

## MATH 105

### Mathematics Applications, Appreciation & Skills

#### Fall 2016 Syllabus

**Instructor:** Dr. Sinan Kanbir

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**Class Meets:** M/TR/F 8:00-8:50am D228 SCI

**Required Tutoring Session:** Tuesday 8:00 – 8:50am D228 SCI or TBA

**Office Hours:** Wednesday 8:00-9:45 am or by appointment

**Text:** *The Heart of Mathematics: An Invitation to Effective Thinking*, 3<sup>rd</sup>-ed. by Edward Burger & Michael Starbird.

**Prerequisite:** Math 90 or a suitable placement score.

**Course Description:** The main idea is to incorporate some significant mathematical ideas for non-math and non-science majors. It emphasizes the Quantitative Literacy (QL) along with developing an appreciation for the beauty of mathematics as part of the General Education Program (GEP). This course satisfies a general degree requirement for a BA degree but not for a BS degree. Throughout the course, the instructor and you will explore some topics of general interest that were not your formal high school mathematics courses. Minimal mathematical background will be assumed. The purpose is for you to see not only how useful mathematics is, but also how beautiful and elegant it can be. The "bottom line," so to speak, is to gain an appreciation for mathematics and to discover the power of mathematical thinking in your everyday life. It is essential in this course to have an open mind, a piqued curiosity, and a willingness to explore and discover

For more information, see: <http://www.uwsp.edu/acadaff/Pages/generalEducation.aspx>

#### Course Objectives:

- To learn to think and reason quantitatively to solve and formulate creative responses.
- To use quantitative reasoning to solve real-world problems and sharpen analytic skills for life issues that are beyond mathematics. (via some of the situations in the stories)
- To develop critical thinking and reasoning skills that could be connected logic and deductive reasoning.

#### Course Outcomes:

##### Quantitative Literacy Learning Outcomes

- Select, analyze, and interpret appropriate numerical data used in everyday life in numerical and graphical format.
- Identify and apply appropriate strategies of quantitative problem solving in theoretical and practical applications.

- Construct a conclusion using quantitative justification.

In addition to those outcomes, you will:

- learn how to read and how to formulate precise mathematical statements;
- develop your skills as logical, disciplined thinkers and as problem solvers;
- learn how to engage and wrestle problems with a productive struggling way.

### **Course Structure and Tentative Requirements:**

**Attendance:(30 out of 600 pts).** You are expected to attend every class meeting. If you are absent more than **4 times** without any special circumstances, it will be considered unprofessional. If you are absent **6 classes** or more, your course grade will be "F". For two absences during the semester there will be no penalty. After the second absence, 3 points per absence will be subtracted from your total attendance points (30 points).

There will be no make-up exam with the possible exception of unforeseen emergencies (decided by instructor). If there is an emergency, the student must provide official written documentation and the make-up exam must be arranged within 5 calendar days. Students missing class for any reason are responsible for information and work done during the class time missed.

**WARNING:** Makeup evaluations may be more difficult than scheduled assessment.

University students are expected to observe certain rules of etiquette. Activities such as talking or leaving the classroom while class is in session should be avoided. **Cell phones must be out of sight.**

**Participation: (40 out of 600 pts)** You are expected to participate in the class activities and discussions. Your participation in class also means that you should not only share your (on-task) ideas during class discussions and in small group work, but also listen and learn from your instructor and colleagues. You will be asked to present solutions to the class, and your willingness to do so will be reflected in your grade. It is expected that you will present solutions and/or lead a discussion at **least 4 times** during the semester.

**Read-Write/Reflection: (100 out of 600 pts)** We will read some assigned chapters of our course textbook and some interesting readings. **Reading assignments** given in class are extremely important. Working with new ideas (rather than just seeing them or hearing about them) is the way most learning takes place, and this textbook is designed to be especially readable. You will see a tentative schedule for reading assignments, but dates or even the readings themselves may change as we go along. You will be asked to submit your reflections approximately **four times during the semester**. The intent is to support you in developing a habit of reflection on your own thinking and learning. Only reflections that are typed will be accepted, unless otherwise specified. In your typing, double space paper (2 to 3 pages) and a cover page should be included with this paper and it should include;

- a. **Name: First, middle, Last**
- b. **Date:**
- c. **Course: MATH 105**
- d. **Assignment Name**

**Presentation (80 out of 600 pts):** You or your group will present two 15-minute-long presentations. These presentations are an opportunity to explore and discover a mathematical topic and its applications in more depth. This may be a topic that is related to your discipline, for instance, or you may choose to depict a mathematical idea in a creative way (via a song or poem, for example). Students may work individually or in a group of two (collaboration encouraged - it's fun!). The presentations will be made each 15-20 minutes of Thursday's meeting. Further details will be provided during class.

**Homework: (100 out of 600 pts.)** Homework from your textbook and will be assigned for some sections covered in class. Your success in learning the material presented requires that you complete each assignment and do not fall behind. We will use class time to go over some of your questions regarding the assignments. We will not, however, have enough class time to answer all questions that arise. The Tuesday's tutoring session will be a good time to get some help for your HW assignments. Your textbook and classmates are also valuable resources. Homework will be collected approximately once a week. Clarity of exposition is important! Strive for well-written, polished solutions. Usually, collaboration with other students in the class is encouraged, but the solutions you turn in must be your own and show your own understanding. **NO LATE HW WILL BE ACCEPTED.**

### E. Grading

This is a 3---credit hour class that requires 6 hours of outside---of---class study per week. Make sure that you schedule and put in those hours consistently throughout the semester. Your course grade will be calculated on a percentage basis (number of points earned out of number possible) and assigned a corresponding letter:

94-100% = A	90- 93 % = A-	
86-89% = B+	83-85% = B	80-82% = B-
76-79% = C+	73-75% = C	70-72% = C-
66-69% = D+	60-65% = D	
Less than 60% = F		

### Fall 2016 MATH105 Point Distribution (Dr. Kanbir)

Evaluation Item	Counts	Points (Max)	Note
Attendance	30*1	30	After the 2 <sup>nd</sup> absence, 3 points per absences will be subtracted from the max (30) points.
Participations	10*4	40	4 times solutions presentations.
Presentations	2*40	80	Podcasts and Projects
Read/Write- Reflections	4*25	100	Various reading and writing reflections from the textbook.
Homework (Textbook)	6*10	60	End of chapters (Mindscapes) problems
Homework (Problem Solving)	4*10	40	Problem sets
In-Class Evaluations	5*30	150	2-3-week coverage.
Final	1*100	100	Whole semester coverage
<b>Total</b>		<b>600</b>	

I may use discretion to raise a student's grade if her/his final grade does not reflect the quality of her/his work in the course (for example, from a low exam score early in the course). I will not, however, use such discretion to lower a student's final grade.

In accordance with UW system policies, Math 105 is dedicated to a safe, supportive and non-discriminatory environment for all persons regardless of age, race, religion, gender, sexual orientation or disability. You are expected to be fully aware of your rights and responsibilities as a UWSP student. These are detailed in the UWSP Community Bill of Rights and Responsibilities:

<http://www.uwsp.edu/dos/Documents/CommunityRights.pdf>

In particular, this includes the UWSP Student Academic Disciplinary Procedures:

<http://www.uwsp.edu/stuaffairs/Documents/RightsRespons/SRR-2010/rightsChap17.pdf>

Information concerning accommodations made as per Section 504 of the Rehabilitation Act or the Americans with Disabilities Act can be found at:

<http://www4.uwsp.edu/special/disability/>

In particular, to request any accommodations of this type, relevant to this class, discuss the matter with the Disability Services Office. Information and contact information may be found at:

<http://www4.uwsp.edu/special/disability/ToQualifyforDisabilityServicesProcedure/>.

### References

- Agnes M. Rash & Sandra Fillebrown (2016): *Courses on the Beauty of Mathematics: Our Version of General Education Mathematics Courses*, PRIMUS, DOI: 10.1080/10511970.2016.1191572
- Burger, E. B., M. Starbird, and D. Bergstrand. 2005. *The Heart of Mathematics*. Emeryville: Key Curriculum Press.
- Forman, S. and A. M. Rash. 2015. *The Whole Truth about Whole Numbers*. New York: Springer.
- Tapp, K. 2012. *Symmetry: A Mathematical Exploration*. New York: Springer.

**Student's Record/Track Table**  
**Fall 2016 MATH105 Point Distribution (Dr. Kanbir)**

Evaluation Item	Your point	Points (Max)	Note
Attendance		30	...subtracted from the max (30) points.
Participation 1		10	4 times solutions presentations.
Participation 2		10	
Participation 3		10	
Participation 4		10	
Presentation 1		40	Podcast
Presentation 2		40	Project
Read/Write- Reflection 1		25	Various reading and writing reflections from the textbook.
Read/Write- Reflection 2		25	
Read/Write- Reflection 3		25	
Read/Write- Reflection 4		25	
Homework (Textbook)		60	End of chapters(Mindsapes) problems
Homework (Problem Solving)		40	Problem Sets
In-Class Evaluation 1		30	
In-Class Evaluation 2		30	
In-Class Evaluation 3		30	
In-Class Evaluation 4		30	
In-Class Evaluation 5		30	
Final		100	December 20 <sup>th</sup> 12:30-14:30
<b>Total</b>			