SMC Core Curriculum Designation Application Form

This form will be submitted to the Chair of the CCC, who will distribute it to the proper Working Group(s).
Your username (jsauerbe@stmarys-ca.edu) will be recorded when you submit this form. Not jsauerbe? Sign out

* Required

Name of Proposer * Kathy Porter

Name of Department/Program of Proposer * Mathematics and Computer Science

Name of Department/Program housing the course * Mathematics and Computer Science

Name of Chair/Program Director * Chris Jones

Type the Course Acronym, every semester

Type the Course Prerequisites (if any): one year each of high school Algebra I, Geometry, and Algebra II with a C- or better, and a mathematics placement into the course after the completion of a placement exam.

Type the Unit Value of the Course: 1

Normal Class Size: 35

Number of students in an 'average' section. 33

Number of Sections expected to be taught in Fall 2012. 2

Number of Sections expected to be taught in Spring 2013. 2

Is the course designed for and/or appropriate for first-year students? yes

Choose the Working Groups and Learning Goals for which the course is being submitted: *

Artistic Understanding

Mathematical Understanding

Scientific Understanding

Social, Historical, Cultural Understanding

Theological Understanding

American Diversity

Common Good

Community Engagement

Global Perspectives

Any course approved for the Core must provide data for the assessment of Core Curriculum learning goals at an institutional level. Is the proposer aware that his/her chair/program director will need oversee (electronic) submission of the student work necessary for this assessment?

Yes

No

While courses and individual sections within courses may vary, the Core should provide somewhat consistent experiences within each Learning Goal. To this end, is the proposer aware that his/her chair/program director will need to agree that instructors of Core courses will participate in Norming and Assessment exercises?

Yes

No

Once the CCC receives this form, you'll be sent a link that will allow you to upload the syllabi and other documentation.

ok :)

Thank you. When you click "submit" you'll be sent to a page you can just close. A copy of your responses will be sent to your email, where you can review, and edit them if necessary.

ok :

2) Coverage of the learning outcomes for Mathematical Understanding for MATH 003

MATH 003 is primarily designed for students with majors in the School of Economics and Business Administration. It will predominantly be taken by Freshmen and Sophomores in these majors.

The learning outcomes for Mathematical Understanding are: *Students will*

1. *Apply abstract and logical reasoning to identify patterns and solve mathematical problems; and*

2. *Communicate mathematical ideas and concepts accurately and clearly using mathematical symbols, language, and formulas.*

The first learning outcome for Mathematical Understanding will be met by the first two Course Learning Objectives for *Finite Mathematics*; these are that students will

   (a) "choose and apply appropriate problem-solving techniques and use mathematical reasoning in solving problems."

   (b) "formulate linear models for practical problems in areas such as economics, business, and social sciences."

The topics that will be covered are linear models, systems of linear equations and solution using matrices, matrix algebra, linear programming, mathematics of finance, sets and counting, and probability. Each of these topics involves using reasoning (both deductive and inductive) to apply mathematical ideas to linear applications. Students will identify proper models to mathematically represent given information and use the theory to build models and to solve them. Major applications include using linear regression to represent data and to predict future behavior, writing systems of linear equations to represent related information and then solving the systems by either matrix or graphical methods, understanding and using the Fundamental Theorem of Linear Programming to find appropriate solutions after determining an objective function and the constraint inequalities, applying the Fundamental Principle of Game Theory to establish a winning strategy in zero-sum games, and using the theory of Markov systems to model and solve processes that pass from state to state under given probabilities, then use this information to predict future behavior of the Markov system..

The second learning outcome for Mathematical Understanding will be met by the third and fourth Course Learning Objectives for *Finite Mathematics*; these are that students will

   (a) "clearly and correctly express themselves in the language of mathematics, orally and in writing." And

   (b) "read mathematical material and translate that into properly written mathematics."

 This objective on mathematical communication will be met by covering all of the topics mentioned above in lecture, textbook readings, and online homework.

3) <u>Assessment artifacts for measuring student learning</u>

Both learning outcomes will be assessed through midterms (usually three), a comprehensive final exam, and homework. Exams and homework will consist of a variety of problems including short answer questions, computational problems, graphical solutions, formulation of models, and algebraic/matrix solutions of real world word problems. Students will be expected to correctly explain processes, theory, and concepts in writing on homework and exams. It is common to expect that students will demonstrate their proficiencies of both learning outcomes on the comprehensive final exam after a semester of learning.

4) <u>Department's disciplinary expertise</u>

All ranked faculty in the Department of Mathematics and Computer Science possess a doctoral degree in mathematics, and it is the ongoing practice to require such a degree of the candidates in every tenure track search. Almost all lecturers and adjunct faculty possess either a master's or doctoral degree in mathematics plus prior experience in teaching college-level mathematics. The rare exception would be a lecturer who instead possesses an advanced degree in a field with a strong focus on mathematics, such as physics or engineering, plus a substantial history of success in teaching college-level mathematics.

The department maintains clear guidelines regarding content, goals, and outcomes for each course and actively communicates to each instructor the expectation for adherence to these guidelines.

MATH 003   *FINITE MATHEMATICS*

PROFESSOR: **Dr. Kathryn Porter**   OFFICE: **Galileo 101C**

TELEPHONE: **631-4447**   EMAIL: **kporter@stmarys-ca.edu**

OFFICE HOURS: **Monday & Wednesdays 10:30-12:30 or by appointment**

TEXTBOOK**:**   *Finite Mathematics,* Waner and Costenoble, 5th Edition, bundled with **Webassign**

COURSE CONTENT: will include functions and linear models, systems of linear equations, matrix algebra and applications, linear programming, mathematics of finance, sets and counting, probability, Game Theory, and Markov chains.

All St. Mary's students must take a math class to develop their skills of analysis, logic, and abstraction and to appreciate ways of the thinking that might be different from their own. In the liberal arts tradition, this goal is not instrumental or vocational–the goals are much broader. The goals of this course, then, are to engage students in mathematical thinking and the development of analytical skills. Many of the examples and applications have been chosen to relate to business and finance, and indeed students going on in the business world will see some of these techniques in use and that this will allow them to make other connections between analytical thinking and problems they might encounter in the future.

COURSE LEARNING OBJECTIVES: **By the end of the course students will be able to:**

- Choose and apply appropriate problem-solving techniques and use mathematical reasoning in solving problems.

- Formulate linear models for practical problems in areas such as economics, business, and social sciences.

- Clearly and correctly express themselves in the language of mathematics, orally and in writing.

- Read mathematical material and translate that into properly written mathematics.

- Use appropriate technology to solve problems and interpret the results of those solutions, while recognizing the limitations of the technology.

FROM STUDENT DISABILITY SERVICES:

Student Disability Services extends reasonable and appropriate accommodations that take into account the context of the course and its essential elements, for individuals with qualifying disabilities. Students with disabilities are encouraged to contact the Student Disability Services Director at (925) 631-4164 to set up a confidential appointment to discuss accommodation guidelines and available services. Additional information regarding the services available may be found at the following address on the Saint Mary's website: http://www.stmarys-ca.edu/academics/academic-advising-and-achievement/student-disability-services.html

DETERMINATION OF COURSE GRADES:

activity	% of your course grade*
homework	16%
quizzes	16%
Exam I	17%
Exam II	17%
Exam III	17%
Final Exam	34%

*The lowest of the Exam I, II, III grades will be dropped; or if the final exam % grade is lower than all the three midterm exams then the final exam will be worth only 17%.

For example, if your three midterms are 76, 88, and 75, while your final exam is 70% (140/200) then half the final exam is dropped and 70, 76, 88, and 75 are each 17% of your course grade.

All grades (for assignments, quizzes, exams) will be posted on GaelLearn. It is your responsibility to check Moodle frequently to make sure that your grades are being recorded accurately.

FINAL COURSE GRADES:

90-100% = A
80-89% = B
70-79% = C   *Plusses and minuses will be assigned for borderline cases.*
60-69% = D
0–59%   = F

EXAMS:

There will be three equally weighted hour-long midterm exams and a comprehensive final. The midterm exams will be given on (approximately) September 28th, October 28th, and November 21st.The date and time of the final exam will be announced around the end of October; **do not plan to leave before the last day of exams since our final exam may be on that day.**

Make-up exams will not be given except in the case of an unexpected personal **emergency** which can be documented.

HOMEWORK:

Webassign assignments will be due each day of class at 12 noon. Hand-written homework is due at 2:15 pm of the class period. You are welcome to seek help on the individual homework assignments from other students, the Student Math Center, TAs and your instructor. **However**, you must write up your own homework work yourself; your work should not look as if it comes from some other source/person. **Late homework will not be accepted.**

QUIZZES:

There will be short 10 minute quizzes on some days (unannounced – all previous material is game!). These quizzes are meant to help you monitor and evaluate your progress in the class.

HELP FOR THE COURSE:

Come see me for help in my office either during my office hours or another time (drop by or make an appointment!) Also plan to use the Student Math Center (SMC), a free help lab provided by the Mathematics Department. It is located in Gal 110 and is open 7-9pm, Sunday-Thursday. In

the SMC you will be able to work with MATH 3 students from both sections as well as with advanced mathematics students.

SOME MORE INFORMATION TO HELP YOU SUCCEED:

1. **WELCOME TO COLLEGE**!!! It is expected that you will conduct yourself appropriately, with respect for each other, for faculty and staff, and for college property. You should expect that **much of your learning will take place outside of the classroom** and that you will take responsibility for your education. This means that you must seek assistance when you need it, prepare for each class by completing all reading and writing assignments prior to coming to class, and realize that it is normal for you to leave the class period with questions and concepts that you will need to explore before your understanding is complete.

2. **Show work** on homework, quizzes and exams. I want to give you partial credit but if you have no work then you will earn no credit. I am not a Vulcan and cannot read your mind so *show me the work*! (Trekkie moment!)

3. Attendance: Each student is allowed a **maximum of three hours of absences** (excused or unexcused) from class. Please save them for when you are ill. Each detected absence beyond three will lower your final grade one level (e.g., if your final grade is a B- and you have 5 absences then your grade is lowered 2 levels to a C).

4. **Study time**: Plan to study/prepare a *minimum* of 1 hour every day for this class.

5. Basic scientific calculators may be used during quizzes/exams only when indicated by me. **Programmable and algebraic/graphing calculators will not be allowed** during exams. Sharing of calculators is never allowed during exams. You should bring your basic calculator to every class meeting.

6. When you read your textbook, aim for **comprehension**. The textbook does not read like a novel as the reading needs to be slow-going and more careful. Read at your own pace with pencil and paper handy to work through the examples and fill in the omitted steps. This is a college-level class; the lecture/discussion will make more sense if you have read the textbook beforehand. Read the text often – before we go over a section read the section –then read it again after we go over the section!

7. All quizzes and exams must be done **without assistance** from any source or person, unless you are told otherwise. However, I do encourage you to work on practice problems and to discuss the concepts with other people in the class.

8. FORM A **STUDY GROUP**!!! Attend the **Student Math Center**, Sunday – Thursday 7- 9 pm in GAL 110. These sessions begin September 6th.

9. **Talk to me** if you think you are getting lost or behind.

10. The **honor code** and the Saint Mary's policies regarding academic honesty detailed in the student handbook apply to this course. I encourage you to work with other students on practice work but on quizzes and exams you must do your own work and not share your work. When working together on homework, **never** copy someone's work. It is one thing to discuss the

problems but copying is not allowed…when a main portion of a solution comes from another person please note this in your work.

11. SMC **Athletes**: By Sept. 9th, I need a statement indicating your name, your sport, the class dates you will miss due to team commitments. This must be written and signed by you.

12. Classroom etiquette: The class hour is dedicated to learning by everyone, and so your principal responsibilities are to participate fully in that process and to not disrupt anyone else's participation. To this end, c**ell phones and other electronic devices** must be turned off and not used for any purpose during class. If your cell phone rings or you use your cell phone in class, you will be required to leave the class for the day. Gum and food are not allowed in the classroom; water, soda, coffee, tea, etc. may be brought to class as long as you are careful and dispose of the container. Hats of any kind are not allowed to be worn during exams. **Class will start promptly, so arrive on time.**

13. Write the names, phone numbers, and emails of several students in this class:

MATH 3 Finite Mathematics Class Schedule – Fall 2011

MONDAY	WEDNESDAY	FRIDAY
8/29 Welcome/Information Sheets Sec. 1.3 Linear Models	8/31 Sec. 1.3 & 1.4 Linear Regression	9/2 More on Chapter 1 Problems using Excel
9/5 No class- Labor Day	9/7 Sec. 2.1 Systems of Equations	9/9 Sec. 2.2 Using Matrices to solve systems
9/12 Sec. 2.2 More on Gauss-Jordan Elimination	9/14 Sec. 2.3 Applications of Systems of Linear Equations	9/16 Sec. 3.1 & 3.2 Matrix Operations
9/19 Sec. 3.3 Matrix inversion	9/21 Group Work	9/23 Applications
9/26 Review	9/28 **Exam I**	9/30 Sec. 3.4 Game Theory
10/3 Sec. 3.4 Game Theory	10/5 Sec.4.1 Graphing Linear Inequalities	10/7 Sec. 4.2 Solving Linear Programming Problems
10/10 Sec. 4.2 More-Applications	10/12 Group Work	10/14 **No class – Midterm Holiday**
10/17 Sec. 6.1 Sets & operations	10/19 Sec. 6.2 Cardinality	10/21 Sec. 6.3 Addition & Multiplication Principles
10/24 applications	10/26 Review	10/28 **Exam II**
10/31 Sec. 6.4 Permutations and Combinations	11/2 Sec. 6.4 More P & C	11/4 Sec. 7.1 Sample spaces and events

11/7	11/9	11/11
Sec. 7.2	Sec. 7.3	Sec. 7.4
Relative frequency	Probability and Probability Models	Counting Techniques in Probability
11/14	11/16	11/18
Group Work	Sec. 7.5 Conditional Probability	Review
11/21	11/23	11/25
Exam III	No class - Thanksgiving	No class - Thanksgiving
11/28	11/30	12/2
Sec. 5.1 & 5.2 Simple and Compound Interest	Sec. 5.2 & 5.3 Compound Interest & Annuities	Sec. 5.3 Annuities, Loans and Bonds
12/5	12/7	12/9
Sec. 7.7 Markov Chains	Sec. 7.7 Markov Chains	Review

FINAL EXAM: Thursday Dec. 15, 4:30-6:30