Department of Mathematics and Computer Science
St. Mary's College
St. Mary's City
Maryland 20686-3301

Semester:	Spring 2003
Course Number:	MATH 131.01
Course Title:	Survey of Mathematics
Prerequisites:	None
Meeting Times:	Mondays, Wednesdays and Fridays 10:40 - 11:50 am
Location:	Schaefer Hall, Room 109
Instructor:	Simon Read
Office Location:	Schaefer Hall, Room 174
Office Hours:	Mondays, Wednesdays and Fridays 9:00 to 10:40 am, Wednesdays 4:30 to 6:00 pm; and by appointment.
Telephone Number:	Extension 4442 (240 895 4442)
E-Mail Address:	`sread@smcm.edu`
Teaching Assistant:	Tara Moore
E-Mail Address:	`tamoore@smcm.edu`
Class Web-Site:	`http://courses.smcm.edu`
Required Textbook:	Burger, Edward and Michael Starbird, The Heart of Mathematics: An invitation to effective thinking, 1st Edition, Key College Publishing, Emeryville CA, 2000, ISBN 1-55953-407-9.

Catalog Description:

This course will include study of both theoretical and applied aspects of mathematics. Topics will vary from section to section, and may include the following: number systems, mathematical modeling, projective geometry, group theory, graph theory, mathematical logic, sets and infinity, topology, the concepts of calculus, and the history of mathematics. The course is recommended for students of the liberal arts who wish to obtain a general view of contemporary mathematics. MATH 131 satisfies the General Education Requirement in mathematics.

Instructor's Description:

In this course you will learn about the "mode of thought" used in mathematics by looking at interesting puzzles and questions. The course will use little algebra or symbolic methods, instead it will rely on more natural, verbal and visual, reasoning techniques.

The goal of this course is to provide you with an additional "thinking tool" and an appreciation for the beauty of mathematics. These are important for any well-rounded college graduate and complement "thinking tools" developed in other disciplines (the scientific method, literary criticism and so forth).

Methods of Instruction:

Lectures and assigned readings will be used to present the factual element of the course. The examinations and weekly homework problems are designed to reinforce the problem solving and critical thinking skills discussed in class. The group research project will develop research and paper writing skills, as well as formal verbal presentation skills.

Grading Criteria/Course Requirements:

There are three elements to the grading of this class: the examinations; the homeworks and the group research project.

There will be three examinations: two midterm examinations (**each 1 hour, weight 15%, totalling 30%**) and a final (**2 hours, weight 30%**). These examinations are designed to test both your understanding of the material presented and your ability to apply the material in problem solving. Examinations are cumulative and you may prepare a crib sheet for use in the examination.

There will be ten homeworks (**weight 2% each, totalling 20%**). The style of questions is similar to the style of examination questions. These will be set by the Friday class before the due day. They will be due by the beginning of class on the deadline date. To complete the homeworks you may only consult: the instructor; the teaching assistants; your notes; and the textbook.

There will be a group research project (**weight 20%**). You will select your groups and the topic of the research with assistance from the instructor and teaching assistants. From the research you will: give a *group* presentation in class; and write a *joint* paper.

Policies:

Communications

This course uses the course management software Blackboard. This system will be used to provide: announcements concerning the class; Powerpoint slides used in classes; external links to useful World Wide Web resources; and other course related materials will all be handled through Blackboard.

Homework assignments will be posted through Blackboard. Homework solutions will be submitted online through Blackboard. Your grades will be displayed on Blackboard. *You* are responsible for making sure that this grade sheet accurately reflects the grades given for each piece of work.

Plagiarism

Students must be familiar with the "Student Code of Rights and Responsibilities", as stated on pages 81-95 in the "To The Point Student Handbook", especially Article III Section 1. Not being familiar with your rights and responsibilities is no excuse. Any direct quotes and someone else's ideas or information *must* be referenced.

Incompletes

> "An I (Incomplete) may be given by the instructor only at the request of the student when extraordinary circumstances, such as extended illness or other serious emergency beyond the control of the student, prevent the student from completing a course within the academic term. To qualify for an Incomplete, the extraordinary circumstances must have occurred near the end of the term and the student must have been attending the course regularly throughout the term up until that point."
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> - Academic Policies, St. Mary's College of Maryland, Catalog 2002-2003, p. 181

Late Submission

Except for unusual, documented circumstances *assignments will not be accepted late.*

Examinations

Unless otherwise stated, all examinations are 'in class', 'cumulative' and 'closed book'. Calculators are allowed, but must be 'cleared' before the examination starts. Students may use a 'crib sheet' during the examination. The 'crib sheet' may be: only one sheet of paper; written or printed on both sides; no larger than US letter sized. Preparing the 'crib sheet' is a helpful part of studying for the examination.

Grading

To earn a C grade, your work must show a strong understanding of the information presented in the course. To earn a B grade your work must show a strong understanding of the information presented in the course *and* an ability to apply this information in problem solving. To earn an A grade your work must show a strong understanding of the information presented *and* an exceptional ability to apply this information in problem solving.

Written materials will be judged with respect to writing quality as well as technical accuracy. Papers are expected to meet or exceed accepted college English and scholarship standards.

Computing Final Grades

When a grade must be computed the table below is used. If all grades carry equal 'weight' then the total score is the sum of the 'scores' for each of the grades divided by the number of grades. If the grades do not carry equal weight, then the total score will be the sum of each of the scores multiplied by the corresponding weight divided by the sum of the weights. The overall grade is the grade whose range contains the total score. The scores are rounded to two decimal places where necessary.

Grade	A	A-	B+	B	B-	C+	C	C-	D	F
Score	4.0	3.7	3.3	3.0	2.7	2.3	2.0	1.7	1.0	0.0
Range	3.85	3.50	3.15	2.85	2.50	2.15	1.85	1.50	0.50	0.00
	4.00	3.84	3.49	3.14	2.84	2.49	2.14	1.84	1.49	0.49

Provisional Schedule:

This is just a tentative schedule, and is subject to change at the instructor's discretion. The only part that is *not* subject to change is the time of the Final Examination. Work that counts towards your final grade is set in **bold font**.

Date		Class Topics	Deadlines
Jan	22	Introduction	
	24	Silly Stories	
	27		
	29	Pigeon Hole Principle and Estimation	
	30	Estimation II	**H/W 1** Due
Feb	3	Fibonacci	
	5	Golden Ratio	
	7	Golden Ratio in Art and Nature	**H/W 2** Due
	10	Fundamental Theorem of Arithmetic	
	12	Euclid's Proof	
	14	Rationals	**H/W 3** Due
	17	Periodic Decimals	
	19	Fermat's Last Theorem	
	21	**Examination I**	Groups Due
	24	Writing a Good Paper	
	26	Estimation Revisited	
	28	Infinity	**H/W 4** Due
Mar	3	Counting Groups of Numbers	
	5	Cantor's Diagonalization Proof	
	7	Powersets Proof	**H/W 5** Due
	10	The Art Museum Theorem	
	12	Blaskara's Proof of Pythagoras' Theorem	
	14	Conway's Pinwheel	**H/W 6** & Topics Due
	24	Platonic Solids I	
	26	Euler's Theorem	
	28	Platonic Solids II	**H/W 7** Due
	31	Logic I	
Apr	2	Logic II	
	4	**Examination II**	
	7	Probability I	
	9	Probability II	
	11	Probability III	**H/W 8** Due
	14	Expected Outcome	
	16	Statistics	
	18	Statistics Critiques	**H/W 9** Due
	21	Future Value of Money	
	23	Game Theory	
	25	Review by Teaching Assistant	**Paper** & **H/W 10** Due
	28	Giving a Good Presentation/Review	
	30	**Presentations**	
May	2		
	10	**Final Examination (2:00 - 4:15pm)**	