COURSE SYLLABUS
MATH 100.01 -- Survey of Mathematical Ideas
Fall 2016

CRN:	5692
CREDIT HOURS:	3
LECTURE:	8:00 - 9:15 a.m. T R, Roddy Hall, Room 261
RECITATION:	(optional) 11:00 – 11:50 a.m. T, Wickersham Hall, Room 203 (overflow in Room 104)

INSTRUCTOR:	Dr. Ron Umble
OFFICE:	Wickersham Hall, Room 203
OFFICE PHONE:	871-7318
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E-MAIL:	ron.umble@millersville.edu
URL:	http://sites.millersville.edu/rumble
OFFICE HOURS:	10:00 - 11:00 a.m. M F 11:00 a.m. – noon M R F and by appointment

TEXT / e-TEXT:	C. Miller, V. Heeren & E.J. Hornsby, Mathematical Ideas, 13th Ed., Pearson/Addison-Wesley Ed. Pub. 2015. ISBN-13:978-0321977076
NOTES:	R. Umble, *Lecture Outlines.* 2014. Posted on D2L for download.
DESCRIPTION:	This course introduces some of the important ideas in mathematics and how they can be applied to solve a wide range of practical problems. Topics include sets, logic, history of numeration, number systems and their properties, number patterns, counting principles, probability, statistics, graph theory, networks, voting methods, and the advantages of home ownership.

OBJECTIVES: Upon completion of this course, the student will be able to:

- Use set theory to analyze surveys
- Analyze validity of arguments
- Count and do arithmetic in ancient Babylonian, Egyptian, and Chinese numeration systems
- Count and do arithmetic in systems with arbitrary base
- Code and decode numeric and alphanumeric data in binary
- Apply counting principles to compute probabilities
- Compute statistical measures of central tendency and dispersion
- Apply principles of graph theory to solve network problems
- Be aware of the problems inherent in a given voting method
- Understand the advantages of home ownership

HOMEWORK: - Each lecture is accompanied by one or two on-line homework assignments, each of which takes approximately 30-60 minutes to complete. On-line homework constitutes 10% of your semester grade (one letter grade). URL: http://www.mymathlab.com/

- To access the on-line homework you need the **Course ID: umble49543** and a **MyMathLab access code**. Textbooks purchased from the University Store are bundled with a MyMathLab access code. If you purchased a used copy of the text, access codes may be purchased on-line for approximately $95. Access codes purchased on-line also provide access to the e-text. If you're comfortable working with the e-text, you don't need to purchase a hard copy.

- There are 39 on-line homework assignments. On-line homework problems are similar to the ones listed in the course schedule from the text. Each on-line homework assignment closes at midnight two (2) class periods after it is assigned. You may skip any four (4) on-line homework assignments for any reason, ***including illness or other emergencies***. Except in extreme circumstances such as extended hospitalization, **requests for extensions will not be granted, so please don't ask.**

MAKE-UP EXAMS: Will be administered in the following cases:
- Illness (documentation required)
- Death of a family member
- Jury duty*
- Religious holidays*
- Participation in outside-the-classroom educational activities*
- Participation in University sponsored activities or programs*

*Advance notification required.

EVALUATION:

Component	**Weight**
On-line homework	10%
Hour Exams (3 @ 20)	60%
Final Examination	30%

Grading Scale:

93% -100%	A	80% - 82%	B-	67% - 69%	D+
90% - 92%	A-	77% - 79%	C+	63% - 66%	D
87% - 89%	B+	73% - 76%	C	60% - 62%	D-
83% - 86%	B	70% - 72%	C-	Below 60%	F

Millersville University and its faculty are committed to assuring a safe and productive educational environment for all students. In order to meet this commitment, comply with Title IX of the Education Amendments of 1972, 20 U.S.C. §1681, et seq., and act in accordance with guidance from the Office for Civil Rights, the University requires faculty members to report to the University's Title IX Coordinator incidents of sexual violence shared by students. The only exceptions to the faculty member's reporting obligation are when incidents of sexual violence are communicated by a student during a classroom discussion, in a writing assignment for a class, or as part of a University-approved research project. Faculty members are obligated to report to the person designated in the University Protection of Minors policy incidents of sexual violence or any other abuse of a student who was, or is, a child (a person under 18 years of age) when the abuse allegedly occurred.

Information regarding the reporting of sexual violence, and the resources that are available to victims of sexual violence, is available at

http://www.millersville.edu/titleix/title-ix-policies-and-procedures.php.

COURSE SCHEDULE
MATH 100.01 -- Survey of Mathematical Ideas
Fall 2016

Date		Text Section / Topic	Text Pages
Aug	30T	2.1: Sets – Symbols and terminology	47 – 51
		2.2: Venn diagrams and subsets	54 – 58
Sept	1R	2.3: Set operations and Cartesian products	60 – 69
	6T	2.4: Surveys and cardinal numbers	71 – 74
		3.1: Intro to logic: Statements and quantifiers	83 – 88
	8R	3.2: Truth tables and equivalent statements	91 – 99
	13T	3.3: Conditional statements	102 – 104
		3.4: Statements related to a conditional	111 – 115
	15R	3.5: Analyzing arguments with Euler diagrams	117 – 121
		3.6: Analyzing arguments with truth tables	123 – 129
	20T	4.1: Historical numeration systems	139 – 146
		4.3: Arithmetic in the Hindu-Arabic system	153 – 156
	22R	**HOUR TEST 1 (Chapters 2,3)**	
	27T	4.4: Conversion between number bases	160 – 167
	29R	5.1: Prime and composite numbers	177 – 182
		5.2: Large prime numbers	184 – 190
Oct	4T	5.3: Selected topics from number theory	192 – 196
		5.4: Greatest common factor and least common multiple	199 – 204
	6R	1.2: Number patterns	9 – 15
		5.5: Fibonacci numbers and The Golden Ratio	208 – 211
	8-11	**FALL BREAK**	
	13R	10.1: Counting by systematic listing	531 – 538
		10.2: Counting using the Fundamental Counting Principle	541 – 548
	18T	10.3: Counting permutations and combinations	552 – 561

Date		Text Section / Topic	Text Pages
Oct	20R	10.5: Counting involving “Not” and “Or”	571 – 576
	25T	11.1: Basic concepts of probability	583 – 592
		11.2: Events involving “Not and “Or”	597 – 603
	27R	**HOUR TEST 2 (Chapters 4,5,10)**	
Nov	1T	11.3: Conditional probability; events involving “And”	605 – 613
		11.4: Binomial probability	617 – 621
	3R	11.5: Expected value	623 – 633
		12.1: Visual displays of data	643 – 651
	8T	12.2: Measures of central tendency	657 – 666
		12.3: Measures of dispersion	670 – 677
	10R	12.4: Measures of position	680 – 683
	15T	12.5: The normal distribution	686 – 693
	17R	15.1: Basic concepts of graph theory	773 – 787
	22T	**HOUR TEST 3 (Chapters 11,12)**	
	23-27	**THANKSGIVING RECESS**	
	29T	15.2: Euler circuits	793 – 801
Dec	1R	15.3: Hamilton circuits	805 – 813
		15.4: Trees and minimum spanning trees	818 – 825
	6T	16.1: The possibilities of voting	837 – 847
		16.2: The impossibilities of voting	851 – 860
	8R	13.4: The costs and advantages of home ownership	731 – 744
	13T	**FINAL EXAMINATION (2:45 – 4:45)**	

Created August 28, 2016