

Mathematical Reasoning  
3.0 Semester Hours (3-0-3)  
Department of Mathematics and Computer Science  
College of Arts and Sciences  
Valdosta State University  
Fall 2013

PREREQUISITE: Grade C or higher in either Math 3162 or Math 3180 or permission of instructor.

Instructor : Dr. XYZ  
Office : Nevins Hall 2XXX  
Phone : 229-333-XXXX  
Email : XYZ@valdosta.edu  
Office Hours : 10:00 – 10:50 TR; others by appointment (example)  
Other Options : Call, e-mail, stop by during office hours, or make an appointment.

REQUIRED MATERIALS:

Textbook: O'Daffer, P., Charles, R., Cooney, T., R., Dossey, J., & Schielack, J. (Fourth edition, 2008). *Mathematics for Elementary School Teachers*. Boston: Pearson –Addison Wesley.

Other: Three-ring notebook or folder, colored pencils or markers, graphing calculator, ruler (12 inches and 30 cm), scissors, compass, protractor, stapler – Please bring to class DAILY!

Software: Geometry Sketch Pad (around \$35) or Geogebra geometry software (free)  
<http://www.geogebra.org/cms/>

COURSE DESCRIPTION

An in-depth study of concepts and processes underlying the P-8 school mathematics curriculum, with special emphasis on informal and formal mathematical reasoning. Problem solving and historical context serve as unifying strands. The analysis and remediation of student errors manifested in the application of conceptual and procedural mathematical knowledge will also be addressed.

GENERAL STUDENT LEARNING OUTCOMES

- By the time you finish this course, you should know (understand) and be able to do the following:
- 1) understand, model, and appreciate the role of informal and formal mathematical reasoning skills and processes within the context of teaching and learning mathematics.
- 2) understand fundamental concepts of formal logic and the relationship to deductive reasoning.
- 3) a) solve a variety of routine and non-routine problems;
- b) select and apply appropriate problem-solving strategies, and describe all aspects of the problem-solving process;
- c) approach unfamiliar problems with confidence in your ability to find solutions.

- 4) a) model pre-number and numeration concepts, including place value;
- b) meaningfully develop and model each of the four basic operations of arithmetic and apply those to a variety of problem settings;
- c) model and explain computational algorithms in a meaningful, developmentally appropriate fashion;
- d) develop and apply a variety of mental computation and estimation techniques;
- e) extend number system knowledge from the whole number system to integers, rationals, and real numbers;
- f) model and apply fundamental number theory concepts.
- 5) a) develop and apply a variety of geometric and measurement computations;
- b) describe and identify different types of spatial reasoning and/or Van Heile Levels
- 6) describe and utilize appropriately the content and process standards contained within the NCTM Standards 2000 and the Core Content Georgia Performance Standards (CCGPS).
- 7) diagnose elementary or middle grades students' misunderstandings of mathematical concepts or procedures and develop and deliver appropriate instruction designed to correct those misunderstandings

**Course Overview:** Content and processes of mathematics will be treated in an environment that encourages pre-service teachers to view mathematics as a fascinating and stimulating intellectual endeavor which provides skills, insights, and modes of thinking that are essential in the twenty-first century. Students will see the connections between the various aspects of mathematics and between mathematics and other fields.

**Time Schedule:** Week-by-week schedule of subjects to be treated. Schedules of Tests etc. Final exam date, day, time, classroom.

## ASSESSMENT

There will be examinations, Web assignments, homework assignments, in-class participation, and a **mandatory comprehensive final examination** (worth 20% of the available points).

### Grading Scale

90% – 100%	A
80% – 89%	B
70% – 79%	C
60% – 69%	D
Below 60%	F

### Examinations and Makeup Policy

**NO MAKEUP EXAMS WILL BE GIVEN** after the test has been administered to the class. If you know in advance you must miss an exam day, let the instructor know **in advance** so potentially arrangements can be made to take the exam early. It is **NOT** your right to take an exam early. This is done at the discretion of the instructor.

Your **lowest exam** score will be **replaced by your final exam score** (if it helps). If you miss one exam, the missed exam will be your low score (grade of zero) and your final exam score will be used for that exam. Each subsequently missed exam will receive a score of zero. **All exams should be taken with a strong effort each time.**

Each of the examinations is a closed-book, closed note, individual exam. The content of the exams comes from the material presented in the course through readings (text and

additional readings), text exercises, assignments, in-class notes, and in-class activities.

The final exam is a **mandatory comprehensive final** and will make up **20% of your overall grade** for the course.

### Daily In-Class Work, Homework Assignments, and Makeup Policy

The in-class experiences and out-of-class assignments are integral parts of the course. You can expect to:

- 1) **In-class activities.** Complete in-class activities with a good work ethic and a positive attitude.
- 2) **Text exercises or instructor made homework.** Text exercises or instructor made problems or exercises will generally be given for homework at each class meeting. Be certain to review **ALL** of the text exercises that are given (doing any exercise is up to you). Formative quizzes over some of the material will be provided.
- 3) **Reading Assignments.** Reading assignments are given on the tentative class schedule. Instructor class notes can be printed by students prior to class for a given section if desired. In general, the instructor will not provide copies of notes for students. Reading assignments prior to each class meeting will enrich your classroom experience and help you to formulate questions for clarification more readily. **Do NOT rely on the notes nor skip the reading!**
- 4) **Web Assignments.** Complete Web assignments following instructions located on either the course Web page or in WebCT as directed (**See Tentative Course Schedule for Due Dates**). Please note and adhere to the due dates for the Web assignments as **NO LATE WORK** will be accepted.
- 5) **Make-Up Work:** Make up work or alternative assignments will be **determined by the professor and at the sole discretion of the professor. These assignments may or may not exactly duplicate the original** and will not entitle other students to the same alternatives since they may not have experienced the same situations.
- 6) Detailed information for individual assignments may be provided separately.

### Example of a time schedule for Math 4161

Aug -12 Syllabus Decimal Number system. Alternative number systems	Aug- 14 Continuation of altern. Number systems. Conversions from base to base	Aug-19 Addition and Subtraction Algorithm In number systems	Aug-21 Add –Subtract-Algorithm-continued	Aug-26 Whole number Multiplication With different base numbers
Aug 28 Multiplication Algorithm multiple bases Area-model-lattice multiplication	Sept-2 Multiplication with lattices in other bases	Sept-4 <b>Test 1 Addition-Subtraction-Multiplication with different bases</b>	Standard Algorithm division How to Reason mathematically.	Sept-11 Continuation Division Algorithm
Sept-16 Division Algorithm in other bases	Sept-18 Continuation Division Algorithm	Sept 23 <b>Test 2: Multiplication and Division Algorithm with decimals</b>	Sept 25 Solid Geometry polyhedra	Sept-30 Platonic – Archmedean and other solids

Oct 2 Structure- Areas- Volumes of solids	Oct 7 Cones from circles And back.	Oct-9 Volume and areas from the Net to the solid	Oct 14 Regular polygons and Platonic and Archimedean solids	Oct 16  The structure of Archimedean solids in terms of edges, faces, vertices
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Oct 21 <b>Test 3 Numeration and Archimedean and Platonic solids</b>	Oct - 23 Geometry of solids Regular polygons and solids	Oct 28 More on Platonic and Archimedean solids and their structure.	Oct 30 Nets of Platonic and Archimedean solids	Nov 4 Continuation of solids study
Nov 6 Continuation of Solids structure	Nov 11 Continuation of solid study	Nov 13 <b>Test-4 Numeration, Platonic and Archimedean solids, structure; cones and circles.</b>	Nov. 18 Review for Final exam	Nov -25 <b>Review</b>

#### ATTENDANCE AND TARDINESS

It is very important that you attend every class session on time. Roll will be taken each day by the instructor. If you are late it is your responsibility to notify the instructor at the end of that specific class meeting to be sure the attendance is amended to tardy. **Failure to notify the instructor that day will result in your being counted absent.** You may not make “corrections” to your absences or tardiness after the fact at a subsequent class meeting. The amount of time you are tardy will count against the number of days you can miss for the course. **Every three times you are tardy will be counted as one absence.** Excessive tardiness or absences may result in the notification of your major chair and/or the filing of a Departmental Concern Form.

If you miss more than 20% of the class meetings (>6 days), you will receive an **F** in the course as per Valdosta State University Policy found in the VSU Undergraduate Catalog. Please note that there are **no** distinctions made between “excused” and “unexcused” absences. **All absences are counted equally no matter what the reason.** If you are absent, be certain to get class notes, handouts, and assignments from another student in the class. Getting the phone number and e-mail address of two or three classmates during the first week of class will be very helpful. It is **completely your responsibility** to get class materials for a session that you missed.

**All cell phones/MP3 players/laptops will be turned off and stowed during class.**

Students will receive points for class attendance and participation. Students will lose points for lack of participation (off task, sleeping, and so on), tardiness, and absences. These points **CANNOT** be made up – if you are not present you did not participate and thus cannot receive participation points.

New Limited Withdrawal Policy:

- Please remember that starting fall 2010 **undergraduate students are limited to 5 course withdrawals for the lifetime of their undergraduate record.**
- **DO NOT OVER-REGISTER!** Please make sure you are enrolled in courses you intend to complete.
- Please go to <http://www.valdosta.edu/academic/WithdrawalPolicy.shtml> and **read the entire policy and the FAQs.**

### SOI Statement

At the end of the term, all students will be expected to complete an online Student Opinion of Instruction survey (SOI) that will be available through SmartEvals. Students will receive an email notification through their VSU email address when the SOI is available (generally at least one week before the end of the term). SOI responses are anonymous to instructors/administrators. Instructors will be able to view only a summary of all responses after they have submitted final grades. While instructors will not be able to view individual responses or to access any of the data until after final grade submission, they will be able to see which students have or have not completed their SOIs. These compliance and non-compliance reports will not be available once instructors are able to access the results. Complete information about the SOIs, including how to access the survey, is available on the [SOI Procedures webpage](#).

### **PROFESSIONALISM**

A professional demonstrates the ability to focus on the job at hand. We expect professional basketball players, surgeons, attorneys, etc. to focus on their work when working. Michael Jordan does not read the paper during his game, nor does he go to the game simply to chat. During the semester, you need to exhibit professional behavior by focusing on the job at hand – learning mathematics. If you will come to class with the mindset of putting learning first, then the following aspects of professionalism will naturally fall into place:

- Come to class every time it is scheduled, be on time, and do not leave early.
- Turn in assignments and other materials on time.
- Do not pack up your books early.
- Stay on task – learning mathematics.
  - Turn off/silence cell phones and all other electronic devices
  - No electronic devices are permitted except graphing calculators
  - Students who use electronic devices during class will lose participation points
- Be prepared.
- Do **NOT** cheat. Procedures for academic dishonesty will be followed if work presented as your own is not actually your own work. If you need help, please get the help **BEFORE** the examinations.
- Through your actions and words, display that the work you are doing is important.
- Be courteous to and respectful of others. All students have the right to hear in class lectures, so do NOT converse privately during class lectures.
- Clean up after yourself.
- Demonstrate a positive attitude.

### Academic Integrity:

"Academic integrity is the responsibility of all VSU faculty and students. Faculty members should promote academic integrity by including clear instruction on the components of academic integrity and clearly defining the penalties for cheating and plagiarism in their course syllabi. Students are responsible for knowing and abiding by

the Academic Integrity Policy as set forth in the Student Code of Conduct and the faculty members' syllabi. All students are expected to do their own work and to uphold a high standard of academic ethics." Full information on Academic Honesty at VSU is available at <http://www.valdosta.edu/academics/academic-affairs/vp-office/academic-honesty-at-vsuo.php>

Turnitin, a plagiarism prevention tool, is available to all faculty through BlazeVIEW, VSU's online course management system. All faculty should include the following announcement in their syllabi: "By taking this course, you agree that all required course work may be subject to submission for textual similarity review to Turnitin, a tool within BlazeVIEW. For more information on the use of Turnitin at VSU see Turnitin for Students at <http://www.valdosta.edu/academics/academic-affairs/vp-office/turnitin-for-students.php>.

**Deviation from the stated, implied, or orally given professional standards may result in the notification of your major chair and/or the filing of a Departmental Concern Form.**

Access Statement:

Students with disabilities who are experiencing barriers in this course may contact the Access Office for assistance in determining and implementing reasonable accommodations. The Access Office is located in Farbar Hall. The phone numbers are 229-245-2498 (V), 229-375-5871 (VP) and 229-219-1348 (TTY). For more information, please visit VSU's Access Office or email: [access@valdosta.edu](mailto:access@valdosta.edu).

The Academic Support Center:

The Academic Support Center (ASC) provides free peer tutoring in core curriculum courses, including sciences, math, writing, social sciences, humanities, and foreign languages. The ASC also provides supplemental instruction (tutor-led study group sessions) for historically difficult courses like biology, chemistry, geosciences, psychology and sociology, as well as academic success workshops. Call 229-333-7570 to make an appointment, email us at [asc@valdosta.edu](mailto:asc@valdosta.edu), or visit our website: [www.valdosta.edu/asc](http://www.valdosta.edu/asc). Located in Odum Library, on the 2<sup>nd</sup> floor.

Title IX Statement:

Valdosta State University (VSU) is committed to creating a diverse and inclusive work and learning environment free from discrimination and harassment. VSU is dedicated to creating an environment where all campus community members feel valued, respected, and included. Valdosta State University prohibits discrimination on the basis of race, color, ethnicity, national origin, sex (including pregnancy status, sexual harassment and sexual violence), sexual orientation, gender identity, religion, age, national origin, disability, genetic information, or veteran status, in the University's programs and activities as required by applicable laws and regulations such as Title IX. The individual designated with responsibility for coordination of compliance efforts and receipt of inquiries concerning nondiscrimination policies is the University's Title IX Coordinator: Maggie Viverette, Director of the Office of Social Equity, [titleix@valdosta.edu](mailto:titleix@valdosta.edu), 1208 N. Patterson St., Valdosta State University, Valdosta, Georgia 31608, 229-333-5463.

**Instructor reserves the right to make changes or modifications to the syllabus upon notification of the class members.**

