Term Information

Effective Term	Autumn 2022
Previous Value	*Autumn 2021*

Course Change Information

What change is being proposed? (If more than one, what changes are being proposed?)

Remove program specific course prerequisites and add New GE - Foundations - Math designation.

What is the rationale for the proposed change(s)?

To add course as a foundations course in the new GE

What are the programmatic implications of the proposed change(s)?

(e.g. program requirements to be added or removed, changes to be made in available resources, effect on other programs that use the course)?

None

Is approval of the request contingent upon the approval of other course or curricular program request? No

Is this a request to withdraw the course? No

General Information

Course Bulletin Listing/Subject Area	Mathematics
Fiscal Unit/Academic Org	Mathematics - D0671
College/Academic Group	Arts and Sciences
Level/Career	Undergraduate
Course Number/Catalog	1125
Course Title	Mathematics for Elementary Teachers I
Transcript Abbreviation	Math Elem Tchs 1
Course Description	Sequence 1125-1126 involves numbers, geometry, measurement, and mathematical reasoning, for prospective elementary school teachers.
Semester Credit Hours/Units	Fixed: 5

Offering Information

Length Of Course	14 Week, 12 Week
Flexibly Scheduled Course	Never
Does any section of this course have a distance education component?	No
Grading Basis	Letter Grade
Repeatable	No
Course Components	Lecture, Recitation
Grade Roster Component	Lecture
Credit Available by Exam	No
Admission Condition Course	No
Off Campus	Never
Campus of Offering	Columbus, Lima, Mansfield, Marion, Newark, Wooster
Previous Value	*Columbus, Lima, Mansfield, Marion, Newark*

Prerequisites and Exclusions

Prerequisites/Corequisites   Prereq: A grade of C- or above in 1075; or credit for 1074, 75, or 104; or Math Placement Level R or above; or ACT math subscore of 22 or higher that is less than 2 years old.

Previous Value   *Prereq: A grade of C- or above in 1075; or credit for 1074, 75, or 104; or Math Placement Level R or above; or ACT math subscore of 22 or higher that is less than 2 years old; and enrollment in Early Childhood or Special Education major, or in Middle Childhood major or pre-major with area of concentration different than Math.*

Exclusions

Electronically Enforced   Yes

Cross-Listings

Cross-Listings

Subject/CIP Code

Subject/CIP Code   27.0101
Subsidy Level   General Studies Course
Intended Rank   Freshman, Sophomore

Requirement/Elective Designation

Mathematical and Quantitative Reasoning (or Data Analysis)
The course is an elective (for this or other units) or is a service course for other units

Previous Value

The course is an elective (for this or other units) or is a service course for other units

Course Details

Course goals or learning objectives/outcomes
- Develop the meaning of mathematical definitions, formulas, and algorithms.
- Use correct and precise mathematical language.
- Make connections and comparisons between different subjects to deepen understanding and help with solving problems.
- Evaluate spoken and written mathematical work to improve correctness and clarity.
- Persevere in solving mathematical problems using problem-solving strategies, including the "explore, conjecture, justify" model.

Content Topic List
- Number systems and their uses: whole, integer, rational, real
- Binary operations: addition, subtraction, multiplication, division, ratios, exponentiation
- Geometry: rigid motions, tessellations, Platonic solids and symmetry, congruence, similarity, constructions with various tools
- Measurement: unit conversion, measurement techniques, actions preserving area/volume, effects of scaling
- Problem solving (a theme throughout the course)

Sought Concurrence   No

Attachments

- 1125-Au21Syllabus_150.docx: Syllabus - AU21

  (Syllabus. Owner: Husen,William J)

- math1125-GE-foundations.pdf: New GE Foundations Sheet

  (Other Supporting Documentation. Owner: Husen,William J)

- deadline appeal.pdf: Deadline appeal

  (Appeal. Owner: Husen,William J)

Comments

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Husen,William J	04/07/2022 10:06 AM	Submitted for Approval
Approved	Husen,William J	04/07/2022 10:06 AM	Unit Approval
Approved	Vankeerbergen,Bernadette Chantal	04/18/2022 12:19 PM	College Approval
Pending Approval	Cody,Emily Kathryn Jenkins,Mary Ellen Bigler Hanlin,Deborah Kay Hilty,Michael Vankeerbergen,Bernadette Chantal Steele,Rachel Lea	04/18/2022 12:19 PM	ASCCAO Approval

Syllabus: Math 1125
Mathematics for Elementary Teachers I
Autumn 2021

Course Overview

Instructor Information

Instructor: Jenny Sheldon   Office: Math Building 216
E-mail: sheldon.118@osu.edu

Teaching Assistant (TA): Scott Newton   Office: Math Tower 250
E-mail: newton.385@osu.edu

Course Delivery Information:

This course will be offered in-person as scheduled. Please plan to attend every session! We will have a Zoom link posted on Carmen for emergency situations, but this will not be in regular use and cannot substitute for in-person attendance. Of course, if you have a personal emergency (family situation, need to quarantine, etc.) please speak with your lecturer to discuss accommodations. All course materials except the textbook will be posted on the Carmen course page. Please check Carmen regularly!

Course description and expectations

Math 1125 is the first in a two-course sequence of math courses for undergraduates intending to be elementary or special education teachers. This course covers number systems, operations, number theory, expressions, and equations as needed for future elementary and special education teachers.

The course will emphasize problem-solving processes and their application to the learning of the listed content areas. Knowing the mathematics for oneself is not the same as knowing the math for teaching. To that end, explanations of mathematical ideas are

emphasized. Full credit will NOT be given for correct mathematical answers without a reasoned explanation that is clear and complete.

Engagement in course activities 5 days a week is critical to your success in this class.
Each class will consist of doing an activity in a small group and discussing it with the whole class. You are expected to participate actively in all phases and will need to bring the relevant activities from the textbook Activities Manual and Student Activities packet to every class. You will be expected to explain your thinking in small and large groups in preparation for explaining mathematics to your future students. If you cannot attend a class meeting, you are still expected to complete the class activity as well as any participation assignments demonstrating your engagement with the problems and with your classmates.

Reading is crucial.
Our time together will not follow a traditional lecture format. Reading assignments are designed to provide an explanation and summary of material that is not provided in class. The textbook also contains helpful practice problems and solutions with explanations. Plan to read the related section in the textbook after each class.

Course materials

1. *Mathematics for Elementary Teachers* and *Activities Manual*, *6th edition.* Author: Sybilla Beckmann.
   - ISBN for the text is: 9780136922001, ISBN for the manual is: 9780136937562. These are sold separately. Purchasing the activities manual is only necessary if you would like a printed copy; the activities are available online through the main textbook.
   - This text is also used in Math 1126.
2. Math 1125 Student Activities Packet (posted and regularly updated on Carmen)

Course technology

For help with your password, university e-mail, Carmen, or any other technology issues, questions, or requests, contact the OSU IT Service Desk. Standard support hours are available at https://ocio.osu.edu/help/hours, and support for urgent issues is available 24/7.

- Self-Service and Chat support: http://ocio.osu.edu/selfservice
- Phone: 614-688-HELP (4357) // TDD: 614-688-8743
- Email: 8help@osu.edu
- Tech tutors: https://digitalflagship.osu.edu/tech-tutoring-student-mentors

Baseline technical skills necessary
- Basic computer skills and web-browsing
- Navigating CarmenCanvas

Technology skills necessary for this specific course
- Ability to adequately scan or photograph written mathematical work for uploading to Carmen or sharing in class.
- CarmenZoom audio, video, and chat participation.

Necessary equipment
- Computer: current Mac (OS X) or PC (Windows 7+) with high-speed internet connection
- Webcam: built-in or external webcam, fully installed
- Microphone: built-in laptop or tablet mic or external microphone

Necessary software
- [Microsoft Office 365 ProPlus] All Ohio State students are now eligible for free Microsoft Office 365 ProPlus through Microsoft's Student Advantage program. Each student can install Office on five PCs or Macs, five tablets (Windows, iPad® and Android™) and five phones.
  - Students are able to access Word, Excel, PowerPoint, Outlook and other programs, depending on platform. Users will also receive 1 TB of OneDrive for Business storage.
  - Office 365 is installed within your BuckeyeMail account. Full instructions for downloading and installation can be found https://ocio.osu.edu/kb04733.

Course schedule (tentative)
A detailed calendar is posted separately on Carmen.

Dates	Topics
8/25 – 8 /30	*Counting; Place value*
8/31 – 9/9	*Meaning of fractions*
9/9 – 9/14	*Solving fraction & percent problems by reasoning from pictures*
9/15 – 9/17	*Decimals – meaning, representations, and relationship to place value*
9/20 – 9/28	*Addition & subtraction structures, problem solving, explaining procedures*

9/29 – 10/5	*Multiplication of whole numbers – meaning and properties and mental math*
10/6 – 10/19	*Multiplication of fractions – meaning and story problems; solving problems involving fractions; explaining procedure for multiplying fractions*
10/20 – 10/26	*Division of whole numbers – meanings of division; dealing with remainder; division by zero; explaining long division procedure*
10/27 – 11/1	*Division with fractions – meaning and story problems; explaining "invert & multiply" procedure; decimal division*
11/2 – 11/17	*Ratios – meaning and representation; solving problems with ratios*
11/18 – 11/22	*Integers – meaning and operations with negative numbers*
11/23 – 12/2	*Factors and Multiples – Odd and even numbers, divisibility tests, divisibility and remainders, prime and composite numbers, prime factorization; problems involving factors and multiples and GCF & LCM*
12/3 – 12/8	*Pre-Algebra and multiple representations – Expressions, equations and formulas; solving problems with strip diagrams and relating these to solving equations*

Types of Assessments

Daily Participation

As previously stated, your success in this course depends on daily participation in the course activities. To demonstrate your participation, you will submit various assignments related to the daily work. These may consist of discussion board posts, submitting work done with a group, journal entries, or other. We will provide details on these assignments during class as well as on the announcements page in Carmen.

Weekly Homework and Untimed Assessments

There will be weekly homework assignments consisting of problems related to the material discussed in class. Some of these problems will be for practice and not collected, while others will be submitted and graded as untimed assessments based on our learning outcomes. Assignments will be posted on CarmenCanvas with due dates indicated on the Carmen calendar as well as on the homework sheet. Assignments should be uploaded to Carmen by the due date. Information will be provided at the start of the class about how this is done.

Monthly Timed Assessments

There will be four days devoted to timed assessments during the semester (one of which is during finals week). Each timed assessment will be given online and will be one hour in length. You will have some flexibility around when the one-hour time window will occur. The intent of a timed assessment will be to assess 1) your individual understanding of

course concepts without the assistance of classmates or instructor, and 2) your ability to give comprehensive and coherent explanations of the reasoning behind the concepts in a limited time window. Both skills are necessary as teachers!

Final Portfolio

You will be expected to assemble a collection of your work over the course of the semester to demonstrate 1) your growth and mastery of the course outcomes, 2) areas where your content understanding still needs improvement, and 3) reflection over your own changes in attitude toward mathematics and thinking about mathematics teaching.

Grades

How will I get a grade for this course?

Your final grade will be assigned based on whether or not you have demonstrated your understanding of specific learning outcomes found at the end of this document. Our system is based on the assumption that it is more important that you learn the ideas fully than that you learn them quickly. Thus, one important feature of our system is that demonstrating your understanding isn't tied to a specific assignment or a certain point in the course. Instead, if you haven't demonstrated your understanding on the first try, you will have the opportunity to try again. Said differently, this grading system helps you to have some flexibility on *when* during the semester your learning occurs.

Please read the separate document about grading on Carmen carefully and ask any questions you have! We will probably do things differently than your previous courses, and it's okay to be confused at first. The most important thing to remember is that we are here to help.

Why are we using this system?

Our system of grading puts the emphasis on achieving full understanding the material, not on earning points. At the end of the course, you'll have a list of items that you have fully understood, and likely a list of items where you could still make improvements. You'll have a clear picture of the gains you've made in this course, and a clear understanding of how your achievements are related to your final grade. Our intent is that this system of grading will, among other things, give you control over your grade in the course. Please carefully read the section about reassessments in the grading document for more details.

We hope that this system will enable us to give you more specific and helpful feedback about your work. Instead of trying to assign points to your work, we will spend our time giving you specific feedback towards improving your work. Then, you can act on this feedback to improve your overall grade.

How will my final grade be determined?

Final grades will be determined according to the following chart and the list of 29 learning outcomes which you can find at the end of this document and on Carmen. Learning outcomes will be assessed on both timed and untimed assessments and will be given a score of either "DFU" for "demonstrates full understanding" or "NY" for "not yet".

Letter Grade	Requirements
A	· Daily Participation assignments: At least 95% complete. · Outcomes: At least 26/29 DFU, timed or untimed. · At least 15 DFU on timed assessments. · Portfolio: 100% satisfactory.
A-	· Daily Participation assignments: at least 93% complete. · Outcomes: At least 25/29 DFU, timed or untimed. · At least 14 DFU on timed assessments. · Portfolio: 100% satisfactory.
B+	· Daily Participation assignments: at least 90% complete. · Outcomes: At least 23/29 DFU, timed or untimed. · At least 12 DFU on timed assessments. · Portfolio: 100% satisfactory.
B	· Daily Participation assignments: at least 85% complete. · Outcomes: At least 22/29 DFU, timed or untimed. · At least 11 DFU on timed assessments. · Portfolio: 100% satisfactory.
B-	· Daily Participation assignments: at least 83% complete. · Outcomes: At least 20/29 DFU, timed or untimed. · At least 10 DFU on timed assessments. · Portfolio: 100% satisfactory.
C+	· Daily Participation assignments: at least 78% complete. · Outcomes: At least 18/29 DFU, timed or untimed. · At least 8 DFU on timed assessments. · Portfolio: 100% satisfactory.
C	· Daily Participation assignments: at least 74% complete. · Outcomes: At least 17/29 DFU, timed or untimed. · At least 4 DFU on timed assessments. · Portfolio: 100% satisfactory.
C-	· Daily Participation assignments: at least 70% complete. · Outcomes: At least 16/29 DFU, timed or untimed. · At least 2 DFU on timed assessments. · Portfolio: 100% satisfactory.
D	· Daily Participation assignments: at least 60% complete. · Outcomes: At least 12/29 DFU, earned via homework or exam. · Portfolio: 50% satisfactory.
E	D-level requirements are not met.

Expectations for response times

We will always be available during office hours, no need to make an appointment – just drop by (if in person) or join the zoom meeting (if remote). If you wish to speak with us privately, please send an email to set up a time. (Remember that you can call 614-688-HELP at any time if you have a technical problem.

E-mail

You can expect us to reply to email within 24 hours on a school day, or by the end of the day Monday if your email was sent over the weekend. (If you don't receive a reply, double-check that you have the correct email address!)

Grading and feedback

For homework assignments, you can generally expect feedback within 7 days. Exams will be returned within 5-7 days.

Attendance, participation, and discussions

Student participation requirements

The following is a summary of everyone's expected participation.

- Attend class and participate in your learning. You are expected to attend each class session and fully participate during class. There will be participation assignments designed to help you demonstrate your participation and begin your studying of the relevant material. If you have a situation which prevents you from attending one class meeting, consult Carmen for the day's activities and participation assignment, and plan to discuss the activities with a classmate. If you have a situation which prevents you from attending multiple class meetings, please contact your lecturer. Keep in mind that it is easier for us to be flexible when we know about situations in advance! You are not required to share personal details about your situation with us, but we may require documentation for extended absences.

- Practice outside of class. Set aside time each week to practice both the content and your explanations. Reading the textbook and working through the suggested practice problems is a good place to begin, and then you should add problems related to the content you find most challenging.

- Engage with other learners. We strongly suggest making use of the tutor room hours and the group study room. We will hold tutor room hours in Cockins Hall, room 142.

When no tutor is scheduled, this room will be available for group study. We will post a schedule of tutors and available times on Carmen.

Discussion and communication guidelines

The following are our expectations for how we should communicate as a class. Above all, please remember to be respectful and thoughtful.

- Tone and civility: Please maintain a supportive learning community where everyone feels safe. No student should be marginalized in any form for questions or contributions made in class, during office hours, or online. Students should cooperate to help each other's understanding of the mathematical concepts discussed in class regardless of their background.

- Back up your work: Consider how to back up your work. This includes both homework documents you submit as well as posts on discussion boards or anything else which is graded. Consider screen shots!

Other course policies

Student academic services

Student academic services offered on the OSU main campus
http://advising.osu.edu/welcome.shtml.

Student support services

Student support services offered on the OSU main campus http://ssc.osu.edu.

Academic integrity policy

Policies for this course

- On timed assessments, you are allowed to use any resources except other people. You must not discuss the exam with anyone until everyone has submitted it. You must submit your own unique work.

- For your daily and weekly assignments, you are encouraged to work in groups with your classmates. However, for work which is graded, you must submit your own unique work unless otherwise specified by the assignment. You are not allowed to copy from resources that explicitly compile solutions to textbook problems (many of these also tend to be wrong!).

- Reusing past work: In general, you are prohibited in university courses from turning in work from a past class to your current class, even if you modify it.
- If you are unsure about a particular situation, please ask ahead of time!

Ohio State's academic integrity policy

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct http://studentlife.osu.edu/csc/.

Copyright disclaimer

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

Statement on Title IX

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at http://titleix.osu.edu or by contacting the Ohio State Title IX Coordinator, Kellie Brennan, at titleix@osu.edu

Accessibility accommodations for students with disabilities

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations,

I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Accessibility of course technology

This online course requires use of Carmen (Ohio State's learning management system) and other online communication and multimedia tools. If you need additional services to use these technologies, please request accommodations with your instructor.

- [Carmen (Canvas) accessibility](#)
- Streaming audio and video
- Synchronous course tools

Your mental health!

As a student you may experience a range of issues that can cause barriers to learning such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling 614- 292-5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on call counselor when CCS is closed at 614-292-5766 and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-800-273- TALK or at suicidepreventionlifeline.org

List of Learning Outcomes

The meaning of numbers: place value and fractions [Chapters 1 and 2]

1. [1-1 Correspondence] Understand and use one-to-one correspondence and explain its role in counting and comparison.
2. [Bundling] Explain how our place value system is built, use and explain several different representations for whole numbers written in this system, and use the meaning of the places to compare whole numbers.
3. [Basic Fractions] Explain the meaning of the whole, numerator, and denominator of any fraction. Use reasoning stemming from these meanings as well as unambiguous labeled pictures to solve problems.
4. [Percent as Fraction] Recognize percents as a special case of fractions and explain how these two ideas are related using reasoning from a picture.
5. [Equivalent Fractions] Use the meaning of fractions (whole, denominator, and numerator) and develop a picture to explain why two equivalent fractions represent the same quantity without using multiplication.
6. [Representing decimals] Explain the relationships in value and size between the places in decimal numbers using a bundling picture. Use decimal representations and their meanings to solve problems involving decimal numbers.

Addition and subtraction [Chapter 3]

7. [Meaning of Addition] Demonstrate understanding of the meaning of addition with any type of numbers. Create useful representations for such problems.
8. [Meaning of Subtraction] Demonstrate understanding of the meaning(s) of subtraction with any type of numbers. Create useful representations for such problems.
9. [Addition or Subtraction Algorithm] Dissect each step in a place value algorithm for addition or subtraction. Explain why each step in the algorithm (written or implied) makes sense in terms of place value and the meaning of the corresponding operation. Connect the overall process to the meaning of the operation.

Multiplication [Chapters 4 and 5]

10. [Meaning of Multiplication] Demonstrate understanding of the meaning of multiplication with whole numbers and decimals in terms of groups and objects per group. Create useful representations for such problems.
11. [Properties] Use a picture or story to explain why using the properties of addition and/or multiplication to change an expression do not change the overall value of that expression. Highlight the meaning of any operation you use.
12. [Multiplication Algorithm] Dissect each step in the partial products algorithm for multiplication. Explain why each step in the algorithm (written or implied) makes sense in terms of place value and the groups and objects meaning of multiplication. Connect the overall process to the meaning of the operation.

13. [Fraction Multiplication] Starting with a story problem involving fractions, explain why the story can be solved with multiplication by identifying the groups and objects per group. Then, use the meaning of fractions as well as a picture or sequence of pictures to see the solution to the story problem.

Division [Chapter 6]

14. [Meaning of Division] Demonstrate understanding of both meanings of division in terms of groups and objects per group. Use the story situation for a division problem to determine the most appropriate form of the answer. Create useful representations for such problems.
15. [Division and Zero] Use the meaning of division and either a story situation or the related multiplication equation to explain why division involving zero is defined in some cases and not defined in other cases.
16. [Division Algorithm] Dissect each step in a place value algorithm for long division. Explain why each step in the algorithm (written or implied) makes sense in terms of place value and one of the groups and objects meanings of division. Connect the overall process to the meaning of the operation.
17. [Fraction Division] Starting with a story problem involving fractions, explain why the story can be solved with division by identifying the groups and objects per group as well as which type of division is involved. Then, explain how to use a picture or sequence of pictures as well as the meaning of fractions to see the solution to the story problem.
18. [Fraction algorithms] Explain (using a picture, the meaning of fractions, and the meaning of the appropriate algorithm) why one of the fraction algorithms makes sense. The algorithms available to choose from for this outcome are fraction multiplication or fraction division from the how many in one group perspective.

Ratios [Chapter 7]

19. [Meaning of Ratios] Identify situations which involve ratios and situations which do not involve ratios and be able to solve problems involving one or both situations. Explain why we produce equivalent ratios using multiplication. Clearly identify what is staying the same and what is changing in the problem.
20. [Ratios via Strip Diagrams] Use strip diagrams or reasoning about operations to solve ratio problems, explaining the steps involved in terms of the meanings of any operations used and any fractions which appear.
21. [Ratios via Tables] Use ratio tables to solve ratio problems, explaining the steps involved in terms of the meanings of any operations which appear.
22. [Ratios via Proportions] Solve problems using the "going through 1" strategy and explain how this strategy is related to setting fractions equal to one another and "cross-multiplying". Explain how ratios and fractions are related using the meaning of fractions and the context of the situation.
23. [Fractions and Decimals] Use and thoroughly explain at least two methods to convert between fractions and decimals. Be sure to explain why your methods are sensible for this conversion and include the meaning of fractions.

24. [Percent Increase and Decrease] Use the connection between fractions and decimals to solve percent increase and decrease problems in at least two ways. Explain your solution in terms of the meaning of fractions as well as the meaning of any operations involved.

Putting it all together [Integer reading, Chapters 8 and 9]

25. [Integers] Model integers using appropriate representations and use these models to illustrate why the rules for operations with negative whole numbers are consistent with the meaning of operations for whole numbers.

26. [Factors and Multiples] Correctly identify factors and multiples of whole numbers in both algebraic and story situations and use these identifications to solve problems.

27. [Solving Equations] Use a picture to solve an equation. If the equation is made from a story problem, explain how the equation is connected to the story. For each step in solving the equation, explain how to see that step in the picture.

28. [Categorize numbers] Give a precise definition for a category of numbers. Use your definition to explain whether a given example fits that category.

29. [Represent Multiple Ways] Represent an idea in at least two different ways. Discuss the benefits of each representation.

GE Foundation Courses

Overview

Courses that are accepted into the General Education (GE) Foundations provide introductory or foundational coverage of the subject of that category. Additionally, each course must meet a set of Expected Learning Outcomes (ELO). Courses may be accepted into more than one Foundation, but ELOs for each Foundation must be met. It may be helpful to consult your Director of Undergraduate Studies or appropriate support staff person as you develop and submit your course.

This form contains sections outlining the ELOs of each Foundation category. You can navigate between them using the Bookmarks function in Acrobat. Please enter text in the boxes to describe how your class meets the ELOs of the Foundation(s) to which it applies. Because this document will be used in the course review and approval process, you should use language that is clear and concise and that colleagues outside of your discipline will be able to follow. Please be as specific as possible, listing concrete activities, specific theories, names of scholars, titles of textbooks etc. Your answers will be evaluated in conjunction with the syllabus submitted for the course.

Accessibility

If you have a disability and have trouble accessing this document or need to receive the document in another format, please reach out to Meg Daly at daly.66@osu.edu or call 614-247-8412.

GE Rationale: Foundations: Race, Ethnicity, and Gender Diversity (3 credits)

Requesting a GE category for a course implies that the course fulfills **all** the expected learning outcomes (ELOs) of that GE category. To help the reviewing panel evaluate the appropriateness of your course for the Foundations: Race, Ethnicity, and Gender Diversity, please answer the following questions for each ELO.

A. Foundations
Please explain in 50-500 words why or how this course is introductory or foundational for the study of Race, Ethnicity and Gender Diversity.

B. Specific Goals of Race, Ethnicity, and Gender Diversity

GOAL 1: Successful students will engage in a systematic assessment of how historically and socially constructed categories of race, ethnicity, and gender, and possibly others, shape perceptions, individual outcomes, and broader societal, political, economic, and cultural systems.

Expected Learning Outcome 1.1: Successful students are able to describe and evaluate the social positions and representations of categories including race, gender, and ethnicity, and possibly others. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Expected Learning Outcome 1.2: Successful students are able to explain how categories including race, gender, and ethnicity continue to function within complex systems of power to impact individual lived experiences and broader societal issues. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Expected Learning Outcome 1.3: Successful students are able to analyze how the intersection of categories including race, gender, and ethnicity combine to shape lived experiences. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Expected Learning Outcome 1.4: Successful students are able to evaluate social and ethical implications of studying race, gender, and ethnicity. Please link this ELO to the course goals and topics and indicate *specific* activities/ assignments through which it will be met. *(50-700 words)*

Course Subject & Number: _____

   GOAL 2: Successful students will recognize and compare a range of lived experiences of race, gender, and ethnicity.

Expected Learning Outcome 2.1: Successful students are able to demonstrate critical self- reflection and critique of their social positions and identities. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Expected Learning Outcome 2.2: Successful students are able to recognize how perceptions of difference shape one's own attitudes, beliefs, or behaviors. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Expected Learning Outcome 2.3: Successful students are able to describe how the categories of race, gender, and ethnicity influence the lived experiences of others. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met.

GE Rationale: Foundations: Social and Behavioral Sciences (3 credits)

Requesting a GE category for a course implies that the course **all** expected learning outcomes (ELOs) of that GE category. To help the reviewing panel evaluate the appropriateness of your course for the Foundations: Social and Behavioral Sciences, please answer the following questions for each ELO.

A. Foundations
Please explain in 50-500 words why or how this course is introductory or foundational in the study of Social and Behavioral Sciences.

B. Specific Goals of Social and Behavioral Sciences

GOAL 1: Successful students will critically analyze and apply theoretical and empirical approaches within the social and behavioral sciences, including modern principles, theories, methods, and modes of inquiry.

Expected Learning Outcome 1.1: Successful students are able to explain basic facts, principles, theories and methods of social and behavioral science. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Expected Learning Outcome 1.2: Successful students are able to explain and evaluate differences, similarities, and disparities among institutions, organizations, cultures, societies, and/or individuals using social and behavioral science. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Course Subject & Number: _____

GOAL 2: Successful students will recognize the implications of social and behavioral scientific findings and their potential impacts.

Expected Learning Outcome 2.1: Successful students are able to analyze how political, economic, individual, or social factors and values impact social structures, policies, and/or decisions. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Expected Learning Outcome 2.2: Successful students are able to evaluate social and ethical implications of social scientific and behavioral research. Please link this ELO to the course goals and topics and indicate *specific* activities/ assignments through which it will be met. *(50-700 words)*

Course Subject & Number: _____

Expected Learning Outcome 2.3: Successful students are able to critically evaluate and responsibly use information from the social and behavioral sciences. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

GE Rationale: Foundations: Historical or Cultural Studies (3 credits)

Requesting a GE category for a course implies that the course fulfills the expected learning outcomes (ELOs) of that GE category. To help the reviewing panel evaluate the appropriateness of your course for the Foundations: Historical and Cultural Studies, please answer the following questions for each ELO. Note that for this Foundation, a course need satisfy **either** the ELOs for Historical Studies **or** the ELOs for Cultural Studies.

A. Foundations
Please explain in 50-500 words why or how this course is introductory or foundational in the study of History **or** Cultures.

B. Specific Goals of Historical *or* Cultural Studies

Historical Studies (A) Goal: Successful students will critically investigate and analyze historical ideas, events, persons, material culture and artifacts to understand how they shape society and people.

Expected Learning Outcome 1.1A: Successful students are able to identify, differentiate, and analyze primary and secondary sources related to historical events, periods, or ideas. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Expected Learning Outcome 1.2A: Successful students are able to use methods and theories of historical inquiry to describe and analyze the origin of at least one selected contemporary issue. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Course Subject & Number: _____

Expected Learning Outcome 1.3A: Successful students are able to use historical sources and methods to construct an integrated perspective on at least one historical period, event or idea that influences human perceptions, beliefs, and behaviors. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Expected Learning Outcome 1.4A: Successful students are able to evaluate social and ethical implications in historical studies. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Cultural Studies (B) Goal: Successful students will evaluate significant cultural phenomena and ideas to develop capacities for aesthetic and cultural response, judgment, interpretation, and evaluation.

Expected Learning Outcome 1.1B: Successful students are able to analyze and interpret selected major forms of human thought, culture, ideas or expression. Please link this ELO to the course goals and topics and identify the *specific* activities/assignments through which it will be met. *(50-700 words)*

Expected Learning Outcome 1.2B: Successful students are able to describe and analyze selected cultural phenomena and ideas across time using a diverse range of primary and secondary sources and an explicit focus on different theories and methodologies. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Expected Learning Outcome 1.3B: Successful students are able to use appropriate sources and methods to construct an integrated and comparative perspective of cultural periods, events or ideas that influence human perceptions, beliefs, and behaviors. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Expected Learning Outcome 1.4B: Successful students are able to evaluate social and ethical implications in cultural studies. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met.

GE Rationale: Foundations: Writing and Information Literacy (3 credits)

Requesting a GE category for a course implies that the course fulfills **all** expected learning outcomes (ELOs) of that GE category. To help the reviewing panel evaluate the appropriateness of your course for the Foundations: Writing and Information Literacy, please answer the following questions for each ELO.

Course Subject & Number: _____

A. Foundations

Please explain in 50-500 words why or how this course is introductory or foundational in the study of Writing and Information Literacy.

B. Specific Goals of Writing and Information Literacy

GOAL 1: Successful students will demonstrate skills in effective reading, and writing, as well as oral, digital, and/or visual communication for a range of purposes, audiences, and context.

Expected Learning Outcome 1.1: Successful students are able to compose and interpret across a wide range of purposes and audiences using writing, as well as oral, visual, digital and/or other methods appropriate to the context.
Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. Explain how the course includes opportunities for feedback on writing and revision. Furthermore, please describe how you plan to insure sufficiently low instructor-student ratio to provide efficient instruction and feedback. *(50-700 words)*

Course Subject & Number: _____

Expected Learning Outcome 1.2: Successful students are able to use textual conventions, including proper attribution of ideas and/or source, as appropriate to the communication situation. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. Is an appropriate text, writing manual, or other resource about the pedagogy of effective communication being used in the course? *(50-700 words)*

Expected Learning Outcome 1.3: Successful students are able to generate ideas and informed responses incorporating diverse perspectives and information from a range of sources, as appropriate to the communication situation. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Expected Learning Outcome 1.4: Successful students are able to evaluate social and ethical implications in writing and information literacy practices. Please link this ELO to the course goals and topics and indicate *specific* activities/ assignments through which it will be met. *(50-700 words)*

GOAL 2: Successful students will develop the knowledge, skills, and habits of mind needed for information literacy.

Expected Learning Outcome 2.1: Successful students are able to demonstrate responsible, civil, and ethical practices when accessing, using, sharing, or creating information. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Expected Learning Outcome 2.2: Successful students are able to locate, identify and use information through context appropriate search strategies. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Expected Learning Outcome 2.3: Successful students are able to employ reflective and critical strategies to evaluate and select credible and relevant information sources. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

GE Rationale: Foundations: Literary, Visual, or Performing Arts (3 credits)

Requesting a GE category for a course implies that the course fulfills **all** expected learning outcomes (ELOs) of that GE category. To help the reviewing panel evaluate the appropriateness of your course for the Foundations: Literary, Visual, and Performing Arts, please answer the following questions for each ELO.

A. Foundations

Please explain in 50-500 words why or how this course is introductory or foundational in the study of Literary, Visual, or Performing Arts.

B. Specific Goals

Goal 1: Successful students will analyze, interpret, and evaluate major forms of human thought, cultures, and expression; and demonstrate capacities for aesthetic and culturally informed understanding.

Expected Learning Outcome 1.1: Successful students are able to analyze and interpret significant works of design or visual, spatial, literary or performing arts. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Course Subject & Number: _____

Expected Learning Outcome 1.2: Successful students are able to describe and explain how cultures identify, evaluate, shape, and value works of literature, visual and performing art, and design. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Expected Learning Outcome 1.3: Successful students are able to evaluate how artistic ideas influence and shape human beliefs and the interactions between the arts and human perceptions and behavior. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Course Subject & Number: _____

Expected Learning Outcome 1.4: Successful students are able to evaluate social and ethical implications in literature, visual and performing arts, and design. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Goal 2: Successful students will experience the arts and reflect on that experience critically and creatively.

Expected Learning Outcome 2.1: Successful students are able to engage in informed observation and/or active participation within the visual, spatial, literary, or performing arts and design. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Course Subject & Number: _____

Expected Learning Outcome 2.2: Successful students are able to critically reflect on and share their own experience of observing or engaging in the visual, spatial, literary, or performing arts and design.

Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

GE Rationale: Foundations: Natural Science (4 credits)

Requesting a GE category for a course implies that the course fulfills **all** expected learning outcomes (ELOs) of that GE category. To help the reviewing panel evaluate the appropriateness of your course for the Foundations: Natural Sciences, please answer the following questions for each ELO.

A. Foundations

Please explain in 50-500 words why or how this course is introductory or foundational in the study of Natural Science.

B. Specific Goals for Natural Sciences

GOAL 1: Successful students will engage in theoretical and empirical study within the natural sciences, gaining an appreciation of the modern principles, theories, methods, and modes of inquiry used generally across the natural sciences.

Expected Learning Outcome 1.1: Successful students are able to explain basic facts, principles, theories and methods of modern natural sciences; describe and analyze the process of scientific inquiry. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Expected Learning Outcome 1.2: Successful students are able to identify how key events in the development of science contribute to the ongoing and changing nature of scientific knowledge and methods. Please link this ELO to the course goals and topics and indicate specific activities/assignments through which it will be met. *(50-700 words)*

Course Subject & Number: _____

Expected Learning Outcome 1.3: Successful students are able to employ the processes of science through exploration, discovery, and collaboration to interact directly with the natural world when feasible, using appropriate tools, models, and analysis of data. Please explain the 1-credit hour equivalent experiential component included in the course: e.g., traditional lab, course-based research experiences, directed observations, or simulations. Please note that students are expected to analyze data and report on outcomes as part of this experiential component. *(50-1000 words)*

GOAL 2: Successful students will discern the relationship between the theoretical and applied sciences, while appreciating the implications of scientific discoveries and the potential impacts of science and technology.

Expected Learning Outcome 2.1: Successful students are able to analyze the inter-dependence and potential impacts of scientific and technological developments. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Expected Learning Outcome 2.2: Successful students are able to evaluate social and ethical implications of natural scientific discoveries. Please link this ELO to the course goals and topics and indicate *specific* activities/ assignments through which it will be met. *(50-700 words)*

Course Subject & Number: _____

Expected Learning Outcome 2.3: Successful students are able to critically evaluate and responsibly use information from the natural sciences. Please link this ELO to the course goals and topics and indicate *specific* activities/ assignments through which it will be met. *(50-700 words)*

GE Rationale: Foundations: Mathematical and Quantitative Reasoning (or Data Analysis) (3 credits)

Requesting a GE category for a course implies that the course fulfills **all** expected learning outcomes (ELOs) of that GE category. To help the reviewing panel evaluate the appropriateness of your course for the Foundations: Mathematical and Quantitative Reasoning (or Data Analysis), please answer the following questions for each ELO.

A. Foundations

Please explain in 50-500 words why or how this course is introductory or foundational in the study of Mathematical & Quantitative Reasoning (or Data Analysis).

B. Specific Goals for Mathematical & Quantitative Reasoning/Data Analysis

Goal: Successful students will be able to apply quantitative or logical reasoning and/or mathematical/statistical analysis methodologies to understand and solve problems and to communicate results.

Expected Learning Outcome 1.1: Successful students are able to use logical, mathematical and/or statistical concepts and methods to represent real-world situations. Please link this ELO to the course goals and topics and indicate *specific* activities/ assignments through which it will be met. *(50-700 words)*

Expected Learning Outcome 1.2: Successful students are able to use diverse logical, mathematical and/or statistical approaches, technologies, and tools to communicate about data symbolically, visually, numerically, and verbally. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Expected Learning Outcome 1.3: Successful students are able to draw appropriate inferences from data based on quantitative analysis and/or logical reasoning. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Course Subject & Number: _____

Expected Learning Outcome 1.4: Successful students are able to make and evaluate important assumptions in estimation, modeling, logical argumentation, and/or data analysis. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Expected Learning Outcome 1.5: Successful students are able to evaluate social and ethical implications in mathematical and quantitative reasoning. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

THE OHIO STATE UNIVERSITY

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April 6, 2022

Re: Deadline Appeal

To Whom It May Concern,

I am writing to request an exception to the deadline for filing both a course change and New GE Foundations request (mathematics) for the course Math 1125. Since a change in pre-requisites in Math 1125, namely removing major specific qualifications was required to be considered in the new GE Foundational math category, additional discussion was required to determine that such a change would be appropriate. As this change has now been approved in the math department, this course is ready for submission for the main request concerning the GE. I would hopefully request that the deadline for submission of such a course be waived so that this course change (and GE designation) may be made active as of Autumn 2022.

Sincerely,

William J. Husen, Ph.D.
Director of Undergraduate Instruction