I. COURSE INFORMATION

Instructor: Joe Champion, Ph.D.
E-mail: joe.champion@tamucc.edu
Webpage: http://faculty.tamucc.edu/jchampion
Office location: Center for Instruction #359
Office phone: 361-825-3165
Office hours: Tue/Thu 12-2 p.m., & by appt
Meeting place: CS 107
Meeting times: 8:30-11:30 on June 10-13, June 17-21, & June 24
             8:30-4 on June 14

II. COURSE DESCRIPTION

An in-depth investigation of the real number system, base ten and other number bases, operations and algorithms, divisibility, Euclidean algorithm, congruence, modular arithmetic, and the Fundamental Theorem of Arithmetic, with an emphasis on quantitative and qualitative reasoning. Emphasis will be on the relationship of number and operations to Algebra I concepts. This class is intended for secondary mathematics teachers.

III. PREREQUISITES for the COURSE

Graduate standing; teacher certification or experience teaching mathematics in grades 6-12; and/or permission of the program coordinator.

IV. TEXTS and OTHER SUPPLIES REQUIRED

- *The Book of Numbers*, Conway & Guy, 1996
- Scientific calculator
- Access to word-processing and spreadsheet software, Microsoft Office preferred
- Regular access to high-speed Internet, http://learner.org/courses/learningmath/number/index.html

V. STUDENT LEARNING OUTCOMES

Upon successful completion of the course, students will:

1. Gain a perspective of the historical background of number theory
2. Explore other number bases through historical/cultural class presentations
3. Calculate and convert between different number bases
4. Recognize and work with common subsets of the real numbers
5. Write elementary proofs for number theory topics such as divisibility
6. Make connections between number and algebra concepts and skills
7. Deepen mathematical understandings of connections between 6-12 grade TEKS in number and operation and algebra
8. Understand and use theorems and algorithms of number theory

VI. INSTRUCTIONAL METHODS and ACTIVITIES

The course will consist of lecture, collaborative group work, class discussions and class presentations. Students are expected to participate in collaborative groups and whole class discussions by contributing knowledge and thoughtful evaluation of the contribution of others.

VII. EVALUATION and GRADE ASSIGNMENTS

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Classwork</td>
<td>25%</td>
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<tr>
<td>Project</td>
<td>30%</td>
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<tr>
<td>Homework &amp; Quizzes</td>
<td>20%</td>
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<tr>
<td>Final Exam</td>
<td>25%</td>
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Final grades exceeding 90% will result in a letter grade of A. Those exceeding 80% will result in at least a B; ≥ 70% will result in at least a C; ≥ 60% will result in at least a D; below 60% will result in an F.

Classwork – participate in inquiry tasks, whole-class discussion, and group work activities during regularly schedules class time.

Project – select a historical or cultural number system or topic and give a class presentation. More details to be given in class.

Homework and Quizzes -- demonstrate your mastery of select student learning outcomes during individual assessments. Homework may require high speed Internet access and word processing software.

Final exam – complete a comprehensive summative evaluation of your knowledge through a post-test. The final exam cannot be made-up if missed. If you have a conflict with the scheduled final exam time, please contact me at least one week prior to discuss scheduling options.

» The final exam is scheduled for **Monday, June 24 at 8:30 - 11:30am**.
VIII. TENTATIVE COURSE SCHEDULE (subject to change)

<table>
<thead>
<tr>
<th>June 2013</th>
<th>Topics</th>
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<tbody>
<tr>
<td>Mon, 6/10</td>
<td>Introduction to Number Theory; pre-test</td>
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<tr>
<td>Tue, 6/11</td>
<td>Number systems, sets, infinity &amp; zero</td>
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<tr>
<td>Wed, 6/12</td>
<td>Base 10; face &amp; place value; Other number bases; base 5</td>
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<tr>
<td>Thu, 6/13</td>
<td>Meanings and models for operations, Quiz 1</td>
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<td>Fri, 6/14</td>
<td>ME by the Sea conference</td>
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<td>Mon, 6/17</td>
<td>Divisibility; simple proofs; GCF &amp; LCM</td>
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<tr>
<td>Tue, 6/18</td>
<td>Prime &amp; composite numbers; Fundamental Theorems of Arithmetic &amp; Algebra; Factors &amp; multiples, factorization</td>
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<td>Wed, 6/19</td>
<td>Sequences &amp; series, Quiz 2, Presentations</td>
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<tr>
<td>Thu, 6/20</td>
<td>Countable &amp; uncountable sets; Modular arithmetic, Presentations</td>
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<tr>
<td>Fri, 6/21</td>
<td>Classroom case studies, Presentations</td>
</tr>
<tr>
<td>Mon, 6/24</td>
<td>Post-test, Projects Due</td>
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IX. CLASS POLICIES

**Attendance/Tardiness.** Since the course duration is limited, you’re expected to attend every class session, arrive on time, and complete all in-class activities. If you need to miss part or all of a class session, please contact me before class or as soon as possible. Email is usually best.

**Late Homework.** Homework will usually be due the next class, but may be submitted later if the student requests an extension prior to the deadline. The instructor may enforce strict deadlines on some assignments by announcing a “hard deadline.” Partial credit on late submissions will be assigned at the instructor’s discretion.

**Cell Phones/Electronic Devices.** Please silence electronic devices during class and step out of class to use them. You may not use any personal electronic device during exams.

**Written Work.** Good writing skills are important in this class. Please type and proof-read your written assignments. The Writing Center is available for help with written assignments.

**In-Class Discussion.** Everyone in the class is encouraged to express personal views with an emphasis on evidence-based claims. Through maintaining a spirit of mutual respect and acknowledgement, the hope is that classroom discussion will be inviting, lively, and informative.

**Academic Integrity/Plagiarism**

University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the
work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a zero grade.

**Dropping a Class**

I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with me before you decide to drop to be sure it is the best thing to do. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Friday, 30 March 2012, is the last day to drop a class with an automatic grade of “W” this term [the last day to withdraw from the university is April 30, 2012].

**Classroom/professional behavior**

Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

**Grade Appeals**

As stated in University Rule 13.02.99.C2, Student Grade Appeals, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Rule 13.02.99.C2, Student Grade Appeals, and University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules Web site at http://www.tamucc.edu/provost/university_rules/index.html. For assistance and/or guidance in the grade appeal process, students may contact the Office of Student Affairs.

**Disabilities Accommodations**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call or visit Disability Services at (361) 825-5816 in Corpus Christi Hall, Room 116.

**Veterans**

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.
REFERENCES


