Sample Descriptor - Math 60X

The intent of this template is to provide base-line preparatory/concurrent support courses that colleges may tailor to meet the needs of their student populations, and is not intended for course submission to C-ID

Discipline: Mathematics – Pre-Transfer

Proposed Sub-discipline (if applicable):

General Course Title: Fundamentals of Algebra for Statistics or Liberal Arts

Min. Units 2

General Course Description:

This course consists of elements of beginning and intermediate algebra needed for statistics, liberal arts mathematics, or other non-mathematics-intensive fields. Topics include: modeling using expressions, equations, functions, and graphs; polynomial inequalities; and algebra of functions in data analysis, geometry, and/or symbolic logic. This course may be accompanied by corequisite/concurrent or prerequisite/preparatory support based on local placement practices and course offerings, for students needing more foundational skills.

This course may be offered in lecture or lab format as locally determined. Units are listed as minimum units commensurate with the depth and breadth at which topics are covered as determined locally. Additional topics may be added with unit load increased appropriately. This course may be mirrored as a noncredit course based on local need and policy.

Proposed Number: Math 60X

Proposed Suffix (if applicable): X

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NOTE: Descriptor templates with an X suffix fall outside of SB 1440/440 and are not subject to mandates associated with such legislation.

Any rationale or comment

This course description includes baseline topics of an intermediate algebra course for students not pursuing majors in STEM and some business fields. In addition, prerequisite and/or foundational skills are implicit in many topics and may not be explicitly stated in the Course Content. For example, “operations on real numbers” is a prerequisite skill to topics in this course. It is expected that colleges may include additional topics as appropriate to local curricular programs. As additional topics are included, the number of units should increase appropriately. Some colleges may choose to offer this course as a corequisite/concurrent course for students choosing to be enrolled in a transfer-level course that may need additional instruction and support, or as a prerequisite/preparatory course for students choosing not to enroll in a transfer-level course concurrently. This course is not a required element of a college’s curricular offerings, rather an option for colleges to meet the needs of the local student population.

Colleges that would like to offer more support for students to have the option to switch to a mathematics intensive field may choose to include more appropriate algebra topics.

Required Prerequisites: Local Decision

Required Co-Requisites: Local Decision

Advisories/Recommended Preparation1: It is expected that students have completed the skills attained in high school algebra I or the equivalent through the Common Core State Standards in Mathematics (CCSSM). Options for students who have not attained these skills may include:

1. Corequisite/concurrent model of C-ID Math 50X Elementary Mathematics
2. Prerequisite/preparatory model of C-ID Math 50X Elementary Mathematics

Course Content:

The following topics should be covered with a focus on skills development for statistics or liberal arts mathematics with an emphasis on modeling in data analysis, geometry, and/or symbolic logic:

1. Algebraic Expressions – simplify and evaluate
2. Rational Exponents
3. Polynomials
    a. Introductory study of factoring
    b. Solve Equations by factoring
    c. Quadratic Formula
    d. Graphing quadratics
4. Rational Expressions and Equations
    a. Solve Equations
    b. Introduction to Graphing
5. Inequalities – Linear, Absolute Value
    a. Solve
    b. Graphing
    c. Introduction to non-linear inequalities
6. Radical Expressions and Equations – Square Root
    a. Rational Exponents
7. Introduction to Exponential and Logarithmic Equations
8. Functions – Polynomial, Rational, Radical, Exponential, Logarithmic
    a. Function Notation
    b. Domain and Range
    c. Introductory graphing
9. Systems of Linear Equations in two variables

[1] Advisories or recommended preparation will not require validation but are recommendations to be considered by the student prior to enrolling.

Optional Topics:

1. Introductory topics in statistics may include: Graphical representations, Descriptive Statistics, Probability, correlation vs causation, data collection, experimental design and ethics.
2. Properties of Logarithms
3. Sequences and Series: Summation Notation
4. Binomial Theorem
5. Basic Ideas of Logic
6. Geometry
7. Graphing of Rational and Radical Functions
8. Matrices
9. Algebra and Composition of functions
10. Inverse functions
11. Affective Domain experiences (to develop being Self-Motivated, Persistent, Skeptical, Focused, Organized, Meta-cognitive, Prepared, Risk-taker, and Adaptable)

Laboratory Activities: (if applicable)

The course content could be offered in a laboratory format at the discretion of discipline faculty.

Course Objectives: At the conclusion of this course, the student should be able to (appropriate to the level and content of this course):

1. Solve linear, quadratic, absolute value, square root, exponential, logarithmic equations;
2. Solve systems of linear equations in two variables;
3. Solve linear and absolute value inequalities;
4. Graph linear, quadratic, absolute value, exponential, and logarithmic functions;
5. Apply elementary operations on functions;
6. Use mathematical modeling to solve applications in data analysis, geometry, and/or symbolic logic.

Methods of Evaluation:

To be determined by local department faculty. The instruments of evaluation require students to demonstrate their mastery of the learning objectives and their ability to devise, organize, and present complete solutions to problems. Departments may wish to consider using departmental final exams and focus on transparency of exam topics and grading rubrics.

Sample Textbooks, Manuals, or Other Support Materials (do not include editions or publications dates):

Instructional materials are a local decision at the discretion of the discipline faculty.

[For Office Use Only]

Descriptor Guide Sheet

Discipline: The discipline was determined and is entered.

Subdiscipline: You may decide that a sub-discipline will serve your discipline best. For example, biology faculty may or may not decide to identify subdivisions (cellular vs. organismic, or marine, or ecology/environmental). Discipline faculty will determine what best serves their needs.

General Course Title: Insert a course name in this field that is generally used and will be widely recognized. It need not be the actual course title at all colleges or universities but should describe the topic of the course.

Minimum Units: Indicate the minimum number of units expected of this course, *based on semester configuration*

Proposed Number: Use the numbering protocol to assign a tentative number to the course; like the sub-discipline or general course title, during your drafting stages, this number can be changed.

Proposed Suffix: If desirable, add an "L" after the number in the box to indicate a lab; an "S" to indicate this course is part of a sequence; a "B" to indicate a combined lab + lecture; or "X" to indicate intrasegmental.

Rationale or Comment: Use this space to provide explanation to the field about the number; during the drafting stage, you may also use this space to record a request for an additional suffix or modification of the numbering protocol.

Required Prerequisites or Co-Requisites: List any courses required to be completed prior to taking the listed course; if there is not agreement among segmental faculty about the prerequisites, you might consider describing a similar course without those prerequisites or listing only Advisories/Recommended Preparation (see below). A co-requisite does not mean in the CCCs what it may mean for the 4-year institutions.

Advisories/Recommended Preparation: These recommendations for courses, experiences, or preparation need not be validated; they can be good-faith and generally accepted recommendations from discipline faculty that further the students' chances of success in this or subsequent courses.

Course Content: Course content should list all the expected and essential topics of the course. If this course is a lab/lecture combination, the Lab content should be spelled out separately.

Course Objectives: List the course objectives, competencies, or skills that the students should be able to demonstrate upon completion of the course. Community college faculty should be attentive to explicitly linking the objectives to the topics covered. If this course is a lab/lecture combination, again the learning objectives should be spelled out separately and be linked to the topics covered in the lab component of the course. Use additional sheets as needed.

Methods of Evaluation: List examples of those methods you anticipate would be used to observe or measure the students' achievement of course objectives (e.g., quizzes, exams, laboratory work, field journals, projects, research, demonstrations).

Textbooks: College-level texts, materials, or software packages can be suggested here. While texts used by individual institutions and even individual sections will vary, enter examples of representative work. If this is a lab course or a lab/lecture section, remember to include an example of a lab manual. The current C-ID textbook policy requires that CORs have at least one textbook with a publication date within **seven (7)** years of the course outline approval date.

There may be cases in which a more recent text is expected (e.g. a technology course) or the publication date is less relevant (e.g. classic primary sources in literature, philosophy or history). If an FDRG determines that one or more textbooks need to be more recent, they will include that requirement on the descriptor (for descriptors developed or reviewed after Nov 1, 2012).

FDRG Lead's Signature and Date: When the descriptor template is finalized by the FDRG, is in final form, and is ready for posting, the Lead should send this completed and signed document to Miguel Rother at miguel@asccc.org. The descriptor will be posted on the C-ID website for review and comment prior to finalizing the descriptor for the next phase of the C-ID system.