

2005-110. Add new courses **MATH 135Q, 136Q, 230Q**
[Math Proposal I].

1. Date: May 11, 2005
2. Department requesting this course: Mathematics
3. Semester and year in which course will be first offered: Fall 2006

Final catalog Listing :

135Q. Honors Calculus I

First semester. Four credits. Prerequisite: Passing score on the Calculus Readiness Survey. Students cannot receive credit for MATH 135 and either MATH 113, 115, or 120. May be used in place of MATH 115 to fulfill any requirement satisfied by MATH 115. (Honors Course) The subject matter of MATH 115 in greater depth, with emphasis on the underlying mathematical concepts.

136Q. Honors Calculus II

Both semesters. Four credits. Prerequisite: MATH 135 or advanced placement credit for calculus (a score of 4 or 5 on the calculus AB examination or a score of 3 on the Calculus BC examination) or consent of instructor.

Students cannot receive credit for MATH 136 and either MATH 114, 116, or 121. May be used in place of MATH 116 to fulfill any requirement satisfied by MATH 116.

(Honors Course) The subject matter of MATH 116 in greater depth, with emphasis on the underlying mathematical concepts.

230Q. Honors Multivariable Calculus

Both semesters. Four credits. Prerequisite: MATH 136 or advanced placement credit for one year of calculus (a score of 4 or 5 on the Calculus BC examination) or consent of instructor. Open to sophomores or higher. Not open to students who have passed MATH 210 or 245. May be used in place of MATH 210 to fulfill any requirement satisfied by MATH 210.

(Honors Course) The subject matter of MATH 210 in greater depth, with emphasis on the underlying mathematical concepts

Items included in catalog Listing:

Obligatory Items

1. Standard abbreviation for Department or Program: MATH
2. Course Numbers: 135Q, 136Q, 230Q
3. Course Titles: Honors Calculus I, Honors Calculus II, Honors Multivariable Calculus
4. Semester offered: MATH 135: first semester; 136 and 230: both semesters
5. Number of Credits: Four credits each
6. Course description:
 - (i) 135Q(Honors Course) The subject matter of MATH 115 in greater depth, with emphasis on the underlying mathematical concepts.
 - (ii) 136Q(Honors Course) The subject matter of MATH 116 in greater depth, with emphasis on the underlying mathematical concepts.
 - (iii) 230Q(Honors Course) The subject matter of MATH 210 in greater depth, with emphasis on the underlying mathematical concepts

Optional Items

7. Number of Class Periods, if not standard : Four
8. Prerequisites, if applicable :135: Passing score on the Calculus Readiness Survey136: MATH 135 or advanced placement credit for calculus (a score of 4 or 5 on the calculus AB examination or a score of 3 on the Calculus BC examination) or consent of instructor.230: MATH 136 or consent of instructor.
10. Consent of Instructor, if applicable: Possible way to satisfy prerequisites but not required.
11. Exclusions, if applicable:Students cannot receive credit for MATH 135 and either MATH 113, 115, or 120. Students cannot receive credit for MATH 136 and either MATH 114, 116, or 121. MATH 230 not open to students who have passed MATH 210 or 245.
14. Open to Sophomores: Mathematics 230Q will be open to sophomores (and to qualified freshmen)
15. Skill Codes : All will be Q-courses

Justification

1. Reasons for adding this course: The Department of Mathematics is replacing the honors sequence 120-121-220 by two sequences of honors calculus courses. The reason for this change is that the department is creating an honors program in mathematics for highly talented mathematics students seeking a rigorous program providing superior preparation for advanced work. This new program will begin with Math 243-244-245-246, which is too high powered for all but a handful of first-year students. To better serve the remaining honors students, we are introducing Math 135,136 and 230 which are honors versions of Math 115,116 and 210, respectively. In the past, Math 120-121-220 has tried to fulfill both roles.
2. Academic Merit: It is important for honors students who study calculus, especially those majoring in the natural sciences or mathematical sciences, to gain an understanding of the concepts underlying the subject as well as a mastery of the standard algorithms of the subject.
3. Overlapping Courses : MATH 112-114, 115-116, and 210 consider many of the topics in the proposed courses.
4. Number of Students Expected: 20-30 per course each semester
5. Number and Size of Section: 1 section per course each with a capacity of 30
6. Effects on Other Departments: No change from the present program
7. Effects on Regional Campuses: None
8. Staffing: Since these courses replace MATH 120, 121, 220, no additional staff should be required. Will be taught by faculty or post-doctoral fellows.
9. Dates approved by:
 - Department Curriculum Committee: April 2005
 - Department Faculty: May 5, 2005
10. Name, Phone Number, and e-mail address of principal contact person:
Andy Haas, 486-4328, haas@math.uconn.edu or
Jeffrey L. Tollefson, 486-3921, tollefson@math.uconn.edu

2005-111. Add New Courses Math 243Q, 244Q, 245Q, 246Q [Proposal II.]

1. Date: May 11, 2005
2. Department requesting this course: MATHEMATICS

3. Semester and year in which course will be first offered: Fall 2006

Final catalog Listing :

MATH 243Q-244Q. Advanced Calculus I, II

Both semesters. 4 credits each semester. May be taken for honors credit but open to any qualified student. Open to sophomores or higher. Prerequisite: A year of calculus (that may include calculus taken in high school) or consent of instructor. A rigorous treatment of the mathematics underlying the main results of one-variable calculus. Intended for students with strong interest and ability in mathematics who are already familiar with the computational aspects of basic calculus.

MATH 243Q may be used in place of MATH 115 or 135 to fulfill any requirement satisfied by MATH 115 or 135. MATH 244Q may be used in place of MATH 116 or 136 to fulfill any requirement satisfied by MATH 116 or 136.

MATH 245Q-246Q. Advanced Calculus III, IV

Both semesters. 4 credits each semester. May be taken for honors credit but open to any qualified student. Open to sophomores or higher. Prerequisite: Math 244Q or consent of instructor.

A rigorous treatment of more advanced topics, including vector spaces and their application to multivariable calculus and first-order, second-order and systems of differential equations.

MATH 245 may be used in place of MATH 210 to fulfill any requirement satisfied by MATH 210. MATH 246 may be used in place of MATH 211 to fulfill any requirement satisfied by MATH 211.

Items included in catalog Listing:

Obligatory Items

1. Standard abbreviation for Department or Program: MATH

2. Course Number: 243-244 and 245-246

3. Course Title: Advanced Calculus I, II, III, IV

4. Semester offered: Both

5. Number of Credits: Four four-credit courses

6. Course description:

243-244: A rigorous treatment of the mathematics underlying the main results of one-variable calculus. Intended for students with strong interest and ability in mathematics who are already familiar with the computational aspects of basic calculus.

MATH 243Q may be used in place of MATH 115 or 135 to fulfill any requirement satisfied by MATH 115 or 135. MATH 244Q may be used in place of MATH 116 or 136 to fulfill any requirement satisfied by MATH 116 or 136.

245-246: A rigorous treatment of more advanced topics, including vector spaces and their application to multivariable calculus and first-order, second-order and systems of differential equations.

MATH 245 may be used in place of MATH 210 to fulfill any requirement satisfied by MATH 210. MATH 246 may be used in place of MATH 211 to fulfill any requirement satisfied by MATH 211.

Optional Items

7. Number of Class Periods, if not standard : Four
8. Prerequisites, if applicable:
 - 243:A year of calculus (that may include calculus taken in high school) or consent of instructor.
 - 244: MATH 243
 - 245: Math 244Q or consent of instructor.
 - 246: MATH 245
10. Consent of Instructor, if applicable: A possible prerequisite but not a requirement
14. Open to Sophomores: Yes
15. Skill Codes : All are Q-courses

Justification

1. Reasons for adding this course: The Department of Mathematics is replacing the honors sequence 120-121-220 by two sequences of honors calculus courses, of which this is one. The reason for this change is that the department is creating an honors program in mathematics for highly talented mathematics students seeking a rigorous program providing superior preparation for advanced work. This program will begin with Math 243-244-245-246
2. Academic Merit : These courses will engage students and instructors in a deep and thorough study of various aspects of calculus and differential equations and the underlying theory.

Math 243Q-244Q will give a rigorous treatment of the foundations of calculus. The likely text for this course will be “Calculus” by Michael Spivak.

Table of Contents:

- 1 Basic Properties of Numbers
- 2 Numbers of Various Sorts
- 3 Functions; Ordered Pairs
- 4 Graphs; Vectors, The Conic Sections, Polar Coordinates
- 5 Limits
- 6 Continuous Functions
- 7 Three Hard Theorems
- 8 Least Upper Bounds; Uniform Continuity
- 9 Derivatives
- 10 Differentiation
- 11 Significance of the Derivative; Convexity and Concavity
- 12 Inverse Functions; Parametric Representation of Curves
- 13 Integrals; Riemann Sums
- 14 The Fundamental Theorem of Calculus
- 15 The Trigonometric Functions
- 16 Pi is Irrational
- 17 Planetary Motion
- 18 The Logarithm and Exponential Functions
- 19 Integration in Elementary Terms; The Cosmopolitan Integral
- 20 Approximation by Polynomial Functions
- 21 e is Transcendental
- 22 Infinite Sequences
- 23 Infinite Series
- 24 Uniform Convergence and Power Series

- 25 Complex Numbers
- 26 Complex Functions
- 27 Complex Power Series
- 28 Fields
- 29 Construction of the Real Numbers
- 30 Uniqueness of the Real Numbers

Math 245Q-246Q will integrate the algebra and geometry of vectors with multivariable calculus and differential equations, including systems. The text for this course will likely be “Multivariable Mathematics” by Richard E. Williamson and Hale F. Trotter.

Table of Contents:

- 1. Vectors.
- 2. Equations and Matrices.
- 3. Vector Spaces and Linearity.
- 4. Derivatives.
- 5. Differentiability.
- 6. Vector Differential Calculus.
- 7. Multiple Integration.
- 8. Integrals and Derivatives on Curves.
- 9. Vector Field Theory.
- 10. First Order Differential Equations.
- 11. Second-Order Equations.
- 12. Introduction to Systems.
- 13. Matrix Methods.
- 14. Infinite Series.

3. Overlapping Courses: Math 243Q-244Q will include the content of Math 213. Math 245Q-246Q will include the contents of Math 210Q, 211Q and 227Q but at a higher level.

4. Number of Students Expected:

Math 243Q-244Q: 20 each semester;

Math 245Q-246Q: 20 each semester;

5. Number and Size of Section: 1 section of 20 for each course.

6. Effects on Other Departments: None

7. Effects on Regional Campuses: None

8. Staffing : Will be taught by faculty or post-doctoral fellows.

9. Dates approved by:

Department Curriculum Committee: April 2005

Department Faculty: May 5, 2005

10. Name, Phone Number, and e-mail address of principal contact person:

Andy Haas, 486-4328, haas@math.uconn.edu or

Jeffrey L. Tollefson, 486-3921, tollefson@math.uconn.edu

2005-112. Proposal to Add new courses **MATH 261, 265, 267** and to insert restrictions in the corresponding graduate courses.

[Math Proposal III]

1. Date: May 11, 2005
2. Department requesting this course: Mathematics
3. Semester and year in which course will be first offered: Fall 2006

Final catalog listings for the new courses

MATH 261. Introduction to Modern Analysis

(Also offered as MATH 301.) First semester. Three credits. Prerequisite: Consent of instructor. Not open for credit to students who have passed MATH 301.

Metric spaces, sequences and series, continuity, differentiation, the Riemann-Stieltjes integral, functions of several variables.

MATH 265. Abstract Algebra I

(Also offered as MATH 315.) First semester. Three credits. Prerequisite: Consent of instructor. Not open for credit to students who have passed MATH 315.

A study of the fundamental concepts of modern algebra: groups, rings, fields. Also selected topics in linear algebra.

MATH 267. Introduction to Geometry and Topology

(Also offered as MATH 307.) First semester. Three credits. Prerequisite: Consent of instructor. Not open for credit to students who have passed MATH 307.

Topological spaces, connectedness, compactness, separation axioms, Tychonoff theorem, compact-open topology, fundamental group, covering spaces, simplicial complexes, differentiable manifolds, homology theory and the De Rham theory, intrinsic Riemannian geometry of surfaces.

Revised catalog listings for the corresponding graduate courses

MATH 301. Introduction to Modern Analysis

3 credits. Lecture. Not open for credit to students who have passed MATH 261.

Metric spaces, sequences and series, continuity, differentiation, the Riemann-Stieltjes integral, functions of several variables.

MATH 315. Abstract Algebra I

3 credits. Lecture. Not open for credit to students who have passed MATH 265.

A study of the fundamental concepts of modern algebra: groups, rings, fields. Also selected topics in linear algebra.

MATH 307. Introduction to Geometry and Topology

3 credits. Lecture. Prerequisite: MATH 301, which may be taken concurrently. Not open for credit to students who have passed MATH 267.

Topological spaces, connectedness, compactness, separation axioms, Tychonoff theorem, compact-open topology, fundamental group, covering spaces, simplicial complexes,

differentiable manifolds, homology theory and the De Rham theory, intrinsic Riemannian geometry of surfaces.

Items included in catalog Listing:

Obligatory Items

1. Standard abbreviation for Department or Program: MATH
2. Course Numbers: 261, 265, 267
3. Course Titles: Introduction to Modern Analysis , Abstract Algebra I , Introduction to Geometry and Topology (respectively)
4. Semester offered: First
5. Number of Credits: Three credits each
6. Course descriptions:
 - (i) 261: Metric spaces, sequences and series, continuity, differentiation, the Riemann-Stieltjes integral, functions of several variables.
 - (ii) 265: A study of the fundamental concepts of modern algebra: groups, rings, fields. Also selected topics in linear algebra.
 - (iii) 267: Topological spaces, connectedness, compactness, separation axioms, Tychonoff theorem, compact-open topology, fundamental group, covering spaces, simplicial complexes, differentiable manifolds, homology theory and the De Rham theory, intrinsic Riemannian geometry of surfaces.
8. Prerequisite: Consent of instructor.
10. Consent: required
11. Exclusions: Students cannot receive credit for both the undergraduate and graduate versions of any of these courses.

Justification

1. Reasons for adding these courses: We envision that students in the new mathematics honors program will be required to take one of these to complete their mathematics degrees.
2. Academic Merit: We are adding dual numbering to three existing graduate courses.
3. Overlapping Courses:
4. Number of Students Expected: 5 per course each year
5. Number and Size of Section: 1 section per course (combining the undergraduate and graduate courses) each with capacity of 25.
6. Effects on Other Departments: None
7. Effects on Regional Campuses: None
8. Staffing: Undergraduates and graduate students will be commingled, and since the three graduate courses are a fundamental part of our graduate instruction, no additional staffing will be required.
9. Dates approved by:
 - Department Curriculum Committee: April 2005
 - Department Faculty: May 5, 2005
10. Name, Phone Number, and e-mail address of principal contact person:
Andy Haas, 486-4328, haas@math.uconn.edu or
Jeffrey L. Tollefson, 486-3921, tollefson@math.uconn.edu

2005-112b. Alter corresponding restrictions to **Math 301, 307, 315.**

2005-113. Proposal to Drop [Existing]Math 120Q, 121Q
[Math Proposal IV.]

1. Date: May 12, 2005
2. Department: Mathematics
3. Catalogue Copy:

120Q. Enhanced Calculus I

Either semester. Four credits. Four class periods. Prerequisite: Passing score on the Calculus Readiness Test. Students cannot receive credit for MATH 120 and either MATH 113 or 115. May be used in place of MATH 113 or 115 to fulfill any requirement satisfied by MATH 113 or 115. Intended to provide superior preparation for prospective mathematics, science and engineering majors. Recommended for those who have taken a semester of calculus in high school.

The subject matter of MATH 115 in greater depth, with emphasis on the underlying mathematical concepts.

121Q. Enhanced Calculus II

Either semester. Four credits. Four class periods. Prerequisite: MATH 120 or advanced placement credit for calculus (a score of 4 or 5 on the calculus AB examination or a score of 3 on the Calculus BC examination) or consent of instructor. Not open for credit to students who have passed MATH 114 or 116. May be used in place of MATH 114 or 116 to fulfill any requirement satisfied by MATH 114 or 116. Intended to provide superior preparation for prospective mathematics, science and engineering majors. Recommended for those who have taken a semester of calculus in high school.

The subject matter of MATH 116 in greater depth, with emphasis on the underlying mathematical concepts.

220Q. Enhanced Multivariable Calculus

Either semester. Four credits. Prerequisite: MATH 121 or instructor consent . Open to sophomores or higher. Not open to students who have passed MATH 210. MATH 220 satisfies any requirement met by MATH 210, and provides superior preparation for prospective mathematics, science, and engineering majors.

The subject matter of MATH 210 in greater depth, with emphasis on the underlying mathematical concepts.

4. Effective Date: Fall 2006

Justification

1. Reasons for dropping these courses: The Department of Mathematics is replacing the honors sequence 120-121-220 by two sequences of honors calculus courses. The reason for this change is that the department is creating an honors program in mathematics for highly talented mathematics students seeking a rigorous program providing superior preparation for advanced work. This new program will begin with Math 243-244-245-246, which is too high powered for all but a handful of first-year students. To better serve the remaining honors students, we are introducing Math 135,136 and 230 which are honors versions of Math 115,116 and 210, respectively. In the past, Math 120-121-220 has tried to fulfill both roles.

2. Other Departments Consulted: None

4. Effects on Other Departments: Math 135, 136 and 230 will replace Math 120, 121 and 220, respectively.

5. Effects on Regional Campuses: None

6. Dates approved by (see Note Q):

Department Curriculum Committee: April 2005

Department Faculty: May 5, 2005

8. Name, Phone Number, and e-mail address of principal contact person:

Andy Haas, 486-4328, haas@math.uconn.edu or

Jeffrey L. Tollefson, 486-3921, tollefson@math.uconn.edu

2005-114. Proposals to Change Existing Math Courses 106Q, 107Q,112Q, 113Q, 115Q/QC, 116Q/QC, 200, 204, 210Q, 211Q, 215, 216, 223Q, 224, 225, 227Q, 231, 235, 237, 242W, 247Q-248Q, 250, 252,255, 258, 272, 273-274, 279, 281,283, 285.

Math Proposal V. (revised)

1. Date: May 12, 2005

2. Department: Mathematics

3. Nature of Proposed Changes: Revise limitations, exclusions, or prerequisite equivalents to reflect the addition of the Mathematics honors courses. (For MATH 107Q, to extend the list of courses for which it is not sufficient preparation.)

6. Effective Date: Fall 2006

V(a) MATH 106Q

4. Current Catalog Copy:

106Q. Calculus for Business and Economics

Either semester. Three credits. (One credit for students who have passed MATH 113, 115, or 120.)

Recommended preparation: MATH 101 or the equivalent and MATH 105. Not open for credit to students who have passed MATH 118.

Derivatives and integrals of algebraic, exponential and logarithmic functions. Functions of several variables. Applications.

5. Proposed Catalog Copy:

106Q. Calculus for Business and Economics

Either semester. Three credits. (One credit for students who have passed MATH 113, 115, 120, or 135.)

Recommended preparation: MATH 101 or the equivalent and MATH 105. Not open for credit to students who have passed MATH 118.

Derivatives and integrals of algebraic, exponential and logarithmic functions. Functions of several variables. Applications.

V(b) MATH 107Q

4. Current Catalog Copy:

107Q. Elementary Mathematical Modeling

Either semester. Three credits. Recommended preparation: MATH 101 or the equivalent. Not open to students who have passed any mathematics course other than MATH 101, 102, 103, 105, or 108. This course and MATH 109 cannot both be taken for credit. This course should not be considered as adequate preparation for MATH 106, 112, 115, or 120.

Use of algebraic and trigonometric functions with technology to analyze quantitative relationships and illustrate the role of mathematics in modern life; graphical numerical and symbolic methods. Most sections require a graphing calculator; some require work with a computer spreadsheet.

5. Proposed Catalog Copy:

107Q. Elementary Mathematical Modeling

Either semester. Three credits. Recommended preparation: MATH 101 or the equivalent. Not open to students who have passed any mathematics course other than MATH 101, 102, 103, 105, or 108. This course and MATH 109 cannot both be taken for credit. This course should not be considered as adequate preparation for MATH 106, 112, 115, 120, or 135.

Use of algebraic and trigonometric functions with technology to analyze quantitative relationships and illustrate the role of mathematics in modern life; graphical numerical and symbolic methods. Most sections require a graphing calculator; some require work with a computer spreadsheet.

V(c) MATH 112Q

4. Current Catalog Copy:

112Q. Introductory Calculus 1

Either semester. Four credits. Four class periods. Recommended preparation: MATH 101 or the equivalent. Students cannot receive credit for MATH 112 and MATH 115 or 120. Students who have not passed the Calculus Readiness Test take this course rather than MATH 115 or 120.

Limits, derivatives, and extreme values of algebraic functions, with supporting algebraic topics.

5. Proposed Catalog Copy:

112Q. Introductory Calculus 1

Either semester. Four credits. Four class periods. Recommended preparation: MATH 101 or the equivalent. Students cannot receive credit for MATH 112 and any of MATH 115, 120, or 135. Students who have not passed the Calculus Readiness Test take this course rather than MATH 115 or 120.

Limits, derivatives, and extreme values of algebraic functions, with supporting algebraic topics.

V(d) MATH 113Q

4. Current Catalog Copy:

113Q. Introductory Calculus 2

Either semester. Four credits. Four class periods. Prerequisite: MATH 112. Recommended preparation: A grade of C- or better in MATH 112. Students cannot receive credit for MATH 113 and either MATH 115

or 120. May be used in place of MATH 115 or 120 to fulfill any requirement satisfied by MATH 115 or 120.

Limits, derivatives, and extreme values of trigonometric functions, with supporting trigonometric topics; anti-derivatives of algebraic and trigonometric functions; the definite integral and applications.

5. Proposed Catalog Copy:

113Q. Introductory Calculus 2

Either semester. Four credits. Four class periods. Prerequisite: MATH 112. Recommended preparation: A grade of C- or better in MATH 112. Students cannot receive credit for MATH 113 and any of MATH 115, 120, or 135. May be used in place of MATH 115 or 120 to fulfill any requirement satisfied by MATH 115 or 120.

Limits, derivatives, and extreme values of trigonometric functions, with supporting trigonometric topics; anti-derivatives of algebraic and trigonometric functions; the definite integral and applications.

V(e) MATH 114Q

4. Current Catalog Copy:

114Q. Introductory Calculus 3

Either semester. Four credits. Four class periods. Prerequisite: MATH 113. Recommended preparation: A grade of C- or better in MATH 113. Note: MATH 115 is not adequate preparation for MATH 114. Not open for credit to students who have passed MATH 116 or 121.

The transcendental functions, formal integration, polar coordinates, infinite sequences and series, lines and planes in three dimensions, vector algebra.

5. Proposed Catalog Copy:

114Q. Introductory Calculus 3

Either semester. Four credits. Four class periods. Prerequisite: MATH 113. Recommended preparation: A grade of C- or better in MATH 113. Note: MATH 115 is not adequate preparation for MATH 114. Not open for credit to students who have passed MATH 116, 121, or 136.

The transcendental functions, formal integration, polar coordinates, infinite sequences and series, lines and planes in three dimensions, vector algebra.

V(f) MATH 115Q

4. Current Catalog Copy:

115Q or QC. Calculus I

Either semester. Four credits. Four class periods. Prerequisite: Passing score on the Calculus Readiness Test. Students cannot receive credit for MATH 115 and either MATH 112, 113, or 120. Suitable for students with some prior calculus experience. May be used in place of MATH 112 or 120 to fulfill any requirement satisfied by MATH 112 or 120.

Limits, continuity, differentiation, antidifferentiation, definite integrals, with applications to the physical and engineering sciences. Sections with QC credit integrate computer-laboratory activity.

5. Proposed Catalog Copy:

115Q or QC. Calculus I

Either semester. Four credits. Four class periods. Prerequisite: Passing score on the Calculus Readiness Test. Students cannot receive credit for MATH 115 and any of MATH 112, 113, 120, or 135. Suitable for

students with some prior calculus experience. May be used in place of MATH 112, 120, or 135 to fulfill any requirement satisfied by MATH 112, 120, or 135.

Limits, continuity, differentiation, antidifferentiation, definite integrals, with applications to the physical and engineering sciences. Sections with QC credit integrate computer-laboratory activity.

V(g) MATH 116Q

4. Current Catalog Copy:

116Q or QC. Calculus II

Either semester. Four credits. Four class periods. Prerequisite: MATH 113 or 115 or 120, or advanced placement credit for calculus (a score of 4 or 5 on the Calculus AB exam or a score of 3 on the Calculus BC exam). Recommended preparation: A grade of C- or better in MATH 113 and 115. Not open to students who have passed MATH 114 or 121. Substitutes for MATH 114 or 121 as a requirement. Transcendental functions, formal integration, polar coordinates, infinite sequences and series, vector algebra and geometry, with applications to the physical sciences and engineering. Sections with QC credit integrate computer-laboratory activity.

5. Proposed Catalog Copy:

116Q or QC. Calculus II

Either semester. Four credits. Four class periods. Prerequisite: MATH 113, 115, 120, or 135, or advanced placement credit for calculus (a score of 4 or 5 on the Calculus AB exam or a score of 3 on the Calculus BC exam). Recommended preparation: A grade of C- or better in MATH 113 and 115. Not open to students who have passed MATH 114, 121, or 136. Substitutes for MATH 114 or 121 as a requirement. Transcendental functions, formal integration, polar coordinates, infinite sequences and series, vector algebra and geometry, with applications to the physical sciences and engineering. Sections with QC credit integrate computer-laboratory activity.

V(h) MATH 200

4. Current Catalog Copy:

MATH 200. Undergraduate Seminar I.

Either Semester. One credit.

Prerequisite: MATH 210 or MATH 220 and MATH 211 or MATH 221.

The student will attend 6-8 seminars per semester, and choose one mathematical topic to investigate in detail. The student will write a well-revised, comprehensive paper on this topic, including a literature review, description of technical details, and a summary and discussion.

5. Proposed Catalog Copy:

MATH 200. Undergraduate Seminar I.

Either Semester. One credit.

Prerequisite: **Either** MATH 210, 220, 230, or 245; and **either** MATH 211, 221 or 246.

The student will attend 6-8 seminars per semester, and choose one mathematical topic to investigate in detail. The student will write a well-revised, comprehensive paper on this topic, including a literature review, description of technical details, and a summary and discussion.

V(i) MATH 204

4. Current Catalog Copy:

204. Introduction to Mathematical Modeling

Either semester. Three credits. Prerequisite: MATH 221; or MATH 211 and 227. Knowledge of a programming language is strongly recommended. Not open for credit to students who have passed MATH 304 or 305, CHEM 305, or PHYS 305.

Construction of mathematical models in the social, physical, life and management sciences. Linear programming, simplex algorithm, duality. Graphical and probabilistic modeling. Stochastic processes, Markov chains and matrices. Basic differential equations and modeling.

5. Proposed Catalog Copy:

204. Introduction to Mathematical Modeling

Either semester. Three credits. Prerequisite: MATH 221 or 246; or MATH 211 and 227. Knowledge of a programming language is strongly recommended. Not open for credit to students who have passed MATH 304 or 305, CHEM 305, or PHYS 305.

Construction of mathematical models in the social, physical, life and management sciences. Linear programming, simplex algorithm, duality. Graphical and probabilistic modeling. Stochastic processes, Markov chains and matrices. Basic differential equations and modeling.

V(j) MATH 210Q

4. Current Catalog Copy:

210Q. Multivariable Calculus

Either semester. Four credits. Four class periods. Prerequisite: MATH 116 or 121 or a score of 4 or 5 on the Advanced Placement Calculus BC exam. Recommended preparation: A grade of C- or better in MATH 116. Not open for credit to students who have passed MATH 220. Open to sophomores or higher. Two- and three-dimensional vector algebra, calculus of functions of several variables, vector differential calculus, line and surface integrals.

5. Proposed Catalog Copy:

210Q. Multivariable Calculus

Either semester. Four credits. Four class periods. Prerequisite: MATH 116, 121, or 136 or a score of 4 or 5 on the Advanced Placement Calculus BC exam. Recommended preparation: A grade of C- or better in MATH 116. Not open for credit to students who have passed MATH 220 or 230 or 245. Open to sophomores or higher. Two- and three-dimensional vector algebra, calculus of functions of several variables, vector differential calculus, line and surface integrals.

V(k) MATH 211Q

4. Current Catalog Copy:

211Q. Elementary Differential Equations

Either semester. Three credits. Prerequisite: MATH 116 or 121. Recommended preparation: A grade of C- or better in MATH 116; and MATH 210 or 220. Not open for credit to students who have passed MATH 221. Open to sophomores or higher. Introduction to ordinary differential equations and their applications, linear differential equations, systems of first order linear equations, numerical methods.

5. Proposed Catalog Copy:

211Q. Elementary Differential Equations

Either semester. Three credits. Prerequisite: MATH 116, 121, [136](#) or [244](#). Recommended preparation: A grade of C- or better in MATH 116; and MATH 210, 220, or [230](#). Not open for credit to students who have passed MATH 221 or [246](#). Open to sophomores or higher.

Introduction to ordinary differential equations and their applications, linear differential equations, systems of first order linear equations, numerical methods.

V(l) MATH 215

4. Current Catalog Copy:

215. Abstract Linear Algebra

Either semester. Alternate years. Three credits.

Prerequisite: [MATH 227](#) and [MATH 213](#) or [214](#).

Vector spaces and linear transformations over fields.

5. Proposed Catalog copy:

215. Abstract Linear Algebra

Either semester. Alternate years. Three credits.

Prerequisite: MATH 227 or [246](#); and MATH 213 or 214.

Vector spaces and linear transformations over fields.

V(m) MATH 216

4. Current Catalog Copy:

216. Abstract Algebra I

Either semester. Three credits. Prerequisite: [MATH 213](#) or [214](#).

Recommended preparation: [MATH 215](#) or [227](#).

The fundamental topics of modern algebra including elementary number theory, groups, rings, polynomials and fields.

5. Proposed Catalog Copy:

216. Abstract Algebra I

Either semester. Three credits. Prerequisite: [MATH 213](#) or [214](#) or [244](#).

Recommended preparation: Math 215 or 227 or [246](#).

The fundamental topics of modern algebra including elementary number theory, groups, rings, polynomials and fields.

V(n) MATH 223Q

4. Current Catalog Copy:

223Q. Geometry

Either semester. Three credits. Prerequisite: MATH 113 or 115 or 120. MATH 113 may be taken concurrently. Open to sophomores or higher.

Deductive reasoning and the axiomatic method, Euclidean geometry, parallelism, hyperbolic and other non-Euclidean geometries, geometric transformations.

5. Proposed Catalog Copy:

223Q. Geometry

Either semester. Three credits. Prerequisite: MATH 113, 115, 120, 135 or 244. MATH 113 may be taken concurrently. Open to sophomores or higher.

Deductive reasoning and the axiomatic method, Euclidean geometry, parallelism, hyperbolic and other non-Euclidean geometries, geometric transformations.

V(o) MATH 224

4. Current Catalog Copy:

224. Projective Geometry

Either semester. Three credits. Prerequisite: MATH 213Q.

Finite and infinite geometries as logical systems based on axioms. Synthetic and analytic projective geometry.

5. Proposed Catalog Copy:

224. Projective Geometry

Either semester. Three credits. Prerequisite: MATH 213Q or 244.

Finite and infinite geometries as logical systems based on axioms. Synthetic and analytic projective geometry.

V(p) MATH 225

4. Current Catalog Copy:

225. Differential Geometry

Either semester, alternate years. Three credits. Prerequisite: MATH 210 and 211, and MATH 213 or 214. The in-depth study of curves and surfaces in space.

5. Proposed Catalog Copy:

225. Differential Geometry

Either semester, alternate years. Three credits. Prerequisite: **Either (i) MATH 210 or 230**, and 211, and MATH 213, 214 **or 244; or (ii) Math 246**.

The in-depth study of curves and surfaces in space.

V(q) MATH 227Q

4. Current Catalog Copy:

227Q. Applied Linear Algebra

Either semester. Three credits. Prerequisite: MATH 116 or 121. Recommended preparation: A grade of C- or better in MATH 116. Not open for credit to students who have passed MATH 215. Open to sophomores or higher.

Systems of equations, matrices, determinants, linear transformations on vector spaces, characteristic values and vectors, from a computational point of view. The course is an introduction to the techniques of linear algebra with elementary applications.

5. Proposed Catalog Copy:

227Q. Applied Linear Algebra

Either semester. Three credits. Prerequisite: MATH 116, 121, 136 or 244. Recommended preparation: A grade of C- or better in MATH 116. Not open for credit to students who have passed MATH 215 or 246. Open to sophomores or higher.

Systems of equations, matrices, determinants, linear transformations on vector spaces, characteristic values and vectors, from a computational point of view. The course is an introduction to the techniques of linear algebra with elementary applications.

V(r) MATH 231

4. Current Catalog Copy:

231. Probability

Either semester. Three credits. Prerequisite: MATH 210 or 220, which may be taken concurrently with the consent of the instructor.

Introduction to the theory of probability. Discussion of some of the probability problems encountered in scientific and business fields.

5. Proposed Catalog Copy:

231. Probability

Either semester. Three credits. Prerequisite: MATH 210, 220, 230 or 245 which may be taken concurrently with the consent of the instructor.

Introduction to the theory of probability. Discussion of some of the probability problems encountered in scientific and business fields

V(s) MATH 235

4. Current Catalog Copy:

235. Introduction to Mathematical Logic

Either semester, alternate years. Three credits. Prerequisite: MATH 213 or 214 or CSE 207. PHIL 211 is recommended.

Formalization of mathematical theories, elementary model theory with applications to algebra, number theory, and non-standard analysis. Additional topics: Elementary recursion theory and axiomatic set theory. Emphasis on the applications of logic to mathematics rather than the philosophical foundations of logic.

5. Proposed Catalog Copy:

235. Introduction to Mathematical Logic

Either semester, alternate years. Three credits. Prerequisite: MATH 213, 214, or 244 or CSE 207. PHIL 211 is recommended.

Formalization of mathematical theories, elementary model theory with applications to algebra, number theory, and non-standard analysis. Additional topics: Elementary recursion theory and axiomatic set theory. Emphasis on the applications of logic to mathematics rather than the philosophical foundations of logic.

V(t) MATH 237

4. Current Catalog Copy:

237. Theory of Computability

Either semester, alternate years. Three credits. Prerequisite: MATH 213 or 214 or CSE 254.

Finite automata and regular languages, pushdown automata and context-free languages and grammars. Turing machines, recursively enumerable sets and grammars, Church's thesis, the halting problem, and other undecidable problems. Computational complexity and NP-completeness.

5. Proposed Catalog Copy:

237. Theory of Computability

Either semester, alternate years. Three credits. Prerequisite: MATH 213,214, 244 or CSE 254.

Finite automata and regular languages, pushdown automata and context-free languages and grammars. Turing machines, recursively enumerable sets and grammars, Church's thesis, the halting problem, and other undecidable problems. Computational complexity and NP-completeness.

V(u) MATH 242W

4. Current Catalog Copy:

242W. History of Mathematics

Either semester, alternate years. Three credits. Prerequisite: MATH 210 and 211, or 221; ENGL 105 or 110 or 111 or 250 This course may not be counted in any of the major groups described in the Mathematics Departmental listing.

A historical study of the growth of the various fields of mathematics.

5. Proposed Catalog Copy:

242W. History of Mathematics

Either semester, alternate years. Three credits. Prerequisite: **Either (i) MATH 210 or 230**, and 211, or **(ii) 221 or 246; and ENGL 105 or 110 or 111 or 250**. This course may not be counted in any of the major groups described in the Mathematics Departmental listing.

A historical study of the growth of the various fields of mathematics.

V(v) MATH 247Q-248Q

4. Current Catalog Copy:

247Q-248Q. Fundamentals of Algebra and Geometry

Either semester. Three credits each semester. Prerequisite: PSYC 132 and three credits of Mathematics other than MATH 101. Not open for credit to students who have passed MATH 210 or 211 or 220. This course may not be counted in any of the major groups described in the Mathematics Departmental listing. The development of the number system with applications to elementary number theory and analytic geometry. This course is recommended for students in elementary education.

5. Proposed Catalog Copy:

247Q-248Q. Fundamentals of Algebra and Geometry

Either semester. Three credits each semester. Prerequisite: PSYC 132 and three credits of Mathematics other than MATH 101. Not open for credit to students who have passed any of MATH 210, 211, 220, 230, or 245. This course may not be counted in any of the major groups described in the Mathematics Departmental listing.

The development of the number system with applications to elementary number theory and analytic geometry. This course is recommended for students in elementary education.

V(w) MATH 250

4. Current Catalog Copy:

250. Elements of Topology

Either semester, alternate years. Three credits. Prerequisite: MATH 213 or 214.

Metric spaces, topological spaces and functions, topological properties, surfaces, elementary topics in geometric topology.

5. Proposed Catalog Copy:

250. Elements of Topology

Either semester, alternate years. Three credits. Prerequisite: MATH 213, 214 or 244.

Metric spaces, topological spaces and functions, topological properties, surfaces, elementary topics in geometric topology.

V(x) MATH 252

4. Current Catalog Copy:

252. Introduction to Complex Variables

(Also offered as MATH 352.) Either semester. Three credits. Prerequisite: MATH 210 and 211, or 221. MATH 252 not open for credit to students who have passed MATH 352.

Functions of a complex variable, integration in the complex plane, conformal mappings.

5. Proposed Catalog Copy:

252. Introduction to Complex Variables

(Also offered as MATH 352.) Either semester. Three credits. Prerequisite: MATH 210 and 211, or 221 or 246. MATH 252 not open for credit to students who have passed MATH 352.

Functions of a complex variable, integration in the complex plane, conformal mappings.
V(y) MATH 255

4. Current Catalog Copy:

255. Principles of Computer Graphics

Either semester. Three credits. Prerequisite: CSE 111 or 130C, MATH 227 or 215, MATH 210, and consent of instructor. Not open for credit to students who have passed CSE 275.

Representation of two- and three-dimensional data, internal representation of data structures, transformations, mapping of functions to graphics screen, graphics hardware. Programming projects assigned.

5. Proposed Catalog Copy:

255. Principles of Computer Graphics

Either semester. Three credits. Prerequisite: CSE 111 or 130C; MATH 227, 215 or 246; MATH 210; and consent of instructor. Not open for credit to students who have passed CSE 275.

Representation of two- and three-dimensional data, internal representation of data structures, transformations, mapping of functions to graphics screen, graphics hardware. Programming projects assigned.

V(z) MATH 258

4. Current Catalog Copy:

258. Introduction to Number Theory

Either semester, alternate years. Three credits. Prerequisite: MATH 213 or 214.

Congruences, unique factorization, primitive roots, numerical functions, quadratic reciprocity and other selected topics, with emphasis on problem solving.

5. Proposed Catalog Copy:

258. Introduction to Number Theory

Either semester, alternate years. Three credits. Prerequisite: MATH 213, 214 or 244.

Congruences, unique factorization, primitive roots, numerical functions, quadratic reciprocity and other selected topics, with emphasis on problem solving.

V(aa) MATH 272

4. Current Catalog Copy:

272. Differential Equations for Applications

Either semester. Three credits. Prerequisite: MATH 210 and 211, or 221. Not open for credit to students who have passed MATH 279.

Series solutions of differential equations, Bessel functions, Fourier series, partial differential equations and boundary value problems, nonlinear differential equations.

5. Proposed Catalog Copy:

272. Differential Equations for Applications

Either semester. Three credits. Prerequisite: MATH 210 and 211, or 221 or 246. Not open for credit to students who have passed MATH 279.

Series solutions of differential equations, Bessel functions, Fourier series, partial differential equations and boundary value problems, nonlinear differential equations.

V(bb) MATH 273-274

4. Current Catalog Copy:

273-274. Analysis

Either semester. Three credits each semester. Prerequisite: MATH 213 or 214, and 211 or 221.

Introduction to the theory of functions of one and several real variables.

5. Proposed Catalog Copy:

273-274. Analysis

Either semester. Three credits each semester. Prerequisite: MATH 213, 214 or 244; and 211, 221 or 246.

Introduction to the theory of functions of one and several real variables.

V(cc) MATH 279

4. Current Catalog Copy:

279. Introduction to Field Theory

Either semester. Three credits. Prerequisite: MATH 210 and 211. Not open for credit to students who have passed MATH 272.

Vector analysis in rectangular, circular-cylindrical and spherical coordinates, postulational derivation of the partial differential equations of classical physics, Fourier series, Bessel and Legendre functions, solutions of Laplace, Poisson, diffusion and scalar and vector wave equations.

5. Proposed Catalog Copy:

279. Introduction to Field Theory

Either semester. Three credits. Prerequisite: **Either (i) MATH 210 or 230, and 211 or 221, or (ii) Math 246.** Not open for credit to students who have passed MATH 272.

Vector analysis in rectangular, circular-cylindrical and spherical coordinates, postulational derivation of the partial differential equations of classical physics, Fourier series, Bessel and Legendre functions, solutions of Laplace, Poisson, diffusion and scalar and vector wave equations.

V(dd) MATH 281

4. Current Catalog Copy:

281. Numerical Analysis I

Either semester. Three credits. Prerequisite: MATH 210Q, 211Q, and either 215 or 227Q; and knowledge of at least one programming language.

Analysis of numerical methods associated with linear systems, eigenvalues, inverses of matrices, zeros of non-linear functions and polynomials. Roundoff error and computational speed.

5. Proposed Catalog Copy:

281. Numerical Analysis I

Either semester. Three credits. Prerequisite: **Either (i) MATH 210 or 230, 211, and either 215 or 227 or (ii) Math 246;** and knowledge of at least one programming language.

Analysis of numerical methods associated with linear systems, eigenvalues, inverses of matrices, zeros of non-linear functions and polynomials. Roundoff error and computational speed.

V(ee) MATH 283

4. Current Catalog Copy:

283. Calculus and Probability Problems

Either semester. One or two credits. Hours by arrangement. Prerequisite: MATH 210 and 231.

Problems in calculus and probability designed to help students prepare for the first actuarial examination.

5. Proposed Catalog Copy:

283. Calculus and Probability Problems

Either semester. One or two credits. Hours by arrangement. Prerequisite: MATH 210, 230 or 245; and Math 231.

Problems in calculus and probability designed to help students prepare for the first actuarial examination.

V(ff) MATH 285

4. Current Catalog Copy:

285. Financial Mathematics I

(Also offered as MATH 365.) Either semester. Three credits. Prerequisite: MATH 114, 116, or 121.

The mathematics of measurement of interest, accumulation and discount, present value, annuities, loans, bonds, and other securities.

5. Proposed Catalog Copy:

285. Financial Mathematics I

(Also offered as MATH 365.) Either semester. Three credits. Prerequisite: MATH 114, 116, 121, 136 or 244.

The mathematics of measurement of interest, accumulation and discount, present value, annuities, loans, bonds, and other securities.

Justification

1. Reasons for changing these courses: To bring the exclusions, etc., up to date, reflecting the addition to the catalog of new honors calculus and honors advanced calculus courses (one of which includes a substantial amount of linear algebra).

2. Effect on Department's Curriculum: None

3. Other Departments Consulted: None

4. Effects on Other Departments: None

5. Effects on Regional Campuses: None

6. Staffing: None

7. Dates approved by: Department Curriculum Committee: April 2005

Department Faculty: May 5, 2005

8. Name, Phone Number, and e-mail address of principal contact person:

Andy Haas, 486-4328, haas@math.uconn.edu or

Jeffrey L. Tollefson, 486-3921, tollefson@math.uconn.edu

2005-115 Proposal to Change an existing Major: Mathematics

Math Proposal VI. (revised)

1. Date: May 11, 2005
 2. Department requesting this change: Mathematics
 3. Title of Major: All mathematics majors
 4. Nature of Change: Change requirements to reflect the addition of new courses
 7. Effective Date: Fall 2006
-

(a) Bachelor of Science in Mathematics

5. Existing catalog Description of the Major:

Bachelor of Science in Mathematics: The requirements for the B.S. in Mathematics are: MATH 220 and 221 (or 210 and 211), 213, 216, 227, 273-274, and at least 6 additional credits from any of the following courses: MATH 204, 215, 217, 223, 224, 225, 231, 232, 235, 237, 250, 252, 255, 258, 272, 277, 278, 281,282, 286, and approved sections of 297 and 298, and at least 3 additional credits from any of the following courses: MATH 215, 217, 225, 250, and 258. In addition, at least 12 credits at the 200 level in approved related areas are required.

6. Proposed catalog Description of the Major:

Bachelor of Science in Mathematics: The requirements for the B.S. in Mathematics are (1) either (i) Math 210 (or 230), 211, 213 (or 243-244), 227 or (ii) Math 213, 245-246 or (iii) Math 243-244-245-246; (2) Math 216 (or 265), 273 (or 261), 274; (3) At least 6 additional credits from any of the following courses: MATH 204, 215, 217, 223, 224, 225, 231, 232, 235, 237, 250 (or 267), 252, 255, 258, 272, 277, 278, 281,282, 286, and approved sections of 297 and 298;(4) At least 3 additional credits from any of the following courses: MATH 215, 217, 225, 250 (or 267), and 258. In addition, at least 12 credits at the 200 level in approved related areas are required.

(b) Bachelor of Arts in Mathematics

5. Existing catalog Description of the Major:

Bachelor of Arts in Mathematics: The requirements for the B.A. in Mathematics are 27 credits of 200-level course work in Mathematics and 12 credits of course work in approved related areas. The required courses are MATH 210 and 211 (or 220 and 221), 213, 216, 227, 273, and at least 3 additional credits from any of the following courses: MATH 215, 217, 225, 250, and 258. The remaining credits may come from any 200-level Mathematics courses, except MATH 242W, 247 and 248.

6. Proposed catalog Description of the Major:

Bachelor of Arts in Mathematics: The requirements for the B.A. in Mathematics are 27 credits of 200-level course work in Mathematics and 12 credits of course work in approved related areas. The required courses are (1) either (i) Math 210 (or 230), 211, 213 (or 243-244), 227

or (ii) Math 213, 245-246 or (iii) Math 243-244-245-246; (2) Math 216 (or 265), 273 (or 261); (3) At least 3 additional credits from any of the following courses: MATH 215, 217, 225, 250 (or 267), and 258. The remaining credits may come from any 200-level Mathematics courses, except MATH 242W, 247 and 248.

(c) Bachelor of Science in Applied Mathematical Sciences

5. Existing catalog Description of the Major:

Bachelor of Science in Applied Mathematical Sciences: The requirements for the B.S. in Applied Mathematical Sciences are MATH 220 (or 210 and 211), 213, 227, 272, 273, 281, and 282, and two courses to be selected from MATH 204, 221, 231, 232, 237, 252, 255, 274, 277, 278, and approved sections of 297 and 298, and at least 3 additional credits from MATH 215, 216, 217, 223, 224, 231, 235, 250, 258, 286, and approved sections of 297 and 298. In addition, at least 12 credits at the 200 level in approved related areas are required.

6. Proposed catalog Description of the Major:

Bachelor of Science in Applied Mathematical Sciences: The requirements for the B.S. in Applied Mathematical Sciences are (1) either (i) Math 210 (or 230), 211, 213 (or 243-244), 227 or (ii) Math 213, 245-246 or (iii) Math 243-244-245-246; (2) Math 272, 273 (or 261), 281, and 282; (3) Two courses to be selected from MATH 204, 221, 231, 232, 237, 252, 255, 274, 277, 278, and approved sections of 297 and 298; (4) At least 3 additional credits from MATH 215 (or 265), 216, 217, 223, 224, 231, 235, 250 (or 267), 258, 286, and approved sections of 297 and 298. In addition, at least 12 credits at the 200 level in approved related areas are required.

(d) Bachelor of Arts in Applied Mathematical Sciences

5. Existing catalog Description of the Major:

Bachelor of Arts in Applied Mathematical Sciences: The requirements for the B.A. in Applied Mathematical Sciences are 27 credits of 200's level course work in Mathematics and at least 12 credits in approved related areas. The required courses for the degree are MATH 210 or 220, 211 or 221, 215 or 227, 272, 281, and 282. The remainder of the 27 credits of Mathematics must be chosen from MATH 204, 213 or 214, 231, 232, 237, 252, 255, 273, 277 and 278.

6. Proposed catalog Description of the Major:

Bachelor of Arts in Applied Mathematical Sciences: The requirements for the B.A. in Applied Mathematical Sciences are 27 credits of 200's level course work in Mathematics and at least 12 credits in approved related areas. The required courses for the degree are MATH 210 (or 230 or 245), 211 (or 221 or 246), 227 (or 245-246), 272, 281, and 282. The remainder of the 27 credits of Mathematics must be chosen from MATH 204, 213 or 214, 215 (or 265), 231, 232, 237, 252, 255, 273 (or 261), 277 and 278.

(e) Bachelor of Science or Arts in Mathematics-Statistics

5. Existing catalog Description of the Major:

Bachelor of Science or Arts in Mathematics-Statistics: The requirements for the B.S. or B.A. in Mathematics-Statistics degree are 36 credits at the 200's level in Mathematics and Statistics (in addition to MATH 210 or 220), with at least 12 credits in each department. The required courses for the Mathematics-Statistics major are MATH 215 or 227, 211 or 221, and Statistics 230 and 231.

6. Proposed catalog Description of the Major:

Bachelor of Science or Arts in Mathematics-Statistics: The requirements for the B.S. or B.A. in Mathematics-Statistics degree are 36 credits at the 200's level in Mathematics and Statistics (in addition to MATH 210 or 230), with at least 12 credits in each department. The required courses for the Mathematics-Statistics major are MATH 215, 227 or (245 and 246); 211 (or 246); and Statistics 230 and 231.

(f) Bachelor of Science or Arts in Mathematics-Actuarial Science

5. Existing catalog Description of the Major:

Bachelor of Science or Arts in Mathematics-Actuarial Science: The requirements for the B.S. or B.A. degree in Mathematics-Actuarial Science are 36 credits at the 200 level in Mathematics, Statistics, Business, and related areas (in addition to MATH 210 or 220). The required courses are MATH 227 or 215, 231, 232 (or STAT 235), 285, 286, 287-288, STAT 230-231, and FNCE 221 or 225. Students should include ECON 111 and 112, a Computer Science course, and ACCT 131 and 200 in their program of study as early as possible. Admittance to this program is available only to students who meet at least one of the following requirements:

- a total grade point average of 2.75 or higher;
- a total grade point average of 3.0 or higher in Mathematics;

- a passing score on one or more Actuarial examinations;
 - acceptance by the Mathematics Department's Actuarial Science Committee.
- To remain in the Actuarial Science Major, students are expected to maintain a total grade point average of 2.75 or higher.

6. Proposed catalog Description of the Major:

Bachelor of Science or Arts in Mathematics-Actuarial Science: The requirements for the B.S. or B.A. degree in Mathematics-Actuarial Science are 36 credits at the 200 level in Mathematics, Statistics, Business, and related areas (in addition to **MATH 210 or 230 or 245**). The required courses are **MATH 227 (or 246)**, 231, 232 (or **STAT 235**), 285, 286, 287-288, **STAT 230-231**, and **FNCE 221 or 225**. Students should include **ECON 111 and 112**, a Computer Science course, and **ACCT 131 and 200** in their program of study as early as possible. Admittance to this program is available only to students who meet at least one of the following requirements:

- a total grade point average of 2.75 or higher;
- a total grade point average of 3.0 or higher in Mathematics;
- a passing score on one or more Actuarial examinations;
- acceptance by the Mathematics Department's Actuarial Science Committee.

To remain in the Actuarial Science Major, students are expected to maintain a total grade point average of 2.75 or higher.

Justification

1. Why is a change required? The changes are needed to reflect the dropping of Math 120, 121 and 220 and the addition of new courses Math 135, 136, 230, 243, 244, 245, 246, 261, 265 and 267.
2. What is the impact on students? The underlying motivation for the addition of the new courses is to implement a new honors program in mathematics for highly talented mathematics students. The changes in the degree requirements will accommodate these students.
3. What is the impact on regional campuses? None
4. Dates approved by (see Note Q):
 Department Curriculum Committee: April 2005
 Department Faculty: May 5, 2005
5. Name, Phone Number, and e-mail address of principal contact person:
 Andy Haas, 486-4328, haas@math.uconn.edu or
 Jeffrey L. Tollefson, 486-3921, tollefson@math.uconn.edu

1. Date: May 11, 2005
2. Department requesting this change: Mathematics
3. Title of Minor: Mathematics
4. Nature of Change:
5. Existing catalog Description of the Minor:

Mathematics

The requirements for this minor are MATH 210 (or 220), 211 (or 221), 227 (or 215), and **at least 6 credits from any of the following courses**: MATH 204, 216, 223, 231, 235, 250, 252, 258, 273, 281, 286 or certain sections of 297, 298, and 299 approved by the department head.

The minor is offered by the Mathematics Department.

6. Proposed catalog Description of the Minor (Changes in red):

Mathematics

The requirements for this minor are 15-18 credits of Mathematics, following one of these tracks:
Either

- 1.1. MATH 210 (or 230 or 245), 211 (or 221 or 246), 227 (or 215 or 246), and **two additional courses from the following**: MATH 204, 216, 223, 225, 231, 235, 250 (or 267), 252, 258, 273 (or 261), 281, 286 or certain sections of 297, 298, and 299 approved by the department head.

or

- 2.2. **Math 243, 244, 245 and 246.**

The minor is offered by the Mathematics Department.

7. Effective Date (semester, year -- see Note R): Fall 2006

Justification

1. Why is a change required? Courses have been added and dropped. The changes reflect these course changes.
2. What is the impact on students? Students will have more options for the minor in mathematics.
3. What is the impact on regional campuses? None
4. Attach a revised "Minor Plan of Study" form to this proposal (see Note P). This form will be used similarly to the Major Plan of Study to allow students to check off relevant coursework. It should include the following information:

A. In information near the top of the form:

NOTE: Completion of a minor requires that a student earn a C (2.0) or better in each of the required courses for that minor. A maximum of 3 credits towards the minor may be transfer credits of courses equivalent to University of Connecticut courses. Substitutions are not possible for required courses in a minor.

B. In information at the bottom of the form:

Name of Student: _____

I approve the above program for the (B.A. or B.S.) Minor in (insert name)
(signed) _____ Dept. of (insert name)

Minor Advisor

5. Dates approved by (see Note Q):

Department Curriculum Committee:

Department Faculty:

6. Name, Phone Number, and e-mail address of principal contact person:

Andy Haas, 486-4328, haas@math.uconn.edu or

Jeffrey L. Tollefson, 486-3921, tollefson@math.uconn.edu

2005-117 Proposal to Change an Existing Course

Math Proposal VIII. (revised)

1. Date: May 12, 2005

2. Department: Mathematics

3. Nature of Proposed Change: change in name and description

4. Current Catalogue Copy:

221Q. Enhanced Differential Equations

Either semester. Three credits. Prerequisite: MATH 121 or instructor consent Open to sophomores or higher. Not open to students who have passed MATH 211. MATH 221 satisfies any requirement met by MATH 211, and provides superior preparation for prospective mathematics, science, and engineering majors.

The subject matter of MATH 211 in greater depth, with emphasis on the underlying mathematical concepts.

5. Proposed Catalogue Copy:

221Q. Honors Differential Equations

Either semester. Three credits. Prerequisite: MATH 136 or instructor consent Open to sophomores or higher. Not open to students who have passed MATH 211 or 246. MATH 221 satisfies any requirement met by MATH 211, and provides superior preparation for prospective mathematics, science, and engineering majors.

(Honors Course) The subject matter of MATH 211 in greater depth, with emphasis on the underlying mathematical concepts.

6. Effective Date: Fall 2006

Justification

1. Name change: Adding "Honors" to the name better reflects the role of this course.
Prerequisite change: Reflects the new sequence of Mathematics honors courses.
Description change: Reflects the new courses that have been added.
2. Effect on Department's Curriculum: none
3. Other Departments Consulted: None
4. Effects on Other Departments: none
5. Effects on Regional Campuses: None
6. Staffing: No change
7. Dates approved by (see Note Q):
Department Curriculum Committee: April 2005
Department Faculty: May 5, 2005
8. Name, Phone Number, and e-mail address of principal contact person:
Andy Haas, 486-4328, haas@math.uconn.edu or
Jeffrey L. Tollefson, 486-3921, tollefson@math.uconn.edu

2005- 118. Proposal to Add a New Graduate Course, ECON 490

1. Date: 8/1/2005
2. Department requesting this course: Economics
3. Semester and year in which course will be first offered: Fall 2005

Final catalog Listing:

†ECON 490. Graduate Seminar

Participation in departmental research seminars and presentation and discussion of original research projects.

1 credit, Seminar. May be repeated for credit.

Items included in catalog Listing:

Obligatory Items

1. Standard abbreviation for Department or Program: Econ
2. Course Number: 490
3. Course Title: Graduate Seminar

4. Course description: Participation in departmental research seminars and presentation and discussion of original research projects.
5. Number of Credits: 1
6. Course type: Seminar.

Optional Items

11. May be repeated for credit
12. S/U grading

Justification

1. Reasons for adding this course: Currently there are no 400-level seminar courses for Economics PhD students.
2. Academic Merit: This course will be open to advanced Ph.D. students to provide a structured environment for them to participate in departmental research seminars and to present and discuss their own research projects.
3. Overlapping Courses: None
4. Number of Students Expected: 15-20
5. Number and Size of Section: 1
6. Effects on Other Departments: None
7. Staffing: Staff
8. Dates approved by:
 - Department Curriculum Committee: 2/18/2005
 - Department Faculty: 4/8/2005
9. Name, Phone Number, and e-mail address of principal contact person:
Metin Cosgel
486-4662
cosgel@uconn.edu

2005-119. Recertify W skill designation of GEOL 297W

Course title: Undergraduate Research Thesis in Geology and Geophysics

Number of Credits: 3

Initiating Dept.: Center for Integrative Geosciences

Contact Person: Jean Crespi

Unit Number: 2045

Phone: 486-0601

Date of Dept. Approval: 30 March 2005

Catalog Copy: GEOL 297W. Undergraduate Research Thesis in Geology and Geophysics.

Either semester. Three credits. Hours by arrangement. Prerequisite: GEOL 296. Open only with consent of instructor.

Writing of a formal thesis based on independent research conducted by the student.

Specific Criteria W course: The prerequisite for GEOL 297W is GEOL 296 Undergraduate Research in Geology and Geophysics. In GEOL 296, students complete the research component of their senior thesis. In GEOL 297W, students write up their research into a thesis. The course is writing intensive with one-to-one instruction, involves multiple drafts, and results in the production of a thesis with a minimum length, excluding figures and references, of fifteen pages.

Semester offered: Fall, Spring

Number of Sections: 3

Seats/Section: 2

Total Num Students/Semester: 6

Role of Grad Students: Graduate students will not participate in the instruction of this course.

Availability at Regional Campuses: Not available because senior year course.

Resources Available: YES

Why No Resources to teach course.: -

Impact of Course on Teaching Loads: Minimal impact.

Supplementary Information: -

2005-120. Proposal to Add [New] Math 104Q.

1. DATE: August 30, 2005

2. INITIATING DEPARTMENT: Mathematics
Unit Number: 3009

3. SEMESTER AND YEAR IN WHICH COURSE WILL BE FIRST OFFERED: Fall 2006

FINAL CATALOG LISTING:

104Q. Introductory College Algebra and Mathematical Modeling

Both semesters. Three credits. Five class periods. Not open for credit to students who have passed MATH 101, or any Q course. Strongly recommended as preparation for Q courses for students whose high school algebra needs reinforcement.

The course emphasizes two components necessary for success in 100 level courses which employ mathematics. The first component consists of basic algebraic notions and their manipulations. The second component consists of the practice of solving multi-step problems from other disciplines, called mathematical modeling. The topics include: lines, systems of equations, polynomials, rational expressions, exponential and logarithmic functions. Students will engage in lively group projects in mathematical modeling.

OBLIGATORY ITEMS:

1. STANDARD ABBREVIATION FOR DEPARTMENT: MATH

2. COURSE NUMBER: 104Q (availability verified with the registrar's office)

3. COURSE TITLE: Introductory College Algebra and Mathematical Modeling

4. SEMESTER OFFERED: Both semesters

5. NUMBER OF CREDITS: Three credits

6. COURSE DESCRIPTION: The course emphasizes two components necessary for success in 100 level courses which employ mathematics. The first component consists of basic algebraic notions and their manipulations. The second component consists of the practice of solving multi-step problems from other disciplines, called mathematical modeling. The topics include: lines, systems of equations, polynomials, rational expressions, exponential and logarithmic functions. Students will engage in lively group projects in mathematical modeling.

OPTIONAL ITEMS:

7. NUMBER OF CLASS PERIODS IF NOT STANDARD: Five

8. PREREQUISITES: None

9. RECOMMENDED PREPARATION: None

10. CONSENT OF INSTRUCTOR: None

11. EXCLUSIONS: Not open for credit to students who have passed MATH 101 or any Q course

12. REPETITION FOR CREDIT: Not repeatable for credit

13. INSTRUCTOR NAME: Sarah Glaz

14. OPEN TO SOPHOMORES: Open to all students who have not passed MATH 101 or a Q course.

15. SKILL CODES: Q skill course

JUSTIFICATION:

1. REASONS FOR ADDING THIS COURSE: Every year approximately 1000 students enroll in UConn's five campuses without adequate preparation in high-school algebra. Many of these 1000 students will be required by their majors to take Q courses for which knowledge of high-school algebra is necessary. Such courses include: all 100 level Q Chem courses, Stat 100 or 110, most 100 level Physics courses, and most 100 level Math courses. At present the Mathematics Department offers high-school Intermediate Algebra material in only one course: Math 101. Math 101 does not provide graduation credits, and covers the absolute minimum of algebra skills necessary to survive in Q courses.

The presently proposed course, Math 104Q, will provide a much better preparation for subsequent Q courses. The course will be set up to integrate a review of Intermediate Algebra into the teaching of Introductory College Algebra necessary for a thorough preparation for Q courses. In addition, Math 104Q will contain a mathematical modeling component composed of a number of lively and interdisciplinary projects, which will generate interest in the material and train students to handle the multi-step problems they will encounter later on in other Q courses. Upon successful completion, Math 104Q will offer 3 Q credits that count towards graduation.

2. ACADEMIC MERIT: I was awarded a 2005 Provost General Education Course Development Grant for the development of this course.

Math 104Q was approved last Spring as an experimental course for the 2005/2006 academic year. It will be offered as Math 195Q, in both Fall and Spring semesters. Detailed information about the course can be found at its

website: <http://www.math.uconn.edu/~glaz/math195f05/>

Math 104Q is designed to provide an effective preparation for science courses for students whose high school algebra background is not very strong. It integrates a review of high school algebra with college algebra topics and mathematical modeling material, and as such it will teach and reinforce the basic mathematical skills necessary for success in all beginning 100 level Q courses offered at UConn.

Specifically, Math 104Q will:

C Help students to refine their basic algebra skills by way of an integrated review of these skills as they are needed for the course.

C Enhance the understanding of algebraic concepts through the integrated use of scientific calculators.

\$ Educate and train students in multi-step problem handling skills, necessary for applications of mathematics to other fields, by incorporating a large number of mathematical modeling projects.

C Expose students to the benefits of the innovative teaching technique called Group-Work, which requires students to work on projects in small groups. This technique encourages self discovery of concepts, and active involvement in the acquisition of knowledge, and it is ideally suited for multi-step mathematical modeling problems.

C Encourage, through exposure to the mathematical modeling projects, a broad view of the acquired mathematical knowledge by placing it in the social context of its applications.

3. OVERLAPPING COURSES: Math 101 covers many of the topics of the proposed course.

4. NUMBER OF STUDENTS EXPECTED: Several hundred a year.

5. NUMBER AND SIZE OF SECTION: 4 - 10 sections of 32 students each.

6. EFFECT ON OTHER DEPARTMENTS: Provides a better mathematical preparation for students in their 100 level Q courses. Other departments offering Q courses, and Student Advising Units, were consulted and will continue to be consulted in the development of this course. In particular, Cecile Hurley from the Chemistry department and Steve Jarvi from ACES provided helpful input and expressed strong support for the course.

7. EFFECT ON REGIONAL CAMPUSES: Provides a better mathematical preparation for students in their 100 level Q courses. I maintain an e-mail list which provides an electronic forum for exchange of ideas with faculty and staff at regional campuses regarding the development of this course.

8. STAFFING: Will be taught by faculty, post-doctoral fellows, or graduate students.

9. DATES APPROVED BY:

Department Undergraduate Program Committee: January 2005

Department Faculty: September 2, 2005

10. NAME, PHONE NUMBER, AND E-MAIL ADDRESS OF CONTACT PERSONS:

Name: Sarah Glaz

Phone numbers: Office 860 486 5193
Home 860 347 5911
e-mail: glaz@math.uconn.edu

I can also be contacted through the Math Department Undergraduate Coordinator:

Name: David Gross
Phone: 860 486 1292
e-mail: gross@math.uconn.edu

Math 104Q: Introductory College Algebra and Mathematical Modeling

Syllabus:

Textbook For Students: Intermediate Algebra, by K.Elain Martin-Gay, 4th ed.

Additional Text for Instructors: **Instructor's Resources**: A collections of mathematical modeling group projects, handouts, and teaching tips that I compiled, and I am making available on the web site <http://www.math.uconn.edu/~glaz/math195f05/>, for all instructors of Math 101, Math195Q, and future instructors of Math 104Q. Password Protected. If you would like to access it, please e-mail me: glaz@math.uconn.edu, and I will be happy to provide you with the password.

Other Requirements: A Scientific Calculator, for example TI-30Xa.

Syllabus: The course will cover 2 to 4 sections from the textbook, and 1 or 2 mathematical modeling group projects each week. There will be three in-class Exams and a Final Exam. The course will cover eight chapters from the textbook, and the exams will be spaced two chapters apart.

Section	Topic	Practice Exercises
Introduction		Mathematical Autobio
Chapter 1		
1.2	Algebraic expressions and sets of numbers	page 15-17: odd 1-9, odd 15-90
1.3	Operations with real numbers	page 27-30: odd 1-84
1.4	Properties of real numbers	page 40-42: odd 1-97
Group Work	Calculate your BMI	

Group Work	Analyze Newspaper Circulation	
Group Work	Are Irrationals rational?	
Chapter 2		
2.1	Linear equations in one variable	page 60-61: odd 1-20, odd 23-30, 35
2.2	Linear equations in one variable	page 68-73: odd 1-12
2.3	Formulas and Problem Solving	page 79-81: 1-5, odd 49-54
2.4	Linear Inequalities and Problem Solving	page 92-94: odd 1-16, odd 17-32, odd 57- 74
Group Work	Algebraic Poetry	
Group Work	Calculate Your Income	
Chapter 3		
3.1	Graphing Equations	page 140-141: odd 1-10, odd 17-26
3.2	Introduction to Functions	page 151-156: odd 1-12, odd 23-36, 55-62
3.3	Graphing Linear Equations	page 162-165:1,3,7,13,15,23,25,27,35,51,53
3.4	The slope of a line	page 177-180:1,5,25,27,29,37,39,odd 45-55
3.5	Equations of Lines	page 189-192: 1,3,7,9,13,15,21,25,27,40-45
Group Work	Hurricane Season (and Tracking Chart)	
Group Work	Cigarette Ads	
Group Work	Life Expectancy	
Chapter 4		
4.1	Linear Equations in two variables	page 225-227: odd 1-14, odd 35-48
Group Work	Which Honda Should You	

	Buy	
Group Work	Photos opf All Sizes	
Chapter 5		
5.1	Exponents and scientific notation	page 282-284: odd 1-10,odd 19-38,odd 63-72
5.2	More exponents and scientific notation	page 289-291:odd 1-27, odd
5.3	Polynomials and polynomial functions	page 300-303: 17-24, 29,31,37,39,43,71
5.4	Multiplying polynomials	page 311-313: 1,5,7,19,25,27,35,43
5.5	The greatest common	page 318-320: odd 1-16
5.6	Factoring trinomials (use quadratic formula for roots from 8.2	page 327-329:odd 1-10, 15, 43,45
5.7	Factoring special products	page 334-335: odd 9-16
5.8	Solving quadratic equations (via quadratic formula and roots	page 350-353: 1,3,5,9,17,81
Group Work	The Largest Box	
Group Work	Free Falling From Bridges	
Chapter 6		
6.1	Multiplying and dividing rational expressions	Multiplying and dividing rational expressions
6.2	Adding and subtracting rational expressions	page 381-383: 1,3, odd 11-24, odd 27-34
6.4	Dividing polynomials	page 396-398: odd 1-7, odd
6.6	Equations with rational expressions	page 408-409: odd
Group Work	Calculate Your Lottery Winning	
Group Work	Modeling Electricity	
Chapter 7		

7.1	Radicals and Radical Functions	page 453-454: odd 1-54
7.2	Rational exponents	page 462-463: odd 1-62
7.3	Simplifying radical expressions	page 469-470: odd 1-47
7.4	Adding, subtracting and multiplying radical expressions	page 474-475: odd 1-15
7.5	Rationalizing numerator and denominator of radical expressions	page 481-482: odd 1-42
Group Work	Skid Marks	
Group Work	The period of a pendulum	
Chapter 9		
9.1	Operations with functions, composition	page 593-594: odd 1-22, 29-34
9.3	Exponential Functions	page 611: odd 1-36
9.4	Logarithmic Functions	page 620: odd 1-70
9.5	Properties of Logarithms	page 626: odd 1-18
9.6	Change of Base	page 633: odd 17-50
Group Work	The Black Bear Population	
Group Work	How long it takes to double your money	
Group Work	Earthquake's intensity	

2005-121. Proposal to Drop GEOG 358.

1. Date: 9/7/05
2. Department: Geography
3. catalog Copy:

GEOG 358. Geography of Africa
3 credits. Lecture.

Advanced study of problems of economic, political, social and spatial integration in Africa. Focus on past and contemporary patterns of change (including associated conflicts) examined within the context of the broader global economy.

4. Effective Date (semester, year -- see Note R):
(Note that changes will be effective immediately unless a specific date is requested.)

Justification

1. Reasons for dropping this course: Course has not been taught in years, and no faculty to teach the course
2. Other Departments Consulted: None
3. Effects on Other Departments: None
4. Effects on Regional Campuses: None
5. Dates approved by (see Note Q):
Department Curriculum Committee: 9/7/05
Department Faculty: 9/7/05
6. Name, Phone Number, and e-mail address of principal contact person:
Alexander C. Vias, 6-2213, Alexander.vias@uconn.edu

2005-122. Proposal to Drop GEOG 386

1. Date: 9/7/05
2. Department: Geography
3. catalog Copy:

GEOG 386. Environmental Evaluation and Assessment

3 credits. Lecture.

Concepts and methods of environmental analysis in contemporary geography. Emphasis on the ecological impact of human activities and on the evaluation and assessment of existing and future environments.

4. Effective Date (semester, year -- see Note R):
(Note that changes will be effective immediately unless a specific date is requested.)

Justification

1. Reasons for dropping this course: No faculty to teach graduate level course
2. Other Departments Consulted: None
3. Effects on Other Departments: None
4. Effects on Regional Campuses: None
5. Dates approved by (see Note Q):
Department Curriculum Committee: 9/7/05
Department Faculty: 9/7/05
6. Name, Phone Number, and e-mail address of principal contact person:
Alexander C. Vias, 6-2213, Alexander.vias@uconn.edu

2005-123. Proposal to Add a New Graduate Course, GEOG xxx

1. Date: August 30, 2005
2. Department requesting this course: Geography
3. Semester and year in which course will be first offered: Spring 2007

Final catalog Listing (see Note A):

Assemble this from the information listed immediately below. Use the following example or graduate catalog as a style guide:

GEOG 5130 Transportation Geography 3 credits, Lecture
Open to graduate students in Geography and other with permission

Discussion of transportation rate establishment, transportation models for predicting transportation flows, the impact of transportation on the location of economic activities and the planning of transportation facilities in cities.

Items included in catalog Listing:

Obligatory Items

1. Standard abbreviation for Department or Program (see Note O): GEOG
2. Course Number (see Note B): 5130
If using a specific number (e.g. "354" instead of "3XX"), have you verified with the Registrar that this number is available for use? Yes No – all 4 digit numbers are new
3. Course Title: Transportation Geography
4. Course description (if appropriate -- see Note K):

Discussion of transportation rate establishment, transportation models for predicting transportation flows, the impact of transportation on the location of economic activities and the planning of transportation facilities in cities.

5. Number of Credits (use numerical characters, e.g. "3" rather than "three" -- see Note D): 3
6. Course type (choose from the following as appropriate -- if none are appropriate, this item may be omitted, as in the following example:
 Lecture; Laboratory; Seminar; Practicum.

Optional Items

7. Prerequisites, if applicable (see Note F):
8. Recommended Preparation, if applicable (see Note G):
9. Consent of Instructor, if applicable (see Note T):
Geography graduate students or permission of instructor
10. Exclusions, if applicable (see Note H):
11. Repetition for credit, if applicable (see Note I): No
12. S/U grading, if applicable (see Note X):

Justification

1. Reasons for adding this course: (see Note L)

No similar course is offered in the department

2. Academic Merit (see Note L):

Transportation infrastructure links the various economic activities located on the surface of the earth. Whether it provides the movement of resources to manufacturing plants where they are processed, the final products to the stores where they are sold or the labor needed to process or sell goods, transportation inputs are a necessary part of the economic process. This course discusses transportation rate establishment, transportation models for predicting transportation flows, the impact of transportation on the location of economic activities and the planning of transportation facilities in cities. This course fits within geography track as a well established area within the discipline.

3. Overlapping Courses (see Note M): None

4. Number of Students Expected: 10

5. Number and Size of Section: 1, 25-30

6. Effects on Other Departments (see Note N): None

7. Staffing (see Note P): Osleeb

8. Dates approved by (see Note Q):

Department Curriculum Committee:

Department Faculty:

9. Name, Phone Number, and e-mail address of principal contact person: Alexander Vias, 6-2213, Alexander.vias@uconn.edu

2005-124. Proposal to Add PHYS 1xx.

1. Date: September 1, 2005
2. Department requesting this course: Physics
3. Semester and year in which course will be first offered: Spring 2007

Final catalog Listing:

PHYS 1XX. Physics for the Health Sciences

Second semester. Three credits. Prerequisite: Math 112 and 113, or Math 115. Not open for credit to students who have passed PHYS 123Q, 131Q, 132Q, 141Q, 142Q, 151Q, or 152Q.

A survey of the principles of physics and their application to the health sciences. Basic concepts of calculus are used. Examples from mechanics, electricity & magnetism, thermodynamics, fluids, waves, and atomic & nuclear physics.

Items included in catalog Listing:

Obligatory Items

1. Standard abbreviation for Department or Program: PHYS
2. Course Number: 1XX
3. Course Title: Physics for the Health Sciences
4. Semester offered: Spring
5. Number of Credits: Three
6. Course description (second paragraph of catalog entry)
A survey of the principles of physics and their application to the health sciences. Basic concepts of calculus are used. Examples from mechanics, electricity & magnetism, thermodynamics, fluids, waves, and atomic & nuclear physics.

Optional Items

7. Number of Class Periods, if not standard: Three
8. Prerequisites, if applicable: Math 112 and 113, or Math 115

9. Recommended Preparation, if applicable: not applicable
10. Consent of Instructor, if applicable: not applicable
11. Exclusions, if applicable: Not open for credit to students who have passed PHYS 123, 131, 132, 141, 142, 151, or 152.
12. Repetition for credit, if applicable: not applicable
13. Instructor(s) names if they will appear in catalog copy: not applicable
14. Open to Sophomores: not applicable
15. Skill Codes "W", "Q", or "C": not applicable
16. S/U grading : not applicable

Justification

1. Reasons for adding this course: The Physics Department was approached by the School of Pharmacy in 2004 to design a one-semester physics course with special attention to those principles of physics which would be especially useful for students in the PharmD program. The course would replace PHYS 121 in the pre-pharmacy schedule of course requirements. Our PHYS 121 course is part of a two-semester sequence (PHYS 121/122) and by itself does not cover relevant topics in electromagnetism, waves, atomic and nuclear physics. We have broadened the scope of the proposed course to include examples generally within the health-sciences area.

2. Academic Merit: The proposed course will cover an array of topics in introductory physics using mathematical tools from algebra, trigonometry and calculus. The proposed text is "Biomedical Applications of Introductory Physics" by J.A. Tuszynski and J.M. Dixon (Wiley, 2002). The course outline is as follows:

Introduction and Description of Motion (units, graphs, formulas, scientific notation, one dimension kinematics, displacement, velocity and acceleration)

Newton's Laws of Motion (inertia, vectors and net forces, Newton's second law, viscous drag, friction, Newton's third law)

Momentum and Energy (momentum-impulse theorem, kinetic energy, work, potential energy, energy conservation, power)

Thermal Energy (temperature, internal energy, heat, work, first law of thermodynamics, specific heat, change of state, heat transfer)

Fluids (density, fluids, Pascal's principle, pressure vs. depth, Archimedes' principle, fluid dynamics, viscosity, Bernoulli effect)

Electricity (electric charge, charge conservation, electrical polarization, electric field, electric potential energy, capacitors, voltage)

Electric Circuits (voltage sources, resistance, Ohm's law, series and parallel circuits, electrical power and energy)

Magnetism (magnetic fields, atomic and nuclear magnets, the magnetic force, MRI, biomagnetism, Faraday's law)

Vibrations and Waves (vibrations and oscillations, natural frequency, resonance, waves, sound waves, electromagnetic waves)

Origins of Quantum Theory (emission of light, incandescence, photoelectric effect, Rutherford model, Bohr model, periodic table, x-rays)

Nuclear and Particle Physics (wave-particle duality, nuclear structure, elements & isotopes, radioactivity, half-life, activity, radioactive dating, biological effects of radiation, antimatter, PET scans)

3. Overlapping Courses: Physics 101 covers some of the same material but at a non-calculus gen-ed level.

4. Number of Students Expected: 100

5. Number and Size of Section: 1 lecture section. 100 students

6. Effects on Other Departments None

7. Effects on Regional Campuses: None

8. Staffing: We expect enrollments in the course to be from students currently taking 121 or 131. No additional staff is required. Course will be taught by D.S. Hamilton.

9. Dates approved by

Department Curriculum Committee: 9/7/05

Department Faculty: 9/8/05

10. Name, Phone Number, and e-mail address of principal contact person: George Rawitscher, 6-4377, George.Rawitscher@uconn.edu

2005-125 Proposal to Add [New] URBN 140W.

1. Date: July 19, 2005

2. Department requesting this course: Urban and Community Studies

3. Semester and year in which course will be first offered: Spring 2006

Final catalog listing:**URBN 140W. Exploring Your Community**

Either semester. Three credits.

Introduction to various aspects of urban and community life emphasizing the interplay of social justice, diversity and multiculturalism, and individual and social well being. Explores theories, concepts, and methods in community studies drawn from anthropology, community psychology, economics, geography, political science, social work and sociology.

Items included in catalog Listing:**Obligatory Items**

1. Standard abbreviation for Department or Program (see Note O): URBN
2. Course Number (see Note B): 140
If using a specific number (e.g. "254" instead of "2XX"), have you checked with the Registrar that this number is available for use? X Yes ___ No
3. Course Title: Exploring Your Community
4. Semester offered (see Note C): Either
5. Number of Credits (see Note D): three credits
6. Course description (second paragraph of catalog entry -- see Note K):

Introduction to various aspects of urban and community life emphasizing the interplay of social justice, diversity and multiculturalism, and individual and social well being. Explores theories, concepts, and methods in community studies drawn from anthropology, community psychology, economics, geography, political science, social work and sociology.

Optional Items

7. Number of Class Periods, if not standard (see Note E): NA
8. Prerequisites, if applicable (see Note F): None
9. Recommended Preparation, if applicable (see Note G): None
10. Consent of Instructor, if applicable (see Note T) No
11. Exclusions, if applicable (see Note H): None
12. Repetition for credit, if applicable (see Note I): No
13. Instructor(s) names if they will appear in catalog copy (see Note J):
14. Open to Sophomores (see Note U): NA
15. Skill Codes "W", "Q", or "C" (see Note T): W
16. S/U grading (see Note W): No

Justification

1. Reasons for adding this course: (see Note L)

No 100 level course currently exists that allows students to explore urban areas and communities from an interdisciplinary perspective. This course will both fill this need and provide a mechanism by which freshman and sophomores might learn more about the Urban and Community Studies major.

2. Academic Merit (see Note L):

The goal of *URBN IXX (W)– Exploring Your Community* is to introduce students to vital aspects of urban and community life, with a specific emphasis on the interplay of social justice, diversity and multiculturalism, and individual and social well being. Students will learn theories, concepts, and methods from the interdisciplinary social science field of community studies, including anthropology, community psychology, economics, political science, social work and sociology. The course also requires a community-based service learning project, which will provide students with a structured opportunity to apply theories, concepts, and methods.

3. Overlapping Courses (see Note M): None

4. Number of Students Expected: 38 per year

5. Number and Size of Section: 19 per section offered twice a year

6. Effects on Other Departments (see Note N): None

7. Effects on Regional Campuses:

This course is important for the pursuit of undergraduate majors in Urban and Community Studies at the Tri-campus. The course will provide an interdisciplinary mechanism by which students might explore the Urban and Community Studies major.

8. Staffing (see Note P): Robert Fisher, Ruth Glasser, Susan Helm

9. Dates approved by (see Note Q):

Department Curriculum Committee: July 19, 2005

Department Faculty: Aug 8, 2005

10. Name, Phone Number, and e-mail address of principal contact person:

Stephen L. Ross, 860-570-9279, Stephen.L.Ross@uconn.edu

1. COURSE INFORMATION

1 a. Course Description

The goal of *URBN IXX (W)– Exploring Your Community* is to introduce students to vital aspects of urban and community life, with a specific emphasis on the interplay of social justice, diversity and multiculturalism, and individual and social well being. Students will learn theories, concepts, and methods from the interdisciplinary social science field of community studies, including anthropology, community psychology, economics, political science, and sociology. The required community-based service learning project provides students a structured opportunity to apply theories, concepts, and methods.

1 b. Course Requirements

URBN IXX (W)– Exploring Your Community is designed as a 3-credit, writing intensive, community-based service learning experience. Assignments include the following:

- 1) regular weekly reading (homework) evidenced by written outline (required text, internet, and handouts);
- 2) in-class activities: standard lectures, Community Guest Lectures, and paired, small group, and whole class activities such as critical reflection in the form of dialog and writing;
- 3) service learning field trips (3 to 4 trips, with minimum of 20 hours of community-based service) during which students apply theory, concepts, and methods learned in class and for which students are required to submit data worksheets and reflection papers; and
- 4) the final, an *Exploring Your Community-Service Learning Portfolio*, which culminates in a modified APA style paper (15 pages minimum with extensive guided revisions) and a class-wide presentation.

1 c. Major Themes, Issues, Topics

URBN IXX (W)– Exploring Your Community is based on theories and concepts from the field of community research and action. It studies the complexities of human interaction and community development through social science theory and analysis, including ecological models. Factors affecting human interaction across individual, family, community, institutional, and societal levels will be explored and brought to life through the *Exploring Your Community* service learning experience, particularly as they relate to issues of social justice, diversity and multiculturalism, and individual and social well being at the local level.

A core concept in the field of community research and action is the relationship between individual and social well being. The very idea of social wellbeing roots the idea of community to issues of social justice, the meanings of individual and social well being and concepts of social justice are diverse and vary across and within cultures. The juxtaposition of diversity and multiculturalism as fundamental components of individual and social wellbeing will be explored in class. Issues of gender, race, class, political and economic power, (dis)ability, and age will be considered as the class co-constructs these connections. The *Exploring Your Community* service learning experience is designed to engage students in this process. As participants in on-going community activities, students will become co-constructors, evaluators, and validators of healthy community-quality of life in terms of social justice and diversity by using the social science theories and methods learned in class.

2. GENERAL EDUCATION GOALS

URBN IXX (W)– Exploring Your Community integrates general education goals into course content and competencies.

Goal 1: Become articulate.

Students become more articulate through this course. As a service learning course, significant guided reflection is inherent in the teaching-learning process. Significant guided reflection includes paired, small group, and whole class dialog as well as various modes of writing. This is designed to improve the students' ability to articulate and use theories, concepts, and methods for exploring their communities.

Goal 2: Acquire intellectual breadth and versatility.

A broad ecological model for understanding the complexities of human interaction within and across multiple levels of analysis is used to frame teaching-learning. Students demonstrate intellectual versatility by applying what they are learning in class to their individualized community-based service learning project.

Goal 3: Acquire critical judgment.

Students acquire critical judgment through extensive opportunities for guided reflection (dialog and writing) and action (community-based service learning experience). Students will become critically conscious of their own perceptions of and behaviors related to key issues in this course: social justice, diversity and multiculturalism, and individual and social wellbeing. Students will be able to use this skill in assessing urban and community life through the service learning experience.

Goal 6: Acquire consciousness of the diversity of human culture and experience.

Students will become critically conscious of the diversity of human culture and experience. Gender, race, class, political and economic power, (dis)ability, and age will be considered as the class co-constructs its concept(s) of social justice, diversity and multiculturalism, and individual and social wellbeing. Students will have ample opportunity to reflect on their personal experience of culture, and to compare and contrast this with their classmates' experiences and with community experiences through the *Exploring Your Community* service learning design of this course.

Goal 7: Acquire a working understanding of the processes by which they can continue to acquire and use knowledge.

Service learning requires significant guided reflection in the form of dialog and writing, because authentically constructed public knowledge is dynamically shaped and reshaped over time. This point is made explicit in the course, such that students acquire a working understanding of the role of reflection-action as a means to continuously seek, form, and use knowledge for personal and public good. This is a particularly relevant skill in Urban and Community Studies, where public and community service is essential.

3. SPECIFIC CRITERIA FOR CONTENT AREAS AND SKILL COMPETENCY

URBN IXX (W)– Exploring Your Community integrates specific criteria for both the Social Science and the Diversity and Multicultural Content Areas, and for the Writing Competency.

Group II: Social Sciences

URBN IXX (W)– Exploring Your Community enables students to analyze and understand interactions of numerous social factors that influence behavior across multiple levels.

- a. Students are introduced to theories and concepts from the field of community research and action. An ecological model for understanding the complexities of human interaction and community development is used. Students learn to identify and analyze factors operating at the micro-, meso-, exo-, macro-, and chrono-levels, with specific emphasis on concepts of social justice, diversity and multiculturalism, and individual and social wellbeing.
- b. Students will learn and apply basic methods commonly used in community research and action. These include methods for organizing, analyzing, and interpreting data collected during participant observation, various interviewing techniques, surveying, and archiving. Ethical considerations will be discussed: issues of confidentiality, mandated reporting, and the researcher-expert dilemma.
- c. Students will learn ways in which individuals, families, groups and organizations, communities, and institutions behave and influence one another and the natural and built environment. This course specifically focuses on urban and community problems and solutions, opportunities and challenges, and the ways in which people access resources designed to enhance individual and social wellbeing.
- d. This course emphasizes the role of self (the student) as community researcher and co-creator of public knowledge. In this role the student is the tool for collecting, analyzing, and interpreting data about urban and community life related to social justice, diversity and multiculturalism, and individual and social wellbeing. The service learning design of this course enables students to understand the personal responsibility inherent in this role, because critical reflection (dialog and writing) is a major teaching-learning activity.

Group IV: Diversity and Multiculturalism

URBN IXX (W)– Exploring Your Community leads students to appreciate differences and commonalities among people in the following ways.

- a. Students will learn about and gain an appreciation for the diversity of human experiences, perceptions, thoughts, values, beliefs, and practices in urban and community life. Students will be introduced to key concepts through class activities, including the Community Guest Lectures, and subsequently students will gain first hand experience in diverse community settings through the service learning field trips.
- c. Students will consider both similarities and unique aspects of urban and community life within and across diverse groups. The core concepts of this course are social justice and individual and social wellbeing, and will form the foundation for identifying, analyzing, and interpreting similarities and differences in urban and community problems & solutions, challenges & opportunities.
- d. Students will understand and become sensitive to human rights and migration issues specific to ethno-cultural groups residing in the tri-campus areas. For example, the South East Asian population in Connecticut has been increasing, yet public resources are not on par with their

needs in health and education. Significant reflection on social justice and social wellbeing related to diversity, and an opportunity to gain first hand experience through the *Exploring Your Community* service learning project will be available to students each semester.

- e. Students will develop an awareness of the dynamics of social, political, economic, and legal power in terms of social justice and access to resources designed to improve community health and quality of life within and across the micro- and meso-levels of urban and community contexts.

W Course: Writing Competency

URBN 1XX (W)– Exploring Your Community satisfies the stated criteria for the “W” designation.

- a. Writing assignments enable and enhance learning the course content. Reflection, in the form of dialog and writing, is an important part of the teaching-learning process for this course. Students are introduced to theories, concepts, and methods for exploring urban and community life through assigned readings, class activities, and Community Guest Lectures. These activities form the foundation for the reflective process: map/outline of reading as homework; brief in-class individualized reflection paper on specified theory, concept, or method related to social justice, diversity and multiculturalism, and/or individual and social wellbeing; followed by class discussion and related activity (pairs, small group, and whole class). Students’ informal writing and dialog represent active co-construction of knowledge. This type of guided reflection and knowledge construction leads students to the more formalized writing required for the course: modified APA style paper on their service learning experience. This paper includes an introduction to specified theory and concepts, a methods section for exploring the specified aspect of community life, the findings, and implications for social justice, diversity and multiculturalism, and individual and social wellbeing.
- b. There are several types of writing assignments required of students in this course. The following table describes the assignments and outlines the page requirements and relative weighting of the “W” component.

Writing Assignment type Assignment description	Page requirements	Weighting of “W” Component
Weekly Homework: Map or Outline of assigned reading	3 to 6 pages (outline or mindmap)	20%
Weekly In-Class Reflections: Individualized guided reflection (5-10 minutes) Class activities, individual assignment completed in pairs and/or small groups	One page Usually 2-page short answer worksheets	20%
Service Learning Project: Community Guest Lecture reflections (4 per semester)	1-page short answer worksheet and 1-page written reflection per guest lecture	
Service Learning Project: Service field trips (3 to 4 trips, minimum of 20 hours of service)	1- to 2-page data collection worksheet per trip (i.e. field notes) 1- to 2-page typed reflection, summarize methods and findings per trip	20%
Service Learning Project: (Final Part 1) Modified APA style research paper	(suggested minimums) Introduction 3 pages Methods 2 pages Findings 4 pages Implications 4 pages	20%

References Personal Reflection of service learning process	1 page 2 pages	
Service Learning Project: (Final Part 2) Project Presentation	(presentation format to be determined by class, therefore page length varies each semester)	20%

- c. Modes of writing instruction are as follows. As outlined above, there are various forms of writing required in this course. Each form of writing serves a purpose in shaping the final course products, the APA style paper and presentation. Students are provided formal instructions (written handouts and oral reviews) with examples of expected formats and content for each writing activity. Students work individually, in pairs, and in small groups during class, at which time informal instruction on format and content is available.

Formal instruction on the service learning project components occurs in class, and students are encouraged to participate in individualized consultations during office hours, particularly for students with demonstrated need. A Service Learning Guide is provided to each student, and whole class discussions on content and format occur as each component is assigned. Each section of the paper is assigned with explicit instructions on content and format, but with sufficient flexibility to allow creativity. Each student’s paper is evaluated, and written feedback is provided. In addition, to facilitate the revisions, general comments about the overall class performance on each section are presented as formal instruction in class. Students are required to edit and revise each section.

Students are assigned reading for homework, and complete a written outline or mindmap as evidence of having read the selection. The purpose of these readings (which are on theory, concepts, and methods) is to help students draft the introduction to the APA paper and to select methods appropriate for the topic. Students are able to refer to their written homework while completing the in-class reflections. In-class reflections are on topics relevant to the *Exploring Your Community* service learning activities, and also serve to shape the APA paper.

- d. Opportunities for revision are an important part of how this course is structured. This is made explicit to students on the syllabus, and students are clearly informed that passing the course is contingent upon satisfactorily fulfilling the writing component. Students are required to draft and revise each component of the APA style paper. Student revision is based on further reflection, in addition to written feedback, informal and formal instruction in-class, and optional consultations during office hours.

Experiential reflective dialog and writing form an important means to authentically constructed public knowledge. This is an essential skill for public and community service, and is a major reason for designing this course as a community-based service learning experience. Students are required to create an *Exploring Your Community* Service Learning Portfolio, which culminates in twin assignments. The first is an individually written paper in which the student demonstrates thorough knowledge of theory, concepts, and methods for exploring a selected urban-community topic. The second major work is to participate in the

class-wide presentation of their newly acquired public knowledge. Previous presentations have included poster sessions, community forums, and panel discussions.

Service learning requires significant guided reflection in the form of dialog and writing because authentically constructed public knowledge is dynamically shaped and reshaped over time. Reflection and revision go hand-in-hand. Revision signifies re-viewing, or seeing, understanding, and knowing from another (an “other’s”) perspective. In service learning, revision not only serves to improve the mechanics of writing, but also to deepen the thinker’s grasp on co-constructed knowledge. In this respect, it is expected that the revision process will enhance the students’ ability to achieve learning objectives regarding diversity and multiculturalism: revision is a mechanism for students to gain insight into others’ experience in order to transform the “other” to self. Seeing oneself in others is essential for effective and authentic public service. Writing and revision, as designed in this community-based service learning course, fits well with the general education writing competency principles.