California State University, San Marcos General Education Program
GENERAL EDUCATION NEW COURSE CERTIFICATION REQUEST
• AREA B4: Mathematics and Quantitative Reasoning
See GE Handbook for information on each section of this form

ABSTRACT

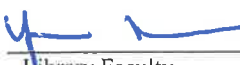|	
Course Abbreviation and Number: MATH 115	**Course Title:** College Algebra
Number of Units: 3	
College or Program: ☐CHABSS X CSM ☐CEHHS ☐COBA ☐Other_____	**Desired term of implementation:** X Fall ☐Spring ☐Summer Year2014	**Mode of Delivery:** X face to face (Some) ☐hybrid X fully on-line (others)
Course Proposer (please print): Marshall Whittlesey	**Email:** mwhittle@csusm.edu	**Submission Date:** Feb. 2014

1. Course Catalog Description: Equations and inequalities, functions, graphs, polynomials, exponential and logarithmic functions, conics, sequences and series, counting principles, binomial theorem, and systems of linear equations.

2. GE Syllabus Checklist: The syllabi for all courses certified for GE credit must contain the following:

☑	Course description, course title and course number
☑	Student learning outcomes for General Education Area and student learning objectives specific to your course, linked to how students will meet these objectives through course activities/experiences
☑	Topics or subjects covered in the course
☑	Registration conditions
☑	Specifics relating to how assignments meet the writing requirement
☑	Tentative course schedule including readings
☑	Grading components including relative weight of assignments

SIGNATURES

Marshall Whittlesey   2/25/14
Course Proposer   Date

A.V.   2/25/14
Department Chair   date

Please note that the department will be required to report assessment data to the GEC annually.   AK *DC Initial*

	Support	Do not support*		Support	Do not support*
Library Faculty 2/27/14	☒	☐	Impacted Discipline Chair Date	☐	☐

	Support	Do not Support*		Approve	Do not Approve
Impacted Discipline Chair Date	☐	☐	GEC Chair Date	☐	☐

* If the proposal is not supported, a memo describing the nature of the objection must be provided.

Course Coordinator: Varies each year. Contact the Dept. Chair for a name. Phone   Email:

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Part A: B4 Quantitative Reasoning General Education Learning Outcomes (GELOs) related to course content. [Please type responses into the tables.]

Math/Quant Reasoning GELOs this course will address:	Course content that addresses each GELO.	How will these GELOs be assessed?
B4.1: Explain and apply a variety of fundamental mathematical concepts, symbols, computations and principles.	Concepts: 1-variable equation; function;graph;sequences and series. Symbols: x,y,f(x);e,log,binary operation symbols,sigma and factorial symbols. Computations: all those involving polynomials, roots, rational, exponential, logarithmic and factorial functions. Principles: the same operation applied to two sides of an equation results in another equation; the product of factors which equal zero means that one of the factors must be zero; division by zero is not allowed; multiplication of both sides of an inequality by a positive (negative) makes the inequality stay the same (change);finding all solutions of an equation involves finding necessary and sufficient conditions for being a solution.	Students will be given a problem involving one or more of the concepts learned and be expected to solve it using the relevant symbols and computations and principles. Students will be expected to state their solution in a logical manner.
B4.2: Determine which quantitative or symbolic reasoning methods are appropriate for solving a given problem and correctly implement those methods.	Solution methods for various kinds of 1-variable equations: linear, quadratic, square root, polynomial, rational, exponential and logarithmic.	The student will be given a 1-variable equation and be expected to determine what method of solution is appropriate, and implement it properly.

Part B: General Education Learning Outcomes required of all GE courses related to course content:

GE Outcomes required of <u>all</u> Courses	Course content that addresses each GE outcome?	How will these GELOs be assessed?
Students will communicate effectively in writing to various audiences. (writing)	Homework and exam problems will require students to explain their thinking.	Students will be expected to write out solutions to problems, explaining their thinking.
Students will think critically and analytically about an issue, idea or problem. (critical thinking)	Problems given will require students to determine what is being asked of them, think about what method/procedure of solution is appropriate, and properly implement that method/procedure.	Students will be expected to solve problems by using accepted principles of mathematical thinking in a logical way.

Part C: GE Programmatic Goals: The GE program aligns with CSUSM specific and LEAP Goals. All B4 courses must meet at least one of the LEAP Goals.

GE Programmatic Goals	Course addresses this LEAP Goal:
LEAP 1: Knowledge of Human Cultures and the Physical and Natural World.	☐ No X Yes
LEAP 2: Intellectual and Practical Skills	☐ No X Yes
LEAP 3: Personal and Social Responsibility	☐ No ☐ Yes
LEAP 4: Integrative Learning	☐ No ☐ Yes
CSUSM Specific Programmatic Goals	**Course content that addresses the following CSUSM goals. Please explain, *if applicable.***
CSUSM 1: Exposure to and critical thinking about issues of diversity.	X ☐ No ☐ Yes (please describe):
CSUSM 2: Exposure to and critical thinking about the	X ☐ No ☐ Yes (please describe):

interrelatedness of peoples in local, national, and global contexts.	

Part D: Course requirements to be met by the instructor.

Course Requirements:	How will this requirement be met by the instructor?
Course meets the All-University Writing requirement: A minimum of 2500 words of writing shall be required for 3+ unit courses.	Students will be expected to write out solutions to problems, explaining their thinking.
All courses offered in area B4 must have a prerequisite of at least intermediate algebra and must use a level of mathematics beyond that of intermediate algebra. No remedial algebra courses (e.g., Math 10, 20, and 30) can be used to satisfy this requirement. Even if a course has intermediate algebra as a prerequisite, it will not satisfy the Quantitative Reasoning Requirement unless it also meets each of the following three conditions:	Math 115 (college algebra) has an explicit prerequisite of ELM (intermediate algebra). College algebra is considered to be a level of algebra above the level of intermediate algebra, as it involves extensions of the methods of symbolic and equation techniques done in intermediate algebra.
• It must focus on the use of mathematical language and formal reasoning in a variety of diverse disciplines, using a broad range of examples.	The mathematical language used includes: notions of variable, equation, solution, function, graph, sequence, series. Students study these things and focus on solving problems concerning them. Formal reasoning includes using the ideas that: the same operation applied to two sides of an equation results in another equation; the product of factors which equal zero means that one of the factors must be zero; division by zero is not allowed; multiplication of both sides of an inequality by a positive (negative) makes the inequality stay the same (change); finding all solutions of an equation involves involves finding necessary and sufficient conditions for being a solution. These ideas are used as justifications for each step in a problem as a student proceeds to a solution. The language and reasoning are applied to a variety of disciplines in several ways. In word problems students learn that abstract ideas such as a variable, graph, sequence or series could represent something concrete in many areas: finance, chemistry, biology, physics, construction, taxation, agriculture, economics, medicine, psychology, sociology, etc. These examples are intended to help the student understand the broad application of the subject.
• It must provide some historical perspective on the role which this approach has played in the development of human knowledge and of our understanding of the world.	Students are introduced to some of the most well-known people in the development of algebra in the last 2,000 years, as well as the rough times that important discoveries occurred, and how these people and discoveries relate to material studied in the course. Here are some examples. They learn that the word algebra has Arabic roots, and how the word itself relates to techniques of problem solving. They learn that Diophantus of Alexandria coined the idea of the abbreviated word form (i.e., letters stand for unknowns) and its use in solving problems in class. They learn that the Cartesian coordinate system and logarithm were invented much later (1600s) in response to the development of more complex problems. While solving polynomial equations, they learn that Gauss proved the

	fundamental theorem of algebra concerning when and how they are solvable.
• It must demonstrate a variety of methods, such as the use of abstract symbols, of numeric techniques, of logical reasoning, of geometry, etc.	Methods demonstrated include: usage of variables to represent quantities; usage of solution technique to solve equations; usage of graphs to understand patterns and trends easily via picture; usage of a set of principles which are used to justify moving from one assertion to the next; usage of functions to show relationships between variables.
A **statistics component** may be included which must:	
• Develop the students' ability to comprehend the power and broad utility of the fundamental mathematical models presented, rather than merely teaching rote statistical skills; and	N/A to Math 115
• Must indicate applications to several areas.	N/A to Math 115
A **computer science component** may be included which must:	
• Teach a computer language that is suitable for use in diverse areas;	N/A to Math 115
• Teach this language in such a way that the student is led to a fundamental understanding of the nature of problem solving by combining data structures with algorithms; and	N/A to Math 115
• Provide fundamental skills in the use of computers for the application of university level quantitative methods to the solution of problems in many diverse areas.	N/A to Math 115

Marshall Whittlesey

From:	Mohammad Oskoorouchi
Sent:	Wednesday, January 29, 2014 2:41 PM
To:	Marshall Whittlesey
Cc:	Wayne Neu
Subject:	Re: GE forms

In this case we are fine the form.

Thanks
Mohammad

Mohammad Oskoorouchi, Ph.D.

Interim Associate Dean
Interim Director of Graduate Programs
College of Business Administration
California State University San Marcos
Phone: 760-750-4219

On Jan 29, 2014, at 2:32 PM, Marshall Whittlesey <mwhittle@csusm.edu> wrote:

The GEC decided to do a 'comprehensive review' of all lower division GE courses. Because we have new lower division GE forms GEC decided to make a call to have all departments fill out the new forms for all their GE courses.

That is the only reason we are filling them out.

From: Mohammad Oskoorouchi
Sent: Wednesday, January 29, 2014 1:57 PM
To: Marshall Whittlesey
Cc: Wayne Neu
Subject: Re: GE forms

Hi Marshall,

Is there a major change? What is the purpose of this form? I am copying Wayne Neu, Chair of CoBA UGCC.

Thanks
Mohammad

Mohammad Oskoorouchi, Ph.D.

Interim Associate Dean
Interim Director of Graduate Programs
College of Business Administration
California State University San Marcos
Phone: 760-750-4219

On Jan 28, 2014, at 4:53 PM, Marshall Whittlesey <mwhittle@csusm.edu> wrote:

Mohammad, Roger,

I am filling out the new GE forms for certification of Math B4 courses. Math 115 (college algebra) and 132 (calculus) are courses for which your departments are 'impacted disciplines' since your disciplines either require the course (132) or often your students have to take the prereq (115). I've attached the drafts of the forms. No changes to the delivery of the courses is intended or anticipated. Please let me know if you are comfortable signing them.

Thx.

Marshall
<math115B42014.docx><math132B42014.docx>

Marshall Whittlesey

From: Roger Arnold
Sent: Tuesday, January 28, 2014 4:59 PM
To: Marshall Whittlesey
Subject: RE: GE forms

Marshall – I am comfortable signing the forms. Roger

From: Marshall Whittlesey
Sent: Tuesday, January 28, 2014 4:54 PM
To: Mohammad Oskoorouchi; Roger Arnold
Subject: GE forms

Mohammad, Roger,

I am filling out the new GE forms for certification of Math B4 courses. Math 115 (college algebra) and 132 (calculus) are courses for which your departments are 'impacted disciplines' since your disciplines either require the course (132) or often your students have to take the prereq (115). I've attached the drafts of the forms. No changes to the delivery of the courses is intended or anticipated. Please let me know if you are comfortable signing them.

Thx.

Marshall

Math 115: College Algebra(Fall 2014)Course Information (Mr. Whittlesey)

Catalogue course description: Equations and inequalities, functions, graphs, polynomials, exponential and logarithmic functions, conics, sequences and series, counting principles, binomial theorem, and systems of linear equations.

Meeting times: TR 1-2:15 in MARK 208, CRN 45265. You must attend every day in the first two weeks of class in order to avoid being dropped from the class. (See "administrative withdrawal" in the CSUSM General Catalog.) If I am late to class, you are responsible for staying until I arrive or official word arrives that class is cancelled. **There is no rule stating that you may leave after a few minutes if the instructor doesn't show up.**

Prerequisites: *Completion of the Entry-Level Mathematics (ELM) requirement.* I reserve the right to 'administratively drop' students who have not satisfied the prerequisites.

Texts: *College Algebra*, by Larson, Hostetler, 8th edition; Houghton-Mifflin, 2007. The student solutions manual is optional and recommended. For this course, you will be required to obtain online access to www.webassign.net to do homework; an e-book is available there, so it is not necessary to purchase a hard copy of the text. Online access is available at a price of $65. If you buy the hard copy, you get automatic access to the online materials at no additional cost. (See **Homework** below.) The webassign institution is 'csusm' and the access key for this class is 6101 6773.

Tentative coverage: 1.1-1.4,1.6-1.7,2.1-2.4,2.6,2.7,3.1-3.2,5.1-5.5,6.1-6.2,6.5-6.6,8.1-8.3,8.6,8.7.

Homework: There will be many homework problems. These will be the basis of your exams. Some of the homework you will submit through webassign.net; you will have to keep up with that on a daily basis. NOTE: THE COMPLETE HOMEWORK PROBLEM LIST IS ON COUGAR COURSES. THE WEBASSIGN PROBLEMS ARE NOT ALL OF THE HOMEWORK!

Exams: We'll have two in-class exams about 1/3 and 2/3 of the way through the semester (tentative schedule: Ex. 1: Sept. 26; Ex. 2: Oct. 29 and a third in the final examination slot on Tues, Dec. 10 from 11:30-1:30 pm. Makeup exams will only be given for legitimate reasons; you should make every effort to take exams on time. If an event arises whereby you are unable to make it, you should contact me as soon as possible. (e.g., if you are sick, please have somebody you live with leave a message with me.) I reserve the right to resolve a missed exam by other means. **You must have an ID card (e.g., CSUSM ID, driver's license, or military ID) to take this class; I will check them during exams. I do not generally allow use of calculators on exams.**

Contact Info: Office hours are in my office W 2-4:30; or **by appointment**. If you have a quick question, feel free to drop by outside my office hours to ask it. My office is Sci2 343, and the phone number is 750-8002. Email: mwhittle@csusm.edu. If you send me email, please keep it as short and to the point as possible. Do not send attachments - write in text only. **You should read your csusm.edu email regularly; I may send emails to the class via those addresses.** If you don't read your campus email often, you should have it forwarded to the account you do read. See http://www.csusm.edu/iits/support/email/getttinganaccount.html to arrange this. I will also be posting information such as the syllabus, quiz and exam solutions, etc, at cc.csusm.edu.

Grading: Final Grade will be calculated from Exams 1-3 (about 100 points each), and homework (50 points). The total number of points is 350 and your final grade will be determined by the following table.

Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
Cutoff	333	315	298	280	263	245	228	210	193	175	158	0

At my discretion, I may give extra credit for doing problems on the board during class. **If you miss class any exam day, this grading scheme is voided.** Knowing basic definitions and ability to do basic calculations with them are essential to pass this course. Ability to do solve standard kinds of equations is essential for a grade of B. Expect to be able to do word problems for a grade of A. **IMPORTANT: In order to receive GE credit for this class, you only need a D-minus. You need a C if you wish to take Math 132 (C-minus is not enough) or if your major requires it (see your advisor for further information.)**

Extra help: Come to my office hours, or visit the **Math Lab in Kellogg 1109** which offers free help on a walk-in basis during business hours.

Deadlines: Last day to drop with no record: end of 2nd week of classes. The rules for dropping classes are complicated; see the CSUSM General Catalog 2012-14, p. 81-83, for more details concerning dropping courses.

Cheating: If you are caught cheating during the course I reserve the right to give you a zero on the relevant assignment or give you an F for the course. **During exams, you must cover your work so that other students cannot see it. If another student sees your work and succeeds in copying it, both you and that student are guilty of cheating.**

Free Speech and Behavior Restrictions: It is your responsibility to arrive on time and stay until the end of class. You should plan ahead to avoid trips to the lavatory during class. If you arrive at class late, shut the door quietly behind you, tiptoe in, quietly be seated as close to the door as possible, and otherwise minimize the disturbance. Avoid bringing food and drink to class, especially if it has an aroma. Please don't ever give me a gift; if you like what I do, please just say thank you.

General Education Program Student Learning Outcomes:

Students will communicate effectively in writing to various audiences. (writing)

Students will think critically and analytically about an issue, idea or problem. (critical thinking)

General Education Student Learning Outcomes for General Education Area B4:

B4.1: Explain and apply a variety of fundamental mathematical concepts, symbols, computations and principles.

B4.2: Determine which quantitative or symbolic reasoning methods are appropriate for solving a given problem and correctly implement those methods.

Course Student Learning Outcomes: Ability to solve equations and use them in word problems. Ability to maximize and minimize objective functions (linear programming) for use in economic decisions. Ability to use various kinds of functions in abstract problems and applications. Ability to use elementary counting principles and infinite series and apply them in word problems.

Writing Requirement: This course has a writing requirement of 2,500 words. This will be fulfilled by completing the exams, quizzes and homework. Work that is graded will be evaluated partly on the quality of the writing.