-first search and a breadth-first search on a graph
- Understand the basics of the traveling salesman problem
- Use network algorithms such as Dijkstra's, Prim's, and Kruskal's
- Solve problems using the pigeonhole principle
- Solve counting problems using a wide variety of techniques including permutations, combinations, generating functions, recurrence relations, and inclusion-exclusion
- Write a proof using a combinatorial argument

Grading: Your overall grade in this course is based on the following:

Participation and Homework	35%
Exams	65%
Total	100%

Grade Scale: Grades will be assigned according to the standard scale which is given below.

Percentage	Letter
90-100%	A
80-89%	B
70-79%	C
60-69%	D
0-59%	F

Note that final course averages will be rounded to the nearest integer. For example, 89.5 will round to 90, but 89.49 will round down to 89.

Conduct: Please come to class prepared and ready to learn every class period except when ill or on a university sponsored activity (sports, music, etc). If you are absent, please get the notes from another student in the class. Be willing to ask questions, be interested and involved in learning the material, and respect colleagues and instructor input. Carry on conversations about topics other than math outside of class. When in class, all discussions will pertain to class topics. Turn off non-essential electronic devices (laptops, cellphones, mp3 players, tablets, etc). Phones should be silenced with no texting in class. If there is an extenuating circumstance, please come talk with me and we will come up with an arrangement that works for everyone. Be prepared to participate in activities done in class. This class will include a variety of in class group assignments and discussions.

To make the classroom a safe place where learning can take place and understanding that getting an answer incorrect is part of the learning process and is not a bad thing, we want to be a community of courage, assume positive intent on the behalf of others, be genuinely curious – this is the best way to overcome fear, and arrive prepared with the intent to learn.

In return, you can expect me to come to class prepared and be willing to answer your questions. I will be available during office hours and also at other times by appointment. I will be interested in your learning the material and respect student ideas and input. I will do my best to be organized, be fair in assessment, and listen to your concerns.

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 referred to the Student Life office.

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

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.

There are only two types of absences in this course: a university approved absence and other types of absence.

University Approved Absence. Academic learning and development of leadership take place in and out of the formal academic setting. A student who is required to be absent from a class to participate in a university activity approved by the academic administration will not be penalized by professors for missing class provided that the procedures noted on the Advance Approval for Absence form are followed.

However, the student should not be permitted to participate if he or she has absences of more than 20% of the class meetings. These include absences approved under this policy as well as other absences. In the event that an athletic team earns or is invited to participate in any NCAA postseason activity, participants are eligible for additional excused absences.

Sponsors are responsible for securing approval of university-sponsored trips using the official university approval forms. The forms should be completed in time for students to give them to their teachers at least seven days before the absence. Sponsors are responsible for student conduct. Each student is responsible for notifying his or her teachers in advance of the reason for absence.

Other Types of Absence. Other types of absences is an absence that is not a university approved absence. Examples of this type of absence include injury or illness that is too severe or contagious for you to attend class, death or major illness in your immediate family, illness of a dependent family member, admission interviews for professional or graduate school, skipping class, and having an appointment or meeting during class.

Please do not attend class if you are sick and may be contagious.

In-class activities and note cards cannot be made up for non-university-approved absences.

Participation: Attendance is expected, and will be taken daily. If you come very late or leave in the middle of class, that will count as an absence. If you will be missing class for an official ACU-approved absence, please notify me in advance so your absence may be excused. All work due during your absence must be completed before you leave. Please do not come to class if you are seriously ill or contagious, but keep the instructor informed by email. Questions are encouraged. Please ask clarification whenever you are confused or need further information on

a particular topic presented in class. Do not denigrate (belittle) other students' questions or requests for clarification.

Exams: There will be 3 exams. Exam dates are given on the calendar and confirmation of exam dates will be provided in class and posted on Canvas approximately 1 week before the exam. If you will be missing an exam for an official ACU-approved absence, you must arrange with the instructor a time to make up the exam *b*efore your absence. **If you leave the classroom for any reason in the middle of an exam, your paper will be picked up and you will no longer be allowed to work on your exam.** Exams may have a take-home component. You may NOT discuss anything about the exam with your classmates, and you may not use resources beyond your notes, previous homework assignments, and your textbook. You may not use the internet for assistance on the take-home portion of an exam.

Homework: There will be daily written homework assignments, which is due by 10:50 am. You may either turn in your homework in class or slide it under my door by 10:50 am. However, if I find you working on homework during class, you will get a 0 on the assignment. The problems for each assignment will be posted on Canvas under the assignments tab. It is your responsibility to check Canvas to find out which problems were assigned. I expect neat, complete, correct solutions to the assigned problems. Some of the assigned homework exercises will have answers given in the back of the book, but they are not always reliable. For each homework assignment, 40% of the points will be given for completeness. The remaining 60% of the points will be allocated to a couple problems, which will be checked for accuracy and justification. You must show all your work to receive credit. Partial credit will be given, so if you can work part-way through a problem but you can't finish it you will be rewarded. However, it is always best to indicate where and possibly why you got stuck. This is much better than simply writing down an answer that does not follow from the work shown. I expect your final answer to be clearly marked (i.e. with a box around it) and I expect multiple-page assignments to be stapled.

You can expect to spend a **minimum** *of 3 hours* outside of class for each class period. Keep all assignments, projects, and exams that are handed back to you.

Late homework will **not** be accepted. To account for illness, family emergencies, and other absences, your two lowest homework scores will be dropped at the end of the semester. If you will be absent on the day the homework will be collected, you need to turn it in before the due date. Homework scanned and emailed to me will not be accepted – you must turn in the physical copy of the homework.

University Academic Integrity Statement: *ACU exists to educate students for Christian service and leadership throughout the world. As a Christian academic community, we are each responsible to hold each other accountable for behaviors consistent with the nature of God, to respect the community and to respect ourselves.*

- Academic integrity is demonstrated by behavior that honors the learning environment – regardless of setting, context, location, or modality.
- Academic dishonesty, or failure to practice academic integrity, negatively affects the learning environment and other members of the ACU community.
- Academic dishonesty includes – but is not limited to – plagiarism, collusion, cheating, fabrication, facilitating academic dishonesty, failure to contribute to a collaborative project, and sabotage.

- Academic dishonesty detracts from a student's personal learning which will affect her or his academic grade, standing in a course or program, and/or standing in the university.
- Academic dishonesty also has a chilling effect on the ACU community creating air of suspicion in the learning environment.

Rationale for Policy: The most powerful motive of integrity and truthfulness comes from one's desire to imitate God's nature in our lives. As a community of Christian students and scholars, we are each responsible to expect behaviors from each other consistent with the nature of God, to respect the community, and to respect ourselves.

Expectations of academic honesty and integrity extend to both university employees and students. Every member of the community is responsible for protecting the integrity of learning, scholarship, and research. Being responsible requires action against violations in spite of peer pressure, loyalty, or compassion. Individuals must take responsibility for their own conduct and discourage misconduct by others.

Definition of Academic Integrity: Academic integrity is defined as academic work completed as assigned for each class by the individual or group responsible for the work. Academic work includes but is not limited to reading assignments, homework assignments, assessments, examinations and tests, attendance at required out-of-class activities, written or oral presentations, and laboratory experiments and research.

Violations of academic integrity and other forms of cheating involve the intention to deceive or mislead or misrepresent and therefore, are a form a lying. Specific examples of violations of academic integrity in this course include, but are not limited to, the following:

- Submitting for credit, in whole or in part, the work of others.
- Receiving, giving, or using unauthorized aid on an examination, test, quiz, or assignment (e.g., texting).
- Viewing the answers of a nearby classmate during an examination, test, quiz, or assignment.
- Having inappropriate notes/practice work available during an examination, test, quiz, or assignment.
- Obtaining examination, test, or quiz questions before the examination, test, or quiz is given.
- Accessing printed copies or electronic copies of formulas and/or notes during an examination, test, quiz, or assignment without instructor approval.
- Failure to give credit to sources used in a work in an attempt to present the work as one's own.
- Submission of paper(s), project(s), or assignment(s), in whole or in part, obtained from any source, such as a friend, research service, or club paper file, as one's own.
- Allowing other members of a group to provide a disproportionate fraction of a required group project or activity.
- Claiming credit for an attendance or service activity without attending or performing the activity.
- Written or oral presentation of falsified materials and facts, including but not limited to the results of interviews, laboratory experiments, and field-based research.

Consequences of Breach: Violations of academic integrity may result in, but are not limited to, the following consequences:

- A first offense will result in a grade of 0 on the assignment in which the violation of academic integrity occurred.
- You will be permitted to remain in the class after the first offense of being found in violation of the academic integrity policy.
- A second violation in a class will result in an automatic grade of F in the course.
- All violations of academic integrity will be reported to Dean of the Onstead College of Science and Engineering and the Dean of Students in the Student Life Office.

Appeal Process: If you would like to appeal a decision, then please follow this link to the Office of the Provost to access the academic integrity policy to learn about how to file an appeal: `http://www.acu.edu/provost`.

Calculators and Other Electronic Devices: The sharing of calculators and other devices is not permitted without prior authorization. You may choose to have a calculator. The TI-83, TI-83 Plus, TI-84, TI-84 Plus, or TI-89 is strongly recommended. A calculator/device with a built-in computer algebra system or Internet connectivity is not allowed. You will not be permitted to ask how to do calculator operations during an exam, nor can you borrow a calculator from the instructor or anyone else in the class for use during an exam.

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 a violation of academic integrity.*

Generative AI Policy: While the uses of generative AI in industry and society are rapidly expanding, as a tool in academia the use of AI is fraught with potential pitfalls. As a mathematics student, using generative AI to solve any mathematics problem, and submit the work as your own, is strictly prohibited. The purpose of a mathematics course is to develop reasoning skills and problem-solving expertise that can only be properly developed by working through steps thoughtfully and rigorously. AI short circuits this process and devalues the learning outcomes of the course. Additionally, generative AI is notoriously prone to making mistakes on mathematical calculations.

Generative AI is also strictly prohibited from use in any writing or reflection assignment. You may use AI to help you edit your writing or give feedback on your writing, but it cannot be used to wholly generate your submission. For any other uses of AI please consult your instructor beforehand as the use of AI may qualify as an academic integrity violation.

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

Medical and Mental Care: ACU is committed to making the return to campus as safe as possible by providing students, faculty, and staff with resources to promote their health. We will continue working tirelessly to fine-tune our cleanliness and hygiene protocols. The ACU Medical and Counseling Care Center, along with Wildcat Care, are available to assist you with medical and mental health needs. Now more than ever, telehealth is an excellent resource, allowing you to stay healthy, talk with a provider 24/7 and greatly limit your exposure to COVID-19. Many medical concerns, such as a cold, sinus infection, rash, nausea, etc., can be discussed via telehealth. In addition to providing in-person care for your medical needs, the ACU Medical Clinic can provide COVID-19 testing with same-day results.

If you experience symptoms related to COVID-19 while on campus, please use our Coronavirus Screening Tool by visiting Wildcat Care and clicking the button at the top of the page. If you are experiencing emotional distress, you can discuss your feelings and concerns with a mental health provider through Wildcat Care as well.

ADA Compliance Statement: 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.

MATH 371-01: Combinatorics and Graph Theory **Fall 2025**

Tentative Schedule (subject to change)

Monday	Wednesday	Friday
8/25	**8/27**	**8/29**
1.1 Graph Models	1.1 Graph Models	1.2 Isomorphism
		HW 1 Due
9/1	**9/3**	**9/5**
Labor Day - No Class	1.3 Edge Counting	1.4 Planar Graphs
	HW 2 Due	HW 3 Due
9/8	**9/10**	**9/12**
Embedding Graphs on Surfaces	2.1 Euler Cycles	2.2 Hamilton Circuits
HW 4 Due	HW 5 Due	HW 6 Due
9/15	**9/17**	**9/19**
2.3 Graph Coloring	2.4 Coloring Theorems	Review
HW 7 Due	HW 8 Due	HW 9 Due
9/22	**9/24**	**9/26**
Exam 1: Ch 1	3.1 Properties of Trees	3.2 Search Trees & Spanning Trees
9/29	**10/1**	**10/3**
3.3 Traveling Salesman	4.1 Shortest Paths	4.2 Minimal Spanning Trees
HW 10 Due	HW 11 Due	HW 12 Due
10/6	**10/8**	**10/10**
A.4 The Pigeonhole Principle	5.1 Two Basic Counting Principles	5.2 Simple Arrangements & Selections
HW 13 Due	HW 14 Due	HW 15 Due
10/13	**10/15**	**10/17**
5.2 Simple Arrangements & Selections	5.3 Arrangements & Selections w/ Repetition	5.3 Arrangements & Selections w/ Repetition
HW 16 Due	HW 17 Due	HW 18 Due

Monday	Wednesday	Friday
10/20 5.4 Distributions HW 19 Due	**10/22** 5.5 Binomial Identities	**10/24** Fall Break - No Class
10/27 5.5 Binomial Identities HW 20 Due	**10/29** Review HW 21 Due	**10/31** **Exam 2: Ch 3-5**
11/3 6.1 Generating Function Models	**11/5** 6.2 Calculating Coefficients of Generating Functions	**11/7** 6.2 Calculating Coefficients of Generating Functions HW 22 Due
11/10 6.4 Exponential Generating Functions	**11/12** 7.1 Recurrence Relation Models HW 23 Due	**11/14** 7.1 Recurrence Relation Models HW 24 Due
11/17 7.3 Solution of Linear Recurrence Relations	**11/19** 7.5 Solutions with Generating Functions HW 25 Due	**11/21** 7.5 Solutions with Generating Functions HW 26 Due
11/24 8.1 Counting with Venn Diagrams	**11/26** Thanksgiving Break - No Class	**11/28** Thanksgiving Break - No Class
12/1 8.2 Inclusion-Exclusion Formula HW 27 Due	**12/3** 8.2 Inclusion-Exclusion Formula HW 28 Due	**12/5** Review HW 29 Due
5/13 Dead Day - No Class	**Exam 3: Ch 6 - 8** **TBD**	

ABILENE CHRISTIAN UNIVERSITY

LIBRARY

M E M O R A N D U M

DATE: January 28, 2025

TO: Dr. John Ehrke

FROM: Mark McCallon, Associate Dean for Library Services

RE: Course Application for MATH 371 – Combinatorics and Graph Theory

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After reviewing the course application and syllabus, the library can support the proposed course. Please contact your Librarian Liaison, Mark McCallon (mccallonm@acu.edu), if additional resources are needed to support the course. Thank you for letting the library review the course application.

February 3, 2025

Dr. John Ehrke
Associate Professor
Department of Mathematics
Onstead Science Center (OSC) 173C
(325) 674-2162
jee@acu.edu

Re: Combinatorics and Graph Theory (MATH 371)

Dear Dr. Ehrke,

Thank you for submitting Combinatorics and Graph Theory (MATH 371)
to us for review. I have reviewed it based on the ACU Syllabus Guidelines. I found the syllabus to meet all aspects of the checklist.
Please note that this letter is intended as a reference, which will be read by the department chair and council members, who may also have questions or comments of their own. If you have any questions, please feel free to let me know.

Please also let me know if we can help in the design and facilitation of this course.

Sincerely,

Dr. Scott E. Hamm,
Assistant Director, Adams Center