



NORTHERN ARIZONA UNIVERSITY

UCC/UGC/ECCC

Proposal for New Course

Please attach proposed Syllabus in approved university format.

1. Course subject and number: MATH 115 2. Units: 3
See upper and lower division undergraduate course definitions.

3. College: Extended Campuses 4. Academic Unit: Personalized Learning

5. Student Learning Outcomes of the new course. (*Resources & Examples for Developing Course Learning Outcomes*)

- Organize and summarize data grammatically and numerically, analyze data and critically assess claims based on data.
- Set up probability models, make probability calculations, and apply probability concepts, such as the mean value of an experiment in making decisions.
- Interpret statistical data and claims such as margins of error in polls in writing and make simple statistical inference, such as the construction of confidence interval estimates of population proportion.
- Identify data with linear or exponential pattern and develop and apply a suitable model to determine and discuss in writing consequences of the information.
- Use models to better understand personal finance.

Design simple graph models or use existing models for applications in such areas as scheduling, organization or information and optimal strategies, and discuss results and interpretation in writing

6. Justification for new course, including how the course contributes to degree program outcomes, or other university requirements / student learning outcomes. (*Resources, Examples & Tools for Developing Effective Program Student Learning Outcomes*).

The purpose of quantitative reasoning is to provide the students with broad array of concepts and skills to solve real-world problems that are useful in other university courses, employment, and personal decisions. Students will acquire skills in understanding quantitative evidence in applying basic quantitative skills to solve real-life problems, especially in understanding the social and natural world. This course is being created to provide Math FNRQ for the Personalized Learning programs.

7. Effective **BEGINNING** of what term and year? Spring, 2013
See effective dates calendar.

8. Long course title: Quantitative and Analytical Calculation
(*max 100 characters including spaces*)

9. Short course title: MATH 115
(*max. 30 characters including spaces*)

10. Catalog course description (*max. 60 words, excluding requisites*):

Students will acquire skills in understanding quantitative evidence in applying basic quantitative skills to solve real-life problems, especially in understanding the social and natural world.

11. Will this course be part of any plan (major, minor or certificate) or sub plan (emphasis)?
Yes No

If yes, include the appropriate plan proposal.

12. Does this course duplicate content of existing courses? Yes No
If yes, list the courses with duplicate material. If the duplication is greater than 20%, explain why NAU should establish this course.

13. Will this course impact any other academic unit's enrollment or plan(s)? Yes No
If yes, include a letter of response from each impacted academic unit.

14. Grading option: Letter grade Pass/Fail Both

15. Co-convened with: n/a 14a. UGC approval date*: n/a
(For example: ESE 450 and ESE 550) See co-convening policy.
*Must be approved by UGC before UCC submission, and both course syllabi must be presented.

16. Cross-listed with: n/a
(For example: ES 450 and DIS 450) See cross listing policy.
Please submit a single cross-listed syllabus that will be used for all cross-listed courses.

17. May course be repeated for additional units? Yes No
16a. If yes, maximum units allowed? _____
16b. If yes, may course be repeated for additional units in the same term? Yes No

18. Prerequisites: N/A
If prerequisites, include the rationale for the prerequisites.

This course does not duplicate content of existing course, but is aligned to the learning outcomes from MAT 114.

19. Co requisites: _____
If co requisites, include the rationale for the co requisites.

20. Does this course include combined lecture and lab components? Yes No
If yes, include the units specific to each component in the course description above.

21. Names of the current faculty qualified to teach this course: Cori Gordon, Dora Donovan, and Jeannie Copley.

Answer 22-23 for UCC/ECCC only:

22. Is this course being proposed for Liberal Studies designation? Yes No
If yes, include a Liberal Studies proposal and syllabus with this proposal.

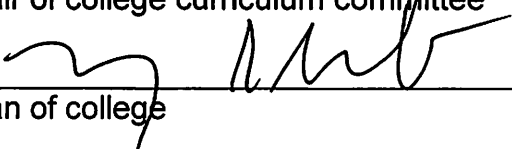
23. Is this course being proposed for Diversity designation? Yes No
If yes, include a Diversity proposal and syllabus with this proposal.

Reviewed by Curriculum Process Associate Date

Approvals:

Department Chair/ Unit Head (if appropriate) Date

Chair of college curriculum committee Date



Dean of college 11/13/12
Date

For Committee use only:

Cm ✓ R

11-7-12

UCC/UGC/ECCC Approval

Date

Approved as submitted:

Yes No

Approved as modified:

Yes No



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Personalized Learning

SYLLABUS
Quantitative and Analytical Calculation
(MATH 115)

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II. Student Learning Outcomes:

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Quantitative and Analytical Calculation Competency Mapping Document (MATH 115)

C1. Fundamental Math Principles: Apply math and financial principles to solve problems. MAT.C1

Objective 1: Basic Math: Apply fundamental math principles to solve problems. MAT.C1.O1

Lesson 1: Numbers and Measurements: Apply math principles to solve problems with a variety of number types and measurements. **MAT.C1.O1.L1 (MATH 115 1.0)**

Topic 1: Whole Numbers: Solve problems related to whole numbers.

MAT.C1.O1.L1.T1

Topic 2: Fractions and Factors Solve problems related to fractions and factors.

MAT.C1.O1.L1.T2

Topic 3: Decimals: Solve problems related to decimals. **MAT.C1.O1.L1.T3**

Topic 4: Percentages: Solve problems related to percentages.

MAT.C1.O1.L1.T4

Topic 5: Measurements: Solve problems related to U.S. and metric measurement systems. **MAT.C1.O1.L1.T5**

Topic 6_Mastery: Solve problems involving whole numbers, fractions, factors, decimals, percentages, and measurements. **MAT.C1.O1.L1.TM**

Materials:

- Elayn Martin-Gay, *Basic College Mathematics, 4th Edition*. Chapter 1: The Whole Numbers
- Elayn Martin-Gay, *Basic College Mathematics, 4th Edition*. Chapter 2: Multiplying and Dividing Fractions
- Elayn Martin-Gay, *Basic College Mathematics, 4th Edition*. Chapter 3: Adding and Subtracting Fractions
- Elayn Martin-Gay, *Basic College Mathematics, 4th Edition*. Chapter 4: Decimals
- Elayn Martin-Gay, *Basic College Mathematics, 4th Edition*. Chapter 6: Percent
- Elayn Martin-Gay, *Basic College Mathematics, 4th Edition*. Chapter 7: Measurement
- CourseConnect Basic College Mathematics Lesson 1: Whole Numbers
- CourseConnect Basic College Mathematics Lesson 2: Fractions and the Greatest Common Factor

- CourseConnect Basic College Mathematics Lesson 3: Fractions and the Lowest Common Multiple
- CourseConnect Basic College Mathematics Lesson 4: Decimals
- CourseConnect Basic College Mathematics Lesson 6: Percentages
- CourseConnect Basic College Mathematics Lesson 7: Measurement

Lesson 2: Algebra: Apply basic algebraic principles to solve problems. **MAT.C1.O1.L2 (MATH 115 1.0)**

Topic 1: Signed Numbers: Solve problems related to signed numbers. **MAT.C1.O1.L2.T1**

Topic 2: Algebraic Methods: Solve problems using algebraic methods. **MAT.C1.O1.L2.T2**

Topic 3_Mastery: Solve problems involving signed numbers and algebraic expressions. **MAT.C1.O1.L2.TM**

Materials:

- Elayn Martin-Gay, *Basic College Mathematics, 4th Edition*. Chapter 10: Signed Numbers
- Elayn Martin-Gay, *Basic College Mathematics, 4th Edition*. Chapter 11: Introduction to Algebra
- CourseConnect Basic College Mathematics Lesson 10: Signed Numbers
- CourseConnect Basic College Mathematics Lesson 11: Introduction to Algebra

Objective 2: Financial Principles: Apply financial principles to solve business problems and manage personal finances. MAT.C1.O2

Lesson 1: Financial Principles in Business: Apply financial principles to solve business problems. **MAT.C1.O2.L1 (MATH 115 1.0)**

Topic 1: Percentages and Statistics: Solve problems related to percentages and statistics. **MAT.C1.O2.L1.T1**

Topic 2: Discounts, Markups, and Markdowns: Solve problems related to trade and cash discounts, and markups and markdowns. **MAT.C1.O2.L1.T2**

Topic 3: Payroll: Solve problems related to payroll. **MAT.C1.O2.L1.T3**

Topic 4: Depreciation: Solve problems related to depreciation. **MAT.C1.O2.L1.T4**

Topic 5: Financial Statements: Use financial statements to determine the health of an organization. **MAT.C1.O2.L1.T5**

Topic 6_Mastery: Solve problems involving percentages, statistics, discounts, markups, markdowns, payroll, depreciation, and financial statements. **MAT.C1.O2.L1.TM**

Materials:

- Cheryl Cleaves, Margie Hobbs, and Jeffrey Noble, *Business Math, 9th Edition*. Chapter 6: Percents

- Cheryl Cleaves, Margie Hobbs, and Jeffrey Noble, *Business Math, 9th Edition*. Chapter 7: Business Statistics
- Cheryl Cleaves, Margie Hobbs, and Jeffrey Noble, *Business Math, 9th Edition*. Chapter 8: Trade and Cash Discounts
- Cheryl Cleaves, Margie Hobbs, and Jeffrey Noble, *Business Math, 9th Edition*. Chapter 9: Markup and Markdown
- Cheryl Cleaves, Margie Hobbs, and Jeffrey Noble, *Business Math, 9th Edition*. Chapter 10: Payroll
- Cheryl Cleaves, Margie Hobbs, and Jeffrey Noble, *Business Math, 9th Edition*. Chapter 17: Depreciation
- Cheryl Cleaves, Margie Hobbs, and Jeffrey Noble, *Business Math, 9th Edition*. Chapter 21: Financial Statements
- CourseConnect Business Math Lesson 3: Percentage and Statistics
- CourseConnect Business Math Lesson 4: Trade and Cash Discounts, Markup and Markdown
- CourseConnect Business Math Lesson 5: Payroll
- CourseConnect Business Math Lesson 9: Depreciation
- CourseConnect Business Math Lesson 12: Financial Statements

Lesson 2: Personal Finances: Apply financial principles to manage personal finances.
MAT.C1.O2.L2 (MATH 115 1.0)

Topic 1: Banking and Equations: Apply principles related to banking and equations to manage personal finances. **MAT.C1.O2.L2.T1**

Topic 2: Credit, Interest, and Value: Apply principles related to credit, interest, and value to manage personal finances. **MAT.C1.O2.L2.T2**

Topic 3: Investments: Apply principles related to annuities, sinking funds, stocks, and bonds to manage personal finances. **MAT.C1.O2.L2.T3**

Topic 4: Mortgages: Apply principles related to mortgages to manage personal finances. **MAT.C1.O2.L2.T4**

Topic 5: Insurance and Taxes: Apply principles related to insurance and taxes to manage personal finances. **MAT.C1.O2.L2.T5**

Topic 6: Financial Statements: Use financial statements to manage personal finances. **MAT.C1.O2.L2.T6**

Topic 7_Mastery: Create a personal financial plan which includes banking, credit, interest, investments, mortgages, insurance, and taxes.

MAT.C1.O2.L2.TM

Materials:

- Cheryl Cleaves, Margie Hobbs, and Jeffrey Noble, *Business Math, 9th Edition*. Chapter 4: Banking
- Cheryl Cleaves, Margie Hobbs, and Jeffrey Noble, *Business Math, 9th Edition*. Chapter 5: Equations
- Cheryl Cleaves, Margie Hobbs, and Jeffrey Noble, *Business Math, 9th Edition*. Chapter 11: Simple Interest and Simple Discount
- Cheryl Cleaves, Margie Hobbs, and Jeffrey Noble, *Business Math, 9th Edition*. Chapter 12: Consumer Credit

- Cheryl Cleaves, Margie Hobbs, and Jeffrey Noble, *Business Math, 9th Edition*. Chapter 13: Compound Interest, Future Value, and Present Value
- Cheryl Cleaves, Margie Hobbs, and Jeffrey Noble, *Business Math, 9th Edition*. Chapter 14: Annuities and Sinking Funds
- Cheryl Cleaves, Margie Hobbs, and Jeffrey Noble, *Business Math, 9th Edition*. Chapter 15: Building Wealth through Investments
- Cheryl Cleaves, Margie Hobbs, and Jeffrey Noble, *Business Math, 9th Edition*. Chapter 16: Mortgages
- Cheryl Cleaves, Margie Hobbs, and Jeffrey Noble, *Business Math, 9th Edition*. Chapter 19: Insurance
- Cheryl Cleaves, Margie Hobbs, and Jeffrey Noble, *Business Math, 9th Edition*. Chapter 20: Taxes
- Cheryl Cleaves, Margie Hobbs, and Jeffrey Noble, *Business Math, 9th Edition*. Chapter 21: Financial Statements
- CourseConnect Business Math Lesson 2: Banking and Equations
- CourseConnect Business Math Lesson 6: Interest, Discount, Credit and Value
- CourseConnect Business Math Lesson 7: Annuities, Sinking Funds, Stocks, and Bonds
- CourseConnect Business Math Lesson 8: Mortgages
- CourseConnect Business Math Lesson 11: Insurance and Taxes
- CourseConnect Business Math Lesson 12: Financial Statements

Part II—NAU Courses Mapped to Competencies

- **MATH 115 (4 units)**

Part III-COMPETENCY GRID

Competency	MATH 115
C1	4
Competency UNITS	4