Term Information

Effective Term	Autumn 2022
Previous Value	*Autumn 2014*

Course Change Information

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

Add new GE - foundations - math designation to this course.

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

To add this course as an acceptable course for the new GE - foundations - math category

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 requrest 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	1135
Course Title	Number and Operations for Teachers
Transcript Abbreviation	Num Op Teach
Course Description	The first course in a two semester sequence for teachers of elementary and middle grade students. This course focuses on concepts of numbers and arithmetic operations, including modern and historical perspectives.
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
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	*Lima, Mansfield, Marion, Newark, Wooster*

Prerequisites and Exclusions

Prerequisites/Corequisites	Prereq: A grade of C- or above in 1075; or credit for 1074; 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.*
Exclusions	
Previous Value	Not open to students with credit for 106.
Electronically Enforced	No

Cross-Listings

Cross-Listings

Subject/CIP Code

Subject/CIP Code	27.0101
Subsidy Level	General Studies Course
Previous Value	*Baccalaureate 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

- Conceptual understanding of positive and negative whole numbers and the meaning of fractions
- Conceptual understanding of positive and negative whole numbers and the meaning of fractions
- Fluency in arithmetic with fractions and decimals using both elementary reasoning and standard algorithms
- Understand and solve proportion problems using both elementary reasoning and fraction arithmetic
- Familiarity with the concepts of divisibility, multiples, and their applications
- Identify major historical developments in number and operation, including contributions of significant figures and diverse cultures

Content Topic List

- Counting numbers, decimals
- Meaning of fractions
- Meaning of addition and subtraction
- Meaning of multiplication
- Multiplying
- Meaning of division
- Meaning of ratios, rates, proportions
- Number theory

Sought Concurrence No

Previous Value **Yes**

Attachments

- math 1135 syllabus AU21 Young.pdf: Syllabus - AU21

  (Syllabus. Owner: Husen,William J)
- math1135-GE-foundations.pdf: New GE Foundations Sheet

  (Other Supporting Documentation. Owner: Husen,William J)
- deadline appeal-new-GE-1135.pdf: Deadline appeal

  (Appeal. Owner: Husen,William J)

Comments

- - Please remember to check off all campuses for the new GE (Columbus included). If there is a valid reason why that should not happen, please upload a rationale for why one or the other campus should not be able to offer this course. (By default all courses in the new GE will be offered at all campuses.)
  -Please remove quarter prerequisites/corequisites in the box above. (I have already removed the quarter exclusions.)
  - The subsidy should not be baccalaureate since 1000-level courses are not part of the bachelor's degree. *(by Vankeerbergen,Bernadette Chantal on 04/18/2022 12:26 PM)*

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Husen,William J	04/07/2022 10:16 AM	Submitted for Approval
Approved	Husen,William J	04/07/2022 10:16 AM	Unit Approval
Revision Requested	Vankeerbergen,Bernadette Chantal	04/18/2022 12:29 PM	College Approval
Submitted	Husen,William J	04/18/2022 02:11 PM	Submitted for Approval
Approved	Husen,William J	04/18/2022 02:13 PM	Unit Approval
Approved	Vankeerbergen,Bernadette Chantal	04/18/2022 03:12 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 03:12 PM	ASCCAO Approval

Math 1135

Number and Operations for Teachers, Autumn 2021

Online Asynchronous)

Justin Young

young.2332@osu.edu
carmen.osu.edu
Office Hours: By appointment on Zoom.

This syllabus is tentative and subject to change.

Course Description: This course covers the concepts of whole numbers (positive and negative), place value (base-ten and alternate bases), decimals, and fractions. Some content on irrational numbers appears at the end, and this is extended in Algebra and coordinate geometry for teachers (2137). The four arithmetic operations are covered both conceptually and algorithmically. Attention is given to ensuring that students can perform the algorithms correctly and explain why they give accurate answers. Lastly, the course covers the concepts of proportions and how they are related both to multiplication/division and to fractions. Factors, divisibility, and some elementary number theory complete the course.
Prerequisite(s): 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. Not open to students with credit for 106.
GEC: This Mathematics course can be used, depending on your degree program, to satisfy the Quantitative and Logical Skills category of the General Education Requirement (GEC). The goals and learning objectives for this category are:
Goals: Courses in quantitative and logical skills develop logical reasoning, including the ability to identify valid arguments, use mathematical models and draw conclusions based on quantitative data.
Learning objectives: Students comprehend mathematical concepts and methods adequate to construct valid arguments and understand inductive and deductive reasoning, scientific inference and general problem solving.
Credits: 5
Text(s): *Mathematics for Elementary Teachers with Activities*, 5$^{\text{th}}$ Edition (4$^{\text{th}}$ edition acceptable)
Author(s): Beckmann
ISBN: 9780134800196 (loose leaf version, recommended) 9780134392790 (bound version)

Grade Distribution:

Quizzes	15%
Discussion activities	25%
Timed online midterms	35%
Timed online final exam	25%

Letter Grade Distribution:

>= 93%	A	73 − 76%	C
90 − 92%	A-	70 − 72%	C-
87 − 89%	B+	67 − 69%	D+
83 − 86%	B	60 − 66%	D
80 − 82%	B-	<= 59	E
77 − 79%	C+		

Note: **Grades are not negotiable, there is no extra credit.**

Zoom Review Sessions: I will hold regular, weekly sessions on Zoom to answer questions and go over any lingering issues from the quizzes or activities. These will generally be on Fridays, and I will let you know the time so you can attend if you wish and so you can ask any questions in advance if you are not able to be there. These will be recorded and posted to the course page.

Quizzes:

A quiz will be assigned each week through the "Assignments" tab on Carmen/Canvas. The quiz will count for participation. The purpose of the quizzes is to give you frequent, low-stakes opportunities to show me your work to check your progress. I will correct the quizzes and make comments, even though I will not be counting the content for a grade. Satisfactory completion of each quiz will be awarded full points. Satisfactory completion generally means showing sufficient effort to complete the problems, I will deduct points for skipped questions, or for very low-effort answers. All quizzes are intended to be done alone, and all answers should be your own and not, for example, copied from online software/the internet or another student. You may use class notes, the book, or a calculator to help, but you should show all of your work so that I can follow your thought process. I am primarily interested in checking your work.

Discussion Activities: The majority of the work in this course will consist of doing the activities in the back of the textbook. We will do them in a discussion format and as such I need to make a few rules clear. 1. Add to the discussion, present a counterpoint, say something substantive (do not simply say "I agree" or "I disagree") 2. Be respectful of others, do not use insulting or demeaning language 3. Use standard grammar, punctuation and complete sentences, your posts do not have to be perfect, but they should not be excessively informal. *4. Do NOT post a blank submission so you can read the other student's answers, I will monitor this closely, be very careful to write something before you submit. The activities only work if you honestly try to do them yourselves.*

Timed midterms and final:

The primary mode of assessment in this course will be the timed midterms and the final exam. These will be done through Carmen/Canvas. You will have a window to choose your starting time on an exam day and then the exam must be completed in the allotted time (this will generally be 90 minutes for the midterms and 180 minutes for the final). The questions on the exams will generally be word problems, conceptual problems, or explanation problems. This is because those problems are harder to cheat, and they test a deeper level of

knowledge than more typical calculation problems. All exams are intended to be done alone, and all answers should be your own and not, for example, copied from online software/the internet or another student. You may use class notes, the book, or a calculator to help, but be aware that with the time limit you will not have much time to consult outside sources. You should show all of your work so that I can follow your thought process. I am primarily interested in grading your work. It is recommended that you complete the timed exams on a wired (ethernet) connection, if possible. You could, for example, complete the exams using a computer on campus. The final exam will take place on Monday December 13, 2021 online, you will need a 3 hour block that day to complete the exam, please plan accordingly.

Technology:

Enrollment in this course requires the use of the internet, this means: you need to have a stable internet connection and access to a device for uploading your work such as a smartphone or ipad.

Independence:

A major element implicit in this course is developing the ability to work independently. I will not confront you and tell you to work harder, or force you to do any work you do not want to do. If you want to succeed in this class, you must take responsibility for your own learning. This means: attending/watching Zoom meetings, keeping up with homework, paying attention to grades and problem areas, asking questions, etc.

Carmen messages:

You are responsible for checking your messages and the course page on Carmen/Canvas at least once a day, you are responsible for reading and understanding (ask if there is confusion) any official announcement sent by me about the class.

Disability Statement:

Any student who needs accommodations due to any type of disability must first register with Student Life Disability Services (SL-DS). Please call Student Life at 740-364-9578 or stop by Warner Center 226 to discuss procedures for getting accommodations. After accommodations are authorized, you will receive an Access Letter to share with your professors to help with the conversation about your needs. Students with disabilities that have been certified by Student Life Disability Services (SL-DS) will be appropriately accommodated and should inform the instructor as soon as possible of their needs.

Academic Misconduct:

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. For additional information, see the Code of Student Conduct (`http://studentaffairs.osu.edu/resource_csc.asp`). *All quizzes and exams (midterms and final) are intended to be done alone, and all submitted answers should be your own and not, for example, copied from online software/the internet or another student.*

Covid process: The University strives to make all learning experiences as accessible as possible. In light of the current pandemic, students seeking to request Covid-related accomodations may do so through the University's request process managed by Student Life Disability Services.

https://slds.osu.edu/covid-19-info/covid-related-accommodation-requests/

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.

Course Subject & Number: _____

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)*

Course Subject & Number: _____

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)*

Course Subject & Number: _____

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.

Course Subject & Number: _____

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.

Course Subject & Number: _____

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)*

Course Subject & Number: _____

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)*

Course Subject & Number: _____

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)*

Course Subject & Number: _____

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)*

Course Subject & Number: _____

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)*

Course Subject & Number: _____

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.

Course Subject & Number: _____

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)*

Course Subject & Number: _____

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).

Math 1135 serves as a first course in the mathematics for elementary and middle school educators sequence (with Math 1136 the second course). This course covers both the foundations of mathematics at this level along with the corresponding pedagogy. The course has the fundamental aspects of a quantitative reasoning course - covering both the fondational mathematical topics as well as communicating mathematics. Math 1135 contains all of the content of Math 1125 with a few additional topics relevant to middle school education. As such, this GE submission is nearly idetical to one currently submitted for Math 1125.

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)*

Associated goals/topics: Almost all topics contain story type problems. Specifically: "Solving problems with strip diagrams and relating these to solving equations"

Representative activites/assessments: Numerous story problems are presented. Students must both learn how to approach such problems but also how to present the same to their future students. For example: "Write a mathematical model that describes a the amount of fencing required to fence in a rectangular garden, if this garden has one side that is open to a river".

Course Subject & Number: _____

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)*

Associated goals/topics: "Evaluate spoken and written mathematical work to improve correctness and clarity"

Representative activities/assessments: Fundamental to this course is the communication of mathematcs, specifically to being able to teach the same mathematical topics to future students. For example: "Suppose a candy bowl contains 723 candies, some of which are read and some of which are green. If there are twice as many green candies as red candies, what is the distribution of candy colors in the bowl?"

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)*

Associated goals/topics: "Make connections and comparisons between different subjects to deepen understanding and help with solving problems."

Representative activities/assessments: A typical problem would be students given a sequence of numbers and then asked for the next element in that sequence. For example: "Given the sequence 9, 14, 19, 24, determine the next element and explain your reasoning."

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)*

Representative goals/topics: Persevere in solving mathematical problems using problem-solving strategies, including the “explore, conjecture, justify” model.

Associated activities/asssessments: Most story problems start with the modeling of the problem along with logical assumptions. For example: a simple problem such as "the length of a rectangle is three units less than the width of this rectangle. If the area of the rectangle is 10, what is the length and width of this triangle?". Students will need to model this first to solve. Additionally, students need to infer from this model that neither the length nor the width may be non-negative (the problem without this assumption would allow a negative answer).

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)*

Representative goals/topics: From the the course guide (as an amalgam of outcomes): "We want our students to grow as humans, as mathematicians and as teachers. Our students come to the course with varied mathematical backgrounds and abilities as well as varied feelings about the subject of mathematics. Our hope is to help our students to see themselves as a person who can figure out mathematics for themselves...Listening to other points of view and seeing multiple solutions to the same problems are important parts of this process."

Associated activities/assessments: Seeing the inherent mathematical value in children's thinking. An example problem: "Kylie has an idea for how to calculate 23*23. She says that twenty times 20 is 400 and 3 times 3 is 9 so 23*23 should be 400 plus 9, which is 409. Is Kylie's method valid? If not, how could you modify her work to make it correct? Don't start over in a different way, rather work with Kylie's idea". In particlular, making sure to validate future student's work and use understanding/misunderstanding to further the full mathematical understanding, and to value said approaches by future students.

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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 a New GE Foundations request (mathematics) for the course Math 1135. Since Math 1135 is very closely related to Math 1125 (the difference being Math 1135 is designed to be taught at the regional campuses), and Math 1125 required a prerequisite change to be considered as a GE, this held up the request process while awaiting departmental approval.

As the change for Math 1125 has now been approved in the math department, Math 1135 is also now 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

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