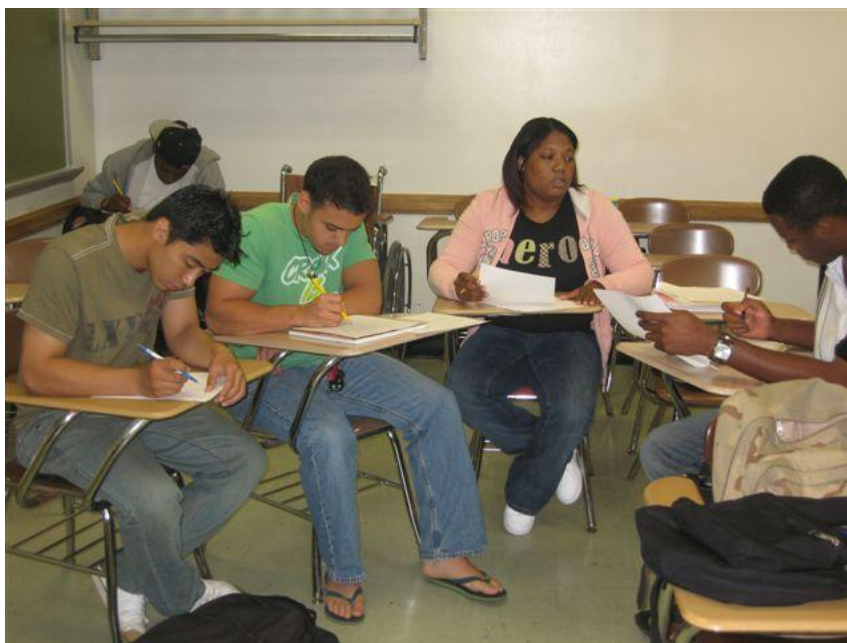


Union County College

Cranford Elizabeth Plainfield

*Center for Student Success:
Institute for the First Year*



**Developmental Mathematics
Retention Strategies Handbook**

Fall 2009

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About UCC...

Union County College (UCC), the oldest community college in New Jersey, is a public comprehensive college with a historic commitment to serving one of the most diverse populations in the country. Building on what began as an educational opportunity for students in the midst of the depression, UCC celebrates its 75th anniversary in 2008 with a renewed commitment to fulfill its mission of serving the higher education needs of the increasingly diverse citizenry of Union County, representing more than 80 languages and cultures.

Its primary mission is to provide the highest quality collegiate and career education opportunities that enable students to transfer to four-year colleges and universities or to pursue immediate entry into a career. UCC has an open admissions policy for both transfer and career programs and is committed to the fundamental values of public higher education.

Illustrating its commitment to serving diverse populations, UCC is a federally designated Hispanic-Serving Institution under Title V. Moreover, UCC's Institute for Intensive English, a national model, is the second largest ESL program in the State. Our students come from 80 different countries and speak 334 languages.

In 2007, the U.S Department of Education awarded the College a five-year Title V grant to implement researched-based strategies designed to increase the academic success and retention rate of our students. The new program, implemented in January 2008, is part of a college-wide initiative within the Center for Student Success. The multi-year project uses a holistic approach to address the academic needs of students during and after their first year.

A central component of the program is the establishment of Learning Communities, whereby designated sections of developmental math, developmental English and English 111 (composition for speakers of other languages) are paired with sections of UCC 101 (the First Year Seminar course). Another major component is the professional development activities for staff and faculty.

UCC is comprised of four campuses: Cranford, Plainfield, Scotch Plains, and Elizabeth, and all serve an increasingly at-risk population drawn from surrounding urban communities. The College is committed to building the diversity of the faculty and staff to reflect the cultural diversity of the county. In this regard, the college has made major progress in increasing diversity of faculty with the number of minority faculty almost tripling since 1990.



The faculty and staff readily embrace the inherent challenges of serving predominantly low-income students. Respectful of their students' diverse learning styles, faculty members continually experiment with new teaching methods and welcome professional development opportunities. The faculty and staff have also successfully expanded activities and services that have shown positive results with students in a target population to a broader college population.

An example is the First Year Seminar Course UCC 101, that is now required for all new students. This course was specifically designed to help students adjust to college life by helping them to clarify their goals, become familiar with the academic environment, and enhance their ability to learn and think critically.

This handbook was developed as a useful retention resource for the faculty. We encourage you to review and refer to it often for helpful information, including teaching strategies, tools and resource materials, and UCC processes and procedures. The handbook will also be available online at our website: www.ucc.edu/go/css as a PDF file and html Word file. To access it, click Professional Development, then Faculty Resources, and finally the individual department you teach in. We welcome your feedback and comments.

Section 1



Developmental Mathematics

- Overview of Developmental Mathematics
- Movement of Students through Developmental Mathematics
 - Developmental Course Timeline
 - Course Handout
 - Academic Calendar

Overview of Developmental Mathematics



There are four non-credit Developmental Mathematics courses in the Mathematics Department at UCC, which offer a review of computation, and the first year of high school algebra. This segment of the Mathematics Department is overseen by a Developmental Mathematics Coordinator, who handles program oversight, student advising, and developmental mathematics policies.

- The first level of Developmental Mathematics is MAT 011, an intensive 3-credit course in computation.
- This is followed by either MAT 022 or the sequence courses MAT 015 and MAT 016. The MAT 022 is an intensive 4-credit mathematics course, which covers high school algebra I in 14 weeks. The MAT 015 and MAT 016 splits the material covered in MAT 022 into two semesters. The MAT 015 is a three-credit course, which introduces the students to the first half of algebra I, and MAT 016, a four-credit course, completes the high school algebra I material.

These courses are designed to provide computation and algebra instruction for students whose placement test scores indicate a lack of readiness for college level mathematics. Students can place into Developmental Mathematics courses at the Computation level (MAT 011), the Beginning Algebra (Part 1) level (MAT 015), or the Beginning Algebra (intensive) level (MAT 022). A great majority of our students place into Beginning Algebra (Part 1) MAT 015 and will need to take Beginning Algebra (Part 2) MAT 016 as well. Students may also place out of developmental mathematics altogether. At this point, they are given a higher-level mathematics exam which may place them into Intermediate Algebra (MAT 119), Pre-Calculus (MAT 143 or MAT 144) or a Calculus (MAT 171) course.

Some students, although very few, may be required to take only one Developmental Mathematics course, they may test only into MAT 022 (Algebra I) or MAT 011 (computation). Once the course is completed, the student will continue with a credit course, depending upon their major. Students should see an Academic Counselor, who will inform them of their requirements based on their major and help them to register.

Upon completing the developmental sequence in mathematics, students are required to be re-tested and must pass the Basic Skills Re-test in order to pass out of the Developmental Mathematics courses.

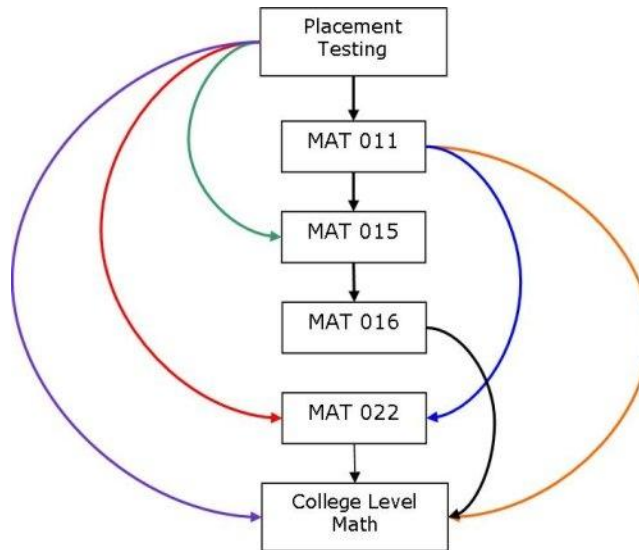
All students entering UCC, except those with certain exemptions, are required to take the Accu-placer Tests in Reading, Writing, and Math. These tests are administered through the Academic Testing Office on the Cranford Campus. Depending upon a student's score on these tests, he/she may be required to take one or more Developmental Mathematics classes or one or more Developmental English classes.

All students see a counselor before and after the Testing process in order to complete their academic advisement and scheduling. Counselors are available on all three campuses to assist students with this process.

Union County College has Academic Learning Centers to assist students in their classes. Tutoring is available at all three campuses, with designated tutors for learning community students.

Movement of Students through Developmental Mathematics

Here is the sequence:



An important piece of information here is that students who have completed MAT 011 may take MAT 113 (a Business Mathematics course required for some majors) but are still required to complete the algebra sequence. Students must receive a C in their course in order to register for the next level. **Counting the grades of W and F, there will be no fourth attempts at any developmental mathematics course. Students seeking a third attempt at a developmental mathematics course must see the Developmental Mathematics Coordinator for approval.**

Early registration:

- Students in 011 may register for 015, 022, or a credit mathematics course.
- Students in 015 may register for 016.
- Students in 016 or 022 may register for a credit mathematics course.

Important note: If the students do not receive a C or better in 011, 015, 016, or 022 they will be pulled out of the higher-level course as well as courses that have developmental mathematics as prerequisites. There is one exception, MAT 117 (a survey course) requires a D in MAT 016 or MAT 022. Please be sure students understand they must come back to adjust their schedules if they receive an F,UF, D,D+ or W in any of the above courses.

Students in any developmental course who bring signed waivers or notes from their teachers saying they are expected to pass with a C or higher may register as follows:

- Students in 011 may register for 015, 022, or a credit mathematics course.
- Students in 015 must register for 016.
- Students in 016 or 022 may register for a credit mathematics course.

Otherwise, they cannot register early for Mathematics courses.

Regular registration:

- Students in developmental mathematics courses may register for the next levels. However, once grades are put in the SIS system, students with D+, D, U, UF, or W are required to re-register for the course in which they failed to receive a C or better.
- Before grades are recorded, students in developmental course must show evidence of having passed with a note or waiver form from the teacher (filled out after the teacher has determined final grades).
- After grades are recorded, check students' transcripts and requirements. Students with F or W must retake the course and must adjust their schedule accordingly.

First Week of Classes:

- During the first week or so of classes, each faculty member will receive a Bad List. The Bad List is a list of students who may not have successfully completed the pre-requisite. Check with the student, or in SIS to determine if the student is properly placed. If you do not have access to SIS, check with the department secretary to make this determination. If you think a student is improperly placed, then send the student to the developmental mathematics coordinator.

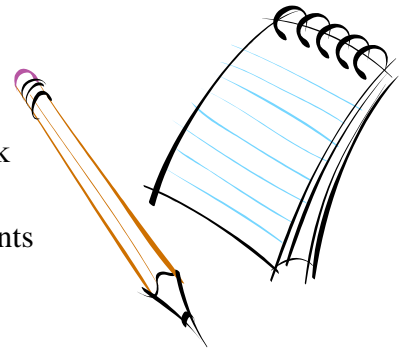
Developmental Courses Timeline



- Registration in Regular Courses is ongoing until the fifth day of classes. Students can add and drop classes until the fifth day.
- Registration in Late-Start Courses is ongoing until the fifth day of late-start. The last day to withdraw from classes is during the eighth week of the semester. Professors should advise all students who are failing prior to this date.
- About ten weeks into the semester, registration begins for the following semester.
- Students may ask you to sign waiver forms allowing them to register (see Movement of Students through Developmental Courses in this section page 4).
- During the last days of class, Math 011, MAT 016 and MAT 022 classes should review for the Basic Skills Test. There are a couple of resources available for this review. There is a yellow Basic Skills Practice Booklet for Computation (MAT 011) and a blue Basic Skills Practice Booklet for Algebra (MAT 016 and MAT 022); both booklets are available in the mathematics department secretary's office. There is a website created by the staff of Academic Learning Center designed especially for our students allowing them to practice taking a multiple choice math test. (See Online Resources section.)
- At the end of the semester, Basic Skills Re-testing is scheduled before the final exam period begins. Students will need a ticket in order to re test. Tickets will be issued via the US Postal service to each instructor's home address. These tickets should be distributed during the last week of classes. Test scores are available the day following the re-testing and will be placed in each instructor's college mailbox as well as being sent electronically to all Mathematics' faculty. Second-chance Testing usually takes place one week after the Re-Test. It is the faculty member's responsibility to inform the students that they need to take the second chance BST. The second chance Basic Skills Test is a privilege and not a right of the students. Only students who are passing the course should be given a second attempt at the BST.
- Faculty members in the mathematics department are required to proctor the Basic Skills Test once a year. Adjuncts are given an honorarium of \$25.
- Once you have received your second chance Basic Skills Re-test results you may enter your final grades on the computer using the faculty website. **Students must pass the Basic Skills Test to receive a passing grade in your class.**

Requirements for Class Handout

We are required to give a class handout to students during the first week of the semester. Unless you teach a course the first time, you can make minor changes to the handout semester to semester, and give it to students on the first day of the class.



The handout should contain the following information:

- ✓ Course number, and courses title; for example; MAT 011, Basic Mathematics.
- ✓ Textbook title, author(s), and edition.
- ✓ Faculty contact information, including name, phone number, email address, as well as office hours. Many adjunct faculty members do not give their home phone numbers to students, so having an email account and checking email daily are very important. You can apply for a college email account (Andrew will help you). Adjunct faculty members are not required to have office hours, although many of us do set hours to help students and many hold them in the faculty lounge.
- ✓ Prerequisites: Find prerequisites from the manual or catalogue. The department requires a C or better grade in prerequisite courses. Also, state the grade requirement for the subsequent courses. For example, in MAT 015's handout, we should state that a student must have passed MAT 011 with a C or better; also a C or better is required from MAT 015 to move onto MAT 016.
- ✓ Attendance Policy: We must check attendance daily. There are two reasons why we should do it: first: the college requires us to report the last day of a student's attendance if he or she ceases to come to class at the mid-semester and the end of the semester, and secondly if a student complains about his or her bad grade, poor attendance will be our best defense. Some professors' lower students' grades for excessive absence, others do not. If you do, you must state it clearly in the handout.
- ✓ Grading policy: We must state clearly our grading policy and we must follow it; the grading policy is a contract between the instructor and the students. If you say you will give three tests, but you only give two, students will complain that they can improve their grades in the third test. The grade should be determined by quizzes/tests/projects/final. We must give a final at the time the college assigns to us; you can find the final schedule on page 3 in the college catalogue. It also has a college calendar on page 1. Some professors give tests and finals, others also give quizzes and/or projects.

We must clearly state in the class handout how a student's grade is determined, so a student can figure out the current and overall grade from the scores he or she "earns" from the quizzes/tests/projects/final. Most professors use point-based system. For example, if you want give 500 points in quizzes/tests//final, and you want quizzes to be 30% of the course grade, tests 40%, final 30%, then you total quizzes points should be 150, tests points 200, and final 150. The guideline 90% = A, 85% = B+, 90% = B, 75% = C+, 70% = C, 65% = D+, 60% = D, and below 60% = F should be followed.

- ✓ **Make-up policy:** You determine your own make-up policy. The guideline is, if a student misses a test or final due to a family or medical emergency with a legitimate proof, a make-up should be given. A good practice in developmental courses (MAT 011/015/016/022) is, if you give four or more tests (or quizzes), you can drop the lowest one. If a student misses a test (or a quiz) the first time, he or she does not need to make up, you drop this one. This way you only give the make-up tests for the second time a student miss it and it is due to family or medical emergency.
- ✓ **Repeating Policy:** We just state that "no third attempt of this course will be allowed without permission of the Developmental Coordinator or Department Chair."
- ✓ **Cheating/Plagiarism policy:** "We will follow college policy as outlined in the STUDENT HANDBOOK" is good enough.
- ✓ **Withdrawals:** Always state the last day to withdrawal date in your syllabus. Late withdrawal policy: Just State: "Department doesn't allow late withdrawal". You can give late withdrawal in justified cases. If you give a late withdrawal, sign the form, **and** bring the form to the Admission Office by **yourself**.
- ✓ **Basic Skill Test (BST) requirement in MAT 011/016/022.** Students must pass the BST to pass a course. Give the date of BST.
- ✓ **Additional information you like your students know.**

Academic Calendar 2009-2010



Registration begins May 11, 2009

September 2 Fall semester classes begin	September 4 Last day to register for the 1 st 7 week session	September 5 & 6 No classes held	September 7 Labor Day (College Closed)	September 8 “W” Grade begins for 1 st 7 week courses
September 9 Last day to late register for courses beginning September 2 nd	September 10 “W” Grade begins for courses beginning September 2 nd	September 16 Fall late start courses begin, all courses end December 14 th	September 22 Last day to late register for courses beginning September 16 th	September 23 “W” Grade begins for courses beginning September 16 th
October 15 Last day of classes for 1 st 7 week courses	October 16 & 20 Final exam for 1 st 7 week session	October 21 Midsemester	October 28 Last day to withdraw from all courses – 2 nd 7 week starts	October 30 Last day to late register for 2 nd 7 week session
November 2 “W” Grades begin for 2 nd week course	November 17 Last day to withdraw for 2 nd 7 week courses	November 25 No Classes Held	November 26 thru 29 Thanksgiving Recess (College Closed)	December 12 Final exams begin (Sat 12/12 – Sun 12/13)
December 14 Last day of fall classes	December 15 Basic skills testing	December 16 Final exams begin (16 th thru 22 nd)	December 23 Last day of fall semester	December 25-27 College Closed

Academic Calendar 2009-2010



Registration begins November 2, 2009

January 18 Martin Luther King Jr. Day College Closed	January 21 Spring Semester Classes Begin	January 27 Last Day to Late Register for courses beginning January 21	January 28 “W” Grade Begins for courses beginning January 21	February 4 Spring Late Start courses begin (all courses end May 10)
February 10 Last Day to Late Register for courses beginning Feb 4	February 11 ‘W’ Grade begins for courses Beginning Feb. 4	February 15 Presidents Day College Closed	March 15 thru 21 Spring Recess No Classes	March 25 Last day to withdraw from spring courses
April 2 - 4 Easter Weekend College Closed	May 6 Basic skills testing no classes held	May 7 Classes resume	May 8 & 9 Final exams – weekend courses	May 10 Last Day of Spring Classes
May 11 – 14 & 17 Final Exams Begin 12th – 18th	May 18 Last day of spring semester	May 24 Awards Night	May 26 Commencement No Evening Classes Held	

Section 2



Teaching Developmental Mathematics

- Teaching in the Developmental Mathematics Classroom
 - Attendance
 - Discipline
- Students with Learning Difficulties and Learning Disabilities
 - Suggested Teaching Strategies

Teaching in the Developmental Mathematics Classroom

Teaching the community college student brings unique challenges. These students are sometimes older, returning students. Some are younger students who are not ready or prepared to attend a four-year school. The younger students are often under-prepared for college level work due to a number of factors: lack of support or encouragement at home—including a lack of emphasis on the importance of a college education; inadequate high school preparation; and/or a general misunderstanding of the nature and scope of the personal commitment that college studies require. Older or younger, community college students often must work full-time jobs and handle family responsibilities while going to school. Many of the students have had a bad experience in the classroom with mathematics, and demonstrate fear and disdain toward the subject. With all this in mind, it is important to be aware of some very specific challenges to be faced in the Developmental Mathematics classroom at UCC.



Attendance:

In college, attendance is usually not required but in a developmental mathematics class, it is necessary for students to attend so that they learn the material. Attendance should be kept for the purpose of assigning a UF grade, and for the financial aid office, the EOF program and student Athlete reports. Irregular student attendance is a significant problem. Faculty will often remark, “I cannot help them if they’re not here in the classroom!” **Some helpful techniques to encourage attendance are:**

- ✓ Try to help students to identify potential schedule problems early. Have them write out a weekly schedule/plan that accounts for all of their responsibilities (including at-home study time).
- ✓ Try to develop a sense of camaraderie in the classroom, helping students to feel as if they are an important and necessary part of classroom work. Learn their names as soon as possible. Have students identify, a “study buddy”: another student in the class who will be able to share notes or assignments in case of an absence.
- ✓ Make class participation, discussion, and in-class work a key component of their grade.
- ✓ Establish a clear attendance policy early on and let the students know and see that you are keeping regular records.
- ✓ Meet with student is mid-semester and have any students with significant absences sign an attendance commitment to pass the class or encourage withdrawal from the class.

Discipline:

Disruptive students can be a serious problem in the developmental classroom. Not addressing the issue can be detrimental to the other students in the class. This includes students who talk during class, students using cell phones/iPods, students who are disrespectful to other students or professors, and students who come in and out of the classroom, among other behaviors.



- ✓ Start by fostering an atmosphere of respect from the beginning, addressing students respectfully as an example.
- ✓ Make sure students feel that they have something at stake in the class, that you need them to work together in order for them to learn properly.
- ✓ Establish clear rules early on and stick with them. If the rules are fair and realistic, students are more likely to abide by them. If you feel comfortable with very strict rules (no cell phones at all, no food, drinks, or gum, all students always paying attention) be prepared to enforce them consistently.
- ✓ For discipline issues that you cannot resolve on your own, contact the Dean of Students, Dr. Ford. For immediate assistance, contact Public Safety (see below for information).

Public Safety

Cranford Campus	Elizabeth Campus	Plainfield Campus
908-709-7152	908-965-6070	908-412-3595

Students with Learning Difficulties/Disabilities

Any student with a learning disability must self-identify. It is not appropriate for a faculty member to ask a student if he/she has a disability. Once a student self-identifies, he/she must provide the professor with an accommodations alert form. Without this form, the faculty member is under no obligation to accommodate the student. This form will specify what accommodations he/she is allowed in the classroom (a note-taker, extra time on test, tape recorder, etc). Once a student has self-identified, faculty are required by law to accommodate the student to the best of the faculty member's ability. The fact they have a learning disability must be kept confidential. Keeping that in mind, their tests should be left in the Academic Testing Center, using the appropriate form and large blue envelopes. These forms are kept at the testing center and in the office of the math department secretary. The following are some other suggested techniques that might help students:



- ✓ At the start of each class session, provide students with an overview (spoken or written) of what is going to happen that day. It will help them to organize their notes and their work for the day.
- ✓ Encourage students who are tape recording the class to also take written notes. Students must obtain a signature from you in order to tape the class.
- ✓ Offer a step-by-step plan that breaks larger tasks down into smaller tasks. You might consider doing this each time you introduce a new topic to the students. Directions should be extremely clear for the students who are allowed extra time for a test and will take the test in the testing center. Sometimes the extra time is not enough—what they need is help in actually accomplishing the task, so breaking it down for them can help.
- ✓ Many students who have difficulties in mathematics do so because they have difficulties in reading and reading comprehension. When covering word problems read the problems to the students and determine if they know which operation needs to be performed, or the steps that are needed to solve the problem. This may help them to see the connection between key words and mathematical operations.
- ✓ Strongly encourage the students to utilize the Academic Learning Center on campus, whether they are failing or not.

Suggested Teaching Strategies for Developmental Mathematics



Because Developmental Mathematics courses are essentially skills-based courses, they should include workshop style learning methods in addition to the lecture style. Teaching mathematics effectively always appears to be difficult, since the faculty member is trying to help the students learn the concepts and master the techniques while always being mindful of the limited time required to teach the remaining topics. With this being said and with time permitting, some suggested teaching strategies that foster the workshop atmosphere include:

Small Group Work:

- ✓ Give the students a specific, multi-part problem to accomplish as a group.
- ✓ Ask students ahead of time to do one part of the problem. Then encourage them to put the parts together to solve the problem. This component helps to ensure that every member contributes something to the group effort.
- ✓ Walk around the room and observe.

Individual Work:

- ✓ Give the students a worksheet with problems that increase in difficulty as they proceed through them.
- ✓ Teach the students the techniques used to solve the problems.
- ✓ Have the students work on the problems individually before the end of class; requiring each student to show their completed solutions to the faculty member.
- ✓ If the student has completed all of the problems perfectly then excuse the student from the class with the evening's homework.
- ✓ If the student needs help in completing a problem, then this is an opportunity to assist the student step by step, thereby identifying their difficulties.
- ✓ Those who need assistance are remaining, and must actively seek the faculty member's help to complete the problems and be dismissed from the class. This method may reduce disruptions in the classroom.

Board Work/Peer Presentations (Group or individually)

- ✓ Give the students problems that increase in difficulty as they proceed through them.
- ✓ Have the students do presentations of the solutions on the board and allow classmates to comment on the presentation.

Section 3



Introduction to Mathematical Concepts MAT 011

- Brief Description of Course
- Textbooks and Course Outline
- Procedures for Assessment and Evaluation of Students

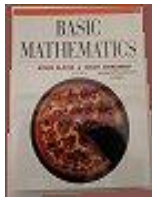
Course Description

Introduction to Mathematical Concepts is a preparatory course designed to teach students basic operations of mathematics, and how to use them in their daily lives. This course is for students whose New Jersey College Basic Skills Test scores indicate the need for preparatory work in arithmetic. It provides a comprehensive study of arithmetic and allied processes with the purpose of preparing students for algebra. Emphasis is on the purpose and techniques of mathematics.



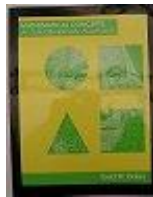
Textbook:

TEXTS USED:



Basic Mathematics, 2nd Edition,
Slavin and Crisonino,
 πr^2 ; Publisher

OR



Mathematical Concepts: An Interdisciplinary Approach, (2nd Ed.)
Todd Daley
Copley Custom Textbooks; Publisher

Math 011 – A course covering the fundamental of arithmetic – whole numbers, fractions, mixed numbers, decimals, ratios, proportions, and percents and their applications.

Calculators are not permitted.

Prerequisites: Prior knowledge of addition and subtraction of whole numbers and the multiplication table is essential to passing the course.

SCHEDULE OF TOPICS

The following outlines the topics to be covered.

TOPICS <u>Basic Mathematics by Slavin & Crisonino</u>
Place Value; Rounding
Addition; Subtraction
Applications
Multiplication With Whole Numbers; Exponents
Squares and Roots of Whole Numbers
Division With Whole Numbers
Arithmetic Properties
Order of Operations
Applications
Picturing Fractions; Fractions in Words and Numbers
Prime Numbers and Factoring; Reducing Fractions
Multiplying Fractions; Multiplying with Exponents
Roots of Fractions
Division with Fractions
Addition and Subtraction of Fractions
Order of Operations Applied to Fractions; Applications for Fractions
Converting Improper Fractions to Mixed Numbers and Mixed Numbers to Improper Fractions; Multiplication and Division of Mixed Numbers
Addition and Subtraction of Mixed Numbers
Applications
Complex Fractions
Order of Operations Applied to Mixed Numbers
Place Value; Rounding Decimals
Addition and Subtraction of Decimals; Multiplying Decimals
Dividing Decimals; Square Roots of Decimals
Order of Operations Applied to Decimals; Applications
Fraction and Decimal Conversions
Rate and Ratio; Unit Pricing; (Length, Distance, and Weight is optional)
Solving Equations by Division; Proportions
What Are Percents?
Basic Percent Problems
Solving Percent Word Problems
Applications

Topics	
<u>Mathematical Concepts: An Interdisciplinary Approach</u>	
By Todd Daley	
Whole Numbers	
Sect. 1	Place Value
Sect. 2	Adding Whole Numbers
Sect. 3	Subtracting Whole Numbers
Sect. 4	Multiplying Whole Numbers
Sect. 5	Dividing Whole Numbers
Sect. 6	Rounding Whole Numbers
Sect. 7	Order of Operations
Fractions	
Sect. 1	Intro to Fractions
Sect. 2	Multiplying & Dividing Fractions
Sect. 3	Adding & Subtracting Fractions
Sect. 4	Intro to Mixed Numbers
Sect. 5	Multiplying & Dividing Mixed Numbers
Sect. 6	Adding & Subtracting Mixed Numbers
Sect. 7	Operations with Mixed Numbers
Decimals	
Sect. 1	Intro to Decimals
Sect. 2	Adding & Subtracting Decimals
Sect. 3	Multiplying Decimals
Sect. 4	Dividing Decimals
Sect. 5	Fraction – Decimal Conversions
Ratio and Proportion	
Sect. 1	Ratios & Rates
Sect. 2	Solving Equations
Sect. 3	Proportions
Sect. 4	Applications of Proportions
Percents	
Sect. 1	Intro to Percents
Sect. 2	Basic Percent Problems
Sect. 3	Applications of Percents
Sect. 4	Percent Change & Discount
Sect. 5	Commissions, Taxes, & Interest

Math 011 Outcomes	Student Learning Outcomes	Assessment of Outcomes
<p><u>Chapter 1</u></p> <p><u>Be able to:</u> Determine whole number place values Write whole numbers in various forms Perform operations with whole numbers Round Whole Numbers Do applications of whole numbers</p>	<p><u>Students should be able to:</u></p> <p>Identify place values Write whole numbers in standard form, expanded form, and verbal form Add, subtract, multiply, and divide whole numbers Round whole numbers to various place values Evaluate exponents and perform operations in correct order</p>	<p><u>Written:</u> Homework & class tests</p> <p><u>Verbal:</u> Class exercises & discussions</p> <p><u>Project:</u> Obtain examples of Roman numeral on government buildings</p>
<p><u>Chapter 2</u></p> <p><u>Be able to:</u> Simplify fractions Do fraction-mixed number conversions Perform operations with fractions & mixed numbers Do applications of fractions & mixed numbers</p>	<p><u>Students should be able to:</u> Reduce fractions to lowest terms Do fraction-mixed number conversions back & forth Add, subtract, multiply, & divide fractions & mixed numbers Simplify complex fractions Do word problems with fractions & mixed numbers</p>	<p><u>Written:</u> Homework & class tests</p> <p><u>Verbal:</u> Class exercises & discussions</p> <p><u>Project:</u> Obtain examples of fractions & mixed numbers from recipes</p>
<p><u>Chapter 3</u></p> <p><u>Be able to:</u> Determine decimal place values Round decimals Perform operations with decimals Do fraction – decimal conversions Do applications of decimals</p>	<p><u>Students should be able to:</u> Identify decimal place values Round decimal numbers to various place values Add, subtract, multiply, & divide decimals Do fraction – decimal conversions back & forth Do word problems with decimals.</p>	<p><u>Written:</u> Homework & class tests</p> <p><u>Verbal:</u> Class exercises & discussions</p> <p><u>Project:</u> Obtain examples of decimals in foods & medicines</p>

Math 011 Outcomes	Student Learning Outcomes	Assessment of Outcomes
<p><u>Chapter 4</u></p> <p><u>Be able to:</u> Define ratios & rates Simplify ratios & rates Do applications of ratios & rates Define proportions & fundamental law of proportions Do applications of proportions</p>	<p>Students should be able to: Reduce ratios to simplest terms Solve rate problems Solve algebraic equations of form $A \cdot X = R$ Use fundamental law of proportions to: a) Test proportions b) Solve proportions. Do word problems with proportions: a) Set up problems b) Solve proportions</p>	<p><u>Written:</u> Homework & class tests <u>Verbal:</u> Class exercises & discussions <u>Project:</u> Obtain examples of ratios & proportions from medicine & chemistry</p>
<p>Chapter 5</p> <p><u>Be able to:</u> Define percent Do fraction-decimal-percent conversions Solve basic percent problems Solve applications of percent problems-percent change, discounts, commissions, taxes, & interest</p>	<p>Students should be able to: Do fraction-decimal-percent conversions back & forth Solve the 3 types of basic percent problems by algebraic method Solve general percent problems: a) write algebraic equation b) Solve resulting equation Solve percent problems-percent change, markup, discount (markdown), sales tax, commission, & simple interest problems: a) Write algebraic equation b) Solve resulting equation</p>	<p><u>Written:</u> Homework & class tests <u>Verbal:</u> Class exercises & discussions <u>Project:</u> Obtain examples of percent from newspaper & magazine articles</p>
		<p>Written-End-of-Term 1) N.J. Basic Skills Test in Computation 2) Comprehensive Final Exam covering all course out-comes of Math 011</p>

Assessment and Evaluation

In the MAT 011 classroom, you may have students with various ranges of knowledge. Students may have been placed in the course because they have not mastered the multiplication tables or they may not have mastered percents. The range in knowledge can be huge which can make teaching the course very difficult. Students who have not mastered the multiplication table will not be able to pass the course, without reviewing and mastering those tables. There is no time in the course to address these underprepared students. Students who just need to learn how to work with percents will become bored with many of the topics covered prior to percents and can become discipline problems. Attendance is usually sporadic and students have a tendency not to do their homework. Students may have learning disabilities. See section on Learning Disabilities in section Three: Teaching Developmental Mathematics.

Clearly setting and explaining guidelines for behavior in the classroom is essential to successfully teaching the course. There should be policies for absence and tardiness. Class participation encourages the students to try on their own. Homework must be assigned daily. Quizzes may be given weekly or less often. Chapter tests or midterms should be given. A final exam MUST be given at the end of the class during the specified time determined by the college. Take-home tests are not recommended. Final exams must be given in the classroom or in a proctored room. **DO NOT CHANGE** the final exam date or time. The Final Exam Schedule will be given to the faculty member sometime before mid-semester.

All students must take the New Jersey College Basic Skills Re-test at the end of the course, unless they have passed it in a previous semester. Students must receive a grade of C (70%) or higher and have passed the NJCBST in order to move to the next level.

In order to take the NJCBST, each student will need an entrance ticket. Every faculty member will receive the tickets for the entire class in a package mailed to their home address. It is the faculty member's responsibility to distribute the tickets to the students. If a student loses his/her ticket, he/she may go to the Academic Testing Office on the Cranford campus with appropriate identification to receive another ticket. If a student has stopped attending the class or does not pick up their own ticket, then it is the student's responsibility to locate the faculty member and obtain the ticket. No ticket is necessary for the second Chance NJCBST.

SUGGESTED TEACHING/LEARNING METHODOLOGIES:

- ✓ Having students work on problem on their own as the faculty member walks around to observe their work
- ✓ Have students work on worksheets during class time, then review worksheet with students before class ends.
- ✓ Small group work.
- ✓ Board presentations.
- ✓ Use of computer resources. See section ten.
- ✓ Visitation to Academic Learning Center.
- ✓ Individual conferences with students on progress.

Grading in MAT 011

1. In MAT 011 students may earn a letter grade of A, B+, B, C+, C, D+, D, F, UF (not passing). If a student receives a D+ or D, then they must repeat the course. In order for students to pass on to the next level they need a grade of C (70%) or higher.
2. In order to receive a passing grade in MAT 011, including the grades of D+ and D, students need to pass the New Jersey College Basic Skills Test in Computation. Students need to receive a passing score of 19 out 30 on the New Jersey College Basic Skills Test. Students will be given 40 minutes in which to complete the NJCBST. Students, who score less than 19 on the NJCBST, may be permitted to take the second chance NJCBST. The second Chance NJCBST gives students a second chance at passing the test but the test will be a different version of the first test. Students need to receive a 19 out of 30 in order to pass the 2nd chance test and will be given 40 minutes in which to complete the test. It is the faculty member's responsibility to contact the students with the NJCBST results. Faculty members should only permit students who are passing their class with a D or higher to take the second chance NJCBST. Being given an opportunity to take the second chance NJBST is a privilege, not a right.



3. Students who pass the NJCBST (with a score of 19 or higher) and fail the MAT 011 class will not be required to retest, but they will need to repeat MAT 011. Students who fail the NJCBST (with a score under 19) automatically fail the course and will need to repeat the course and retest.
4. Grades should be submitted online using the UCC website. Memos and e-mails will be sent by the Registrar's office at the appropriate time explaining the process.

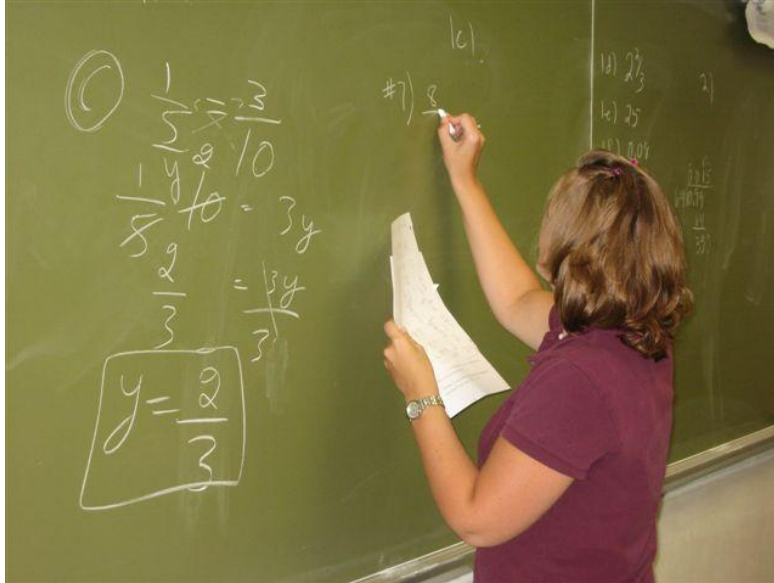
Other Pertinent Information:

1. The college placement exam, Accuplacer, places a student into the appropriate course. In a few cases, students place into MAT 011 only. Once they have passed the course with a C or better, they are permitted to register for a credit course in their major.
2. Under no circumstances can a MAT 011 student skip MAT 015/MAT 016 or MAT 022 simply because they are doing well or receiving an A in MAT 011.
3. Some students test into MAT 011 and MAT 022, the intensive Beginning Algebra course. Students cannot just take MAT 022; they must test into the course. Students, who test into MAT 015, do so because they have very little knowledge of algebra. MAT 022 is an intensive fast-paced course designed for students who only need a review of algebra. The pace and the difficulty of the material in MAT 022 are not conducive to the learning style of a MAT 015 student.
4. Most students will test into MAT 011 and MAT 015. MAT 015 is a slower paced algebra class designed for the student who needs extra time to understand algebra topics. This course only covers half of a beginning high school algebra course. Student must complete the sequence by taking MAT 016, the second half of the beginning Algebra course.

IMPORTANT NOTES:

1. If a student never attended (NA), the proper grade is UF. If a student stopped attending, he/she receives a UF grade, and the date of last attendance should be recorded on the final grade form.
2. The mathematics department policy states that no late withdrawals should be given, unless in extreme cases. A late withdrawal grade (W) is only given if the Late Withdrawal form, which must be obtained by the instructor, has been filled out by the student and signed and submitted (by the instructor) to the registrar. The Late Withdrawal forms can be obtained from the mathematics department secretary.

Section 4



Beginning Algebra (Part 1) – MAT 015

- Brief Description of Course
- Textbook and Course Outline
- Procedures for Assessment and Evaluation of Students

COURSE DESCRIPTION:

Introduction to Beginning Algebra (part 1- MAT 015) is a preparatory course designed for students with little or no previous experience with algebra. This course is the first in a sequence of two courses in algebra. The course will cover signed numbers, exponents, algebraic expressions, rational expressions, the solution of linear and rational equations, and verbal problems. The course is equivalent to taking the first half of a high school Algebra I course. Students must complete MAT 016 in order to have satisfied the algebra requirement. Prerequisite: MAT 011 or satisfactory performance on the College Placement Test: Accu-Placer.

Text Book and Course Outline:

I. TEXTS USED: Understanding Elementary Algebra, 6th Edition



Goodman and Hirsch

Brooks/Cole, Thompson Learning

II. OBJECTIVES AND GOALS OF THE COURSE

To provide a first course in algebra for students with a weak algebra background. To enable students to go on to further study in MAT 016.

III. TOPICS

The following schedule outlines the topics to be covered.

TOPICS
<ul style="list-style-type: none"> • Basic Notation • Integers • Adding Integers • Subtracting Integers • Multiplying & Dividing Integers • The Real Number System
<ul style="list-style-type: none"> • Variables and Exponents • Algebraic Substitution • Distributive Property and Like Terms • Simplifying Algebraic Expressions • Translating Phrases & Sentences Algebraically
<ul style="list-style-type: none"> • Types of Equations and Basic Properties of Equalities • Solving Linear Equations • More First Degree Equations and Applications • Types of Inequalities & Basic Properties of Inequalities • Solving Linear Inequalities
<ul style="list-style-type: none"> • Fundamental Principle of Fractions • Multiplying & Dividing Rational Expressions • Adding and Subtracting Rational Expressions • Solving Fractional Equations & Inequalities • Applications
<ul style="list-style-type: none"> • Exponent Rules • Zero & Negative Exponents • Scientific Notation

Assessment and Evaluation

The typical MAT 015 student has little or no knowledge of algebra. Students have been placed in the course because they have not mastered basic high school algebra. The students appear eager to learn but have fears of failing and often become frustrated; when they are unable to understand a concept or complete a task. Students need the instructor to explain the material step by step in a clear and concise manner. Many will need to have the steps written on the board for them and have the examples covered in almost a “slow motion” form. Students must master basic operations on signed numbers in order to be successful in the course.

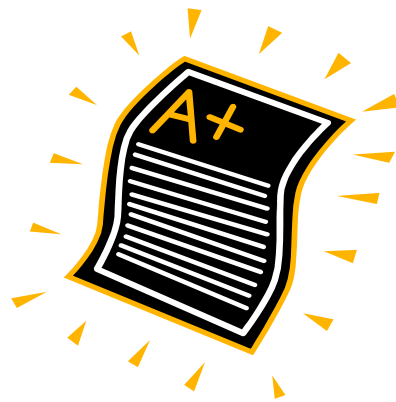
Attendance can be sporadic and students may not do their homework. Students may have learning disabilities. See section on Learning Disabilities in section Three: Teaching Developmental Mathematics.

Discipline can be a problem but by clearly explaining and setting guidelines for behavior in the classroom, most of the time, minor problems can be “nipped in the bud.” There should be policies for absence and tardiness clearly stated in your course syllabus. Class participation encourages the students to try on their own. Homework must be assigned daily. Quizzes may be given weekly or less often. Chapter tests or midterms should be given. A final exam MUST be given at the end of the class during the specified time determined by the college. Take-home tests are not recommended. Final exams must be given in the classroom or in a proctored room. **DO NOT CHANGE** the final exam date or time. The Final Exam Schedule will be given to the faculty member sometime before mid-semester. MAT 015 students **DO NOT** take the New Jersey College Basic Skills Test. See below.

SUGGESTED TEACHING/LEARNING METHODOLOGIES:

- ✓ Having students work on problem on their own as the faculty member walks around to observe their work.
- ✓ Have students work on worksheets during class time, then review worksheet with students before class ends.
- ✓ Small group work, particularly when they are learning word problems.
- ✓ Board presentations.
- ✓ Use of computer resources. See section 10.
- ✓ Visitation of Academic Learning Center.
- ✓ Individual conferences with student on progress.

Grading in MAT 015



1. In MAT 015 students may earn a letter grade of A, B+, B, C+, C, D+, D, F, UF (not passing). If a student receives a D+ or D, then they must repeat the course. In order for students to pass on to the next level, MAT 016, they need a grade of C (70%) or higher.
2. In MAT 015, students do not take the New Jersey College Basic Skills Test in Algebra since they have only covered half of an algebra I course. The NJCBST in algebra includes such topics as factoring of trinomials, solving quadratic equations, and graphing of lines. Students in MAT 015 have not been introduced to such topics.
3. In **rare** cases, students in MAT 015 may test out of MAT 016. This is a privilege not a right and is not normally advertised. Students who qualify for this privilege must satisfy the following three conditions:
 - a. Student has had algebra I previously in high school.
 - b. Student will receive an A in MAT 015.
 - c. Student does not need to take another higher-level mathematics course.

Typically students with majors of Nursing and Liberal Arts: Media or Film may qualify. **DO NOT ANNOUNCE THIS TO THE CLASS.**

Faculty members should identify students who satisfy the requirements and inform them of this after class. Again, this is a privilege, not a right. The faculty member must return the class list form sent to them by Academic Testing with the names of the qualified students circled. The NJCBST entrance cards will be sent to the instructor's home by mail. If a student loses his/her ticket, he/she may go to Academic Testing Office on the Cranford campus with appropriate identification to receive another ticket. It is the responsibility of the instructor to distribute the cards to the students.

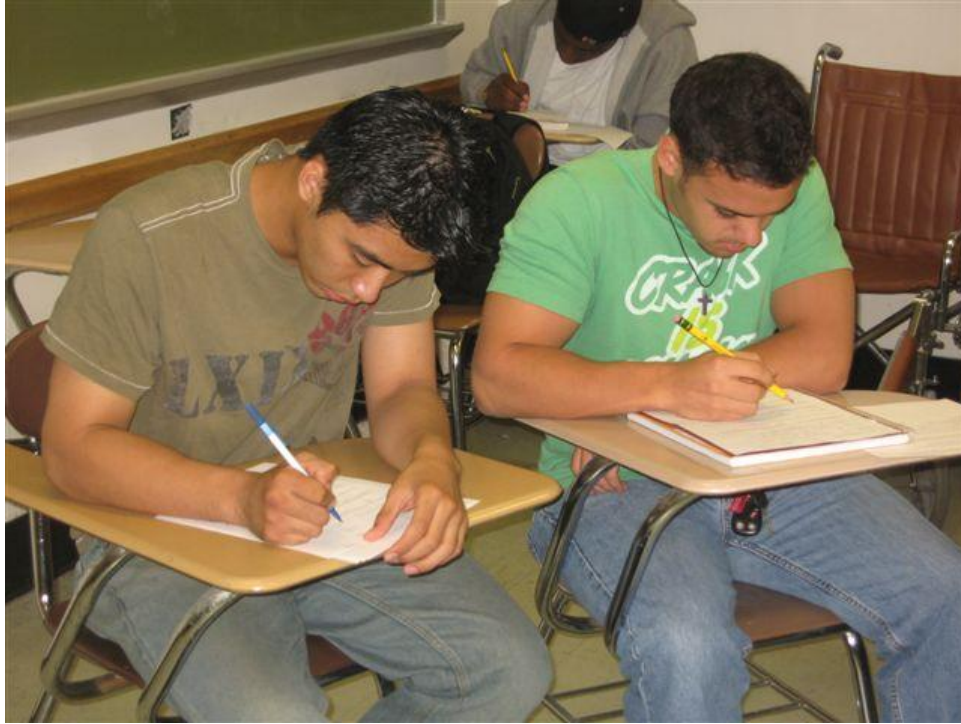
The student must receive 22 out of 30 on the test. The test has 30 questions and students are given 60 minutes to pass the test. Students, who have passed the Basic Skills Test, are candidates for skipping MAT 016. This does not happen automatically. The students' names must be sent to the Developmental Mathematics Coordinator, so that the requirement of MAT 016 is removed from the computer.

4. Students in MAT 015 who have been given a chance to take the NJCBST the first time are **not** eligible a second chance test. If they fail to pass the test on the first try, then they are to register for MAT 016.

IMPORTANT NOTES:

1. If a student never attended (NA), the proper grade is UF. If a student stopped attending, he/she receives a UF grade, and the date of last attendance should be recorded on the grade form.
2. The mathematics department policy states that no late withdrawals should be given, unless in extreme cases. A late withdrawal grade (W) is only given if the Late Withdrawal form, which must be obtained by the instructor, has been filled out by the student and signed and submitted (by the instructor) to the registrar. The Late Withdrawal forms can be obtained from the mathematics department secretary.
3. Grades should be submitted online using the UCC website. Memos and e-mails will be sent by the Registrar's office at the appropriate time explaining the process.

Section 5



Beginning Algebra (Part 2) - MAT 016

- Brief Description of Course
- Textbook and Course Outline
- Procedures for Assessment and Evaluation of Students

COURSE DESCRIPTION:

Beginning Algebra I (part 2) is a preparatory course for students who have successfully completed Beginning Algebra I (part 1, MAT 015). This course is the second in the algebra sequence and will cover factoring, radicals, polynomials, rational expressions, verbal problems, linear graphs, quadratic equations. Prerequisite: A grade of “C” or better in MAT 015.

NOTE: Completing the MAT 015, MAT 016 sequence is equivalent to completing MAT 022.

Text Book and Outline

I. TEXT USED:



Understanding Elementary Algebra, 6th Edition
Goodman and Hirsch
Brooks/Cole, Thompson Learning

II. OBJECTIVES AND GOALS OF THE COURSE

To provide a continuation course in algebra for students with a weak algebra background. To enable students to pass the State’s Basic Skills Algebra Test. To prepare students to succeed in MAT 117, MAT 119 or to go on to more advanced mathematics study via Elementary Mathematical Analysis (MAT 143).

III. SCHEDULE OF TOPICS:

The following outlines the topics to be covered.

TOPICS
Introduction to Polynomials Multiplying Polynomials Special Products*
Common Factors Factoring Trinomials** More Factoring Solving Polynomial Equations by Factoring Dividing Polynomials
Reducing Rational Expressions Multiplying & Dividing Rational Expressions Adding & Subtracting Rational Expressions Fractional Equations Literal Equations Applications
The Rectangular (Cartesian) Coordinate System Graphing a Linear Equation in Two Variables The Slope The Equation of a Line
Interpreting Graphs Solving Systems of Linear Equations: Graphical Method Solving Systems of Linear Equations: Algebraic Method Applications
Definitions & Basic Notation Properties of Radicals & Simplest Radical Form Adding & Subtracting Radical Expressions Multiplying & Dividing Radical Expressions Radical Equations
The Factoring and Square Root Methods* The Method of Completing the Square The Quadratic Formula Choosing a Method Applications

ASSESSMENT AND EVALUATION:

By the time the student has arrived in MAT 016, they have learned what is required to be successful in a mathematics course. The student should be able to work with signed numbers, simplify algebraic expressions, solve linear equations, solve linear verbal problems, combine rational expressions, and solve rational equations. The level of difficulty of MAT 016 is significantly higher than that of MAT 015. The students will be asked to take a large leap, as they are required to factor trinomials within the first couple of weeks of the class. This concept alone can be frightening to the students. Many become frustrated and give up. Many students will need to take the course more than once in order to pass the course.

Discipline problems can still arise. Setting clear guidelines for behavior in the classroom will probably be enough to stop any problems that may arise. Attendance can be sporadic but students usually do their homework. Students may have learning disabilities. See section on Learning Disabilities in section Three: Teaching Developmental Mathematics.

There should be policies for absence and tardiness. Class participation encourages the students to try on their own. Homework must be assigned daily. Quizzes may be given weekly or less often. Chapter tests or midterms should be given. Be mindful of the time required to complete the syllabus, when establishing test dates and quizzes. A final exam MUST be given at the end of the class during the specified time determined by the college. Take-home tests are not recommended. Final exams must be given in the classroom or in a proctored room. **DO NOT CHANGE** the final exam date or time. The Final Exam Schedule will be given to the faculty member sometime before mid-semester.

All students must take the New Jersey College Basic Skills re-test at the end of the course, unless they have passed it in a previous semester. Students must receive a grade of C or higher and have passed the NJCBST in order to move to the next level.

In order to take the NJCBST, each student will need an entrance ticket. Every faculty member will receive the tickets in a package mailed to their home address. It is the faculty member's responsibility to distribute the tickets to the students. If a student loses his/her ticket, he/she may go to Academic Testing Office on the Cranford campus with appropriate identification to receive another ticket. If a student has stopped attending the class or does not pick up their own ticket, then it is the student's responsibility to locate the faculty member and obtain the ticket. No ticket is necessary for the 2nd Chance NJCBST.

SUGGESTED TEACHING/LEARNING METHODOLOGIES:

- Having students work on problem on their own as the faculty member walks around to observe their work.
- Have students work on worksheets during class time, then review worksheet with students before class ends.
- Small group work.
- Board presentations. Time may be too limited for this activity.
- Use of computer resources. See section 10.
- Visitation of Academic Learning Center.
- Individual conferences with student on progress.

Grading in MAT 016

1. In MAT 016 students may earn a letter grade of A, B+, B, C+, C, D+, D, F, UF (not passing). If a student receives a D+ or D, then they must repeat the course. In order for students to pass on to the next level they need a grade of C or higher, with the exception of those enrolling in MAT 117. Students need a grade of D or higher to enroll in MAT 117.
2. In order to receive a passing grade in MAT 016, including the grades of D+ and D, students need to pass the New Jersey College Basic Skills Test in Algebra. Students need to receive a passing score of 22 out of 30 on the New Jersey College Basic Skills. The students will have 60 minutes to complete the test. Students who score less than 22 on the NJCBST, may be permitted to take the 2nd chance NJCBST. The 2nd Chance NJCBST gives students a second chance at passing the test but the test will be a different version of the first test. Students need to receive a 22 out 30 in order to pass the 2nd chance test and will be given 60 minutes in which to complete the test. It is the faculty member's responsibility to contact the students with the NJCBST results. Faculty members should only permit students who are passing their class with a D or higher to take the 2nd chance NJCBST. Being given an opportunity to take the 2nd chance NJCBST is a privilege, not a right.



3. Students who pass the NJCBST (with a score of 22 or higher) and fail the MAT 016 class will not be required to retest, but they will need to repeat MAT 016. Students who fail to pass the NJCBST with a score of 22 or higher automatically fail the course and will need to repeat the course.
4. Once students have passed the NJCBST and have completed MAT 016 with a grade of C, they may take any higher level mathematics course. Students who have completed MAT 016 with a grade of D may register for MAT 117 only. LPN students need a grade of C to continue in their program. RN students can continue with a grade of D.

IMPORTANT NOTES:

1. If a student never attended (NA), the proper grade is UF. If a student stopped attending, he/she receives a UF grade, and the date of last attendance should be recorded on the final grade form.
2. The mathematics department policy states that no late withdrawals should be given, unless in extreme cases. A late withdrawal grade (W) is only given if the Late Withdrawal form, which must be obtained by the instructor, has been filled out by the student and signed and submitted (by the instructor) to the registrar. The Late Withdrawal forms can be obtained from the mathematics department secretary.
3. Grades should be submitted online using the UCC website. Memos and e-mails will be sent by the Registrar's office at the appropriate time explaining the process.

Section 6



Beginning Algebra – MAT 022

- Brief Description of Course
- Textbook and Course Outline
- Procedures for Assessment and Evaluation of Students

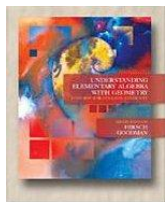
Course Description

Beginning Algebra is a course for students whose College Basic Skills Test scores indicate the need for preparatory work in algebra but have knowledge of signed numbers and some other basic algebraic concepts. The course includes solving linear and quadratic equations, polynomials, factoring, and graphing lines. Prerequisite: MAT 011 or satisfactory performance on the College Placement Test, Accu-placer.

NOTE: Completing the MAT 015, MAT 016 sequence is equivalent to completing MAT 022.

Textbook and Course Outline

I. TEXT USED:



Understanding Elementary Algebra, 6th Edition
Goodman and Hirsch
Brooks/Cole, Thompson Learning

II. OBJECTIVES AND GOALS OF THE COURSE

- To provide a continuation course in algebra for students with a weak algebra background.
- To enable students to pass the State's Basic Skills Algebra Test.
- To prepare students to succeed in MAT 117 or MAT 119 or to go on to more advanced mathematics study via Elementary Mathematical Analysis (MAT 143).

III. TOPICS:

The following outlines the topics to be covered.

TOPICS
General Class Procedures Basic Notation Integers Adding Integers Subtracting Integers Multiplying & Dividing Integers The Real Number System
Variables and Exponents Algebraic Substitution Distributive Property and Like Terms Simplifying Algebraic Expressions Translating Phrases & Sentences Algebraically
Types of Equations and Basic Properties of Equalities Solving Linear Equations More First Degree Equations and Applications Types of Inequalities & Basic Properties of Inequalities Solving Linear Inequalities
Fundamental Principle of Fractions Multiplying & Dividing Rational Expressions Adding and Subtracting Rational Expressions Solving Fractional Equations & Inequalities Applications
Exponent Rules Zero & Negative Exponents Scientific Notation Introduction to Polynomials Multiplying Polynomials Special Products

TOPICS
<p>Common Factors Factoring Trinomials More Factoring Solving Polynomial Equations by Factoring Dividing Polynomials</p>
<p>Reducing Rational Expressions Multiplying & Dividing Rational Expressions Adding & Subtracting Rational Expressions Fractional Equations Literal Equations Applications</p>
<p>The Rectangular (Cartesian) Coordinate System Graphing a Linear Equation in Two Variables The Slope The Equation of a Line</p>
<p>Interpreting Graphs Solving Systems of Linear Equations: Graphical Method Solving Systems of Linear Equations: Algebraic Method Applications</p>
<p>Definitions & Basic Notation Properties of Radicals & Simplest Radical Form Adding & Subtracting Radical Expressions Multiplying & Dividing Radical Expressions Radical Equations</p>
<p>The Factoring and Square Root Methods The Method of Completing the Square The Quadratic Formula Choosing a Method Applications</p>

Assessment and Evaluation



Students have been placed in the MAT 022 course based on the College Placement Exam and should be prepared for a fast-paced intensive algebra course. More than likely, the course will move faster than any algebra course the student has previously had and the faculty member will find that many students are under-prepared for the course. Normally discipline is not a problem as students try to keep up with the material that is being covered. The faculty member has an outline of topics that need to be covered in the time allowed and it is imperative that all topics are covered.

Attendance is usually good in the beginning of the course but as students realize they can not keep up, attendance has a tendency to drop off. Students usually do their homework. Students with learning disabilities are normally not in MAT 022. If the faculty member believes a student has been improperly placed in MAT 022 then he/she should send the student to see the Developmental Mathematics Coordinator.

There should be policies for absence and tardiness. Class participation encourages the students to try on their own. Homework must be assigned daily. Quizzes may be given weekly or less often. Chapter tests or midterms should be given. A final exam MUST be given at the end of the class during the specified time determined by the college. Take-home tests are not recommended. Final exams must be given in the classroom or in a proctored room. **DO NOT CHANGE** the final exam date or time. The Final Exam Schedule will be given to the faculty member sometime before mid-semester. All students must take the New Jersey College Basic Skills re-test at the end of the course, unless they have passed it in a previous semester. Students must receive a grade of C or higher and have passed the NJCBST in order to move to the next level.

In order to take the NJCBST, each student will need an entrance ticket. Every faculty member will receive the tickets in a package mailed to their home address. It is the faculty member's responsibility to distribute the tickets to the students. If a student loses his/her ticket, he/she may go to Academic Testing Office on the Cranford campus with appropriate identification to receive another ticket. If a student has stopped attending the class or does not pick up their own ticket, then it is the student's responsibility to locate the faculty member and obtain the ticket. No ticket is necessary for the 2nd Chance NJCBST.

Suggested Teaching/Learning Methodologies

- ✓ Having students work on problem on their own as the faculty member walks around to observe their work
- ✓ Have students work on worksheets during class time, then review worksheet with students before class ends.
- ✓ Small group work. (Time is Limited)
- ✓ Use of computer resources. See section 10.
- ✓ Visitation of Academic Learning Center. (may not have time for this)
- ✓ Individual conferences with student on progress.

Grading in MAT 022

1. In MAT 022 students may earn a letter grade of A, B+, B, C+, C, D+, D, F, UF (not passing). If a student receives a D+ or D, then they must repeat the course. In order for students to pass on to the next level they need a grade of C or higher, with the exception of those enrolling in MAT 117. Students need a grade of D or higher to enroll in MAT 117.
2. In order to receive a passing grade in MAT 022, including the grades of D+ and D, students need to pass the New Jersey College Basic Skills Test in Algebra. Students need to receive a passing score of 22 out 30 on the New Jersey College Basic Skills. The students will have 60 minutes to complete the test. Students who score less than 22 on the NJCBST, may be permitted to take the 2nd chance NJCBST. The 2nd Chance NJCBST gives students a second chance at passing the test but the test will be a different version of the first test. Students need to receive a 22 out of 30 in order to pass the 2nd chance test and will be given 60 minutes in which to complete the test. It is the faculty member's responsibility to contact the students with the NJCBST results. Faculty members should only permit students who are passing their class with a D or higher to take the 2nd chance NJCBST. Being given an opportunity to take the 2nd chance NJBST is a privilege, not a right.



3. Students who pass the NJCBST (with a score of 22 or higher) and fail the MAT 022 class will not be required to retest, but they will need to repeat MAT 022. Students who fail to pass the NJCBST with a 22 or higher automatically fail the course and will need to repeat the course. The department policy permits a student to take a course at most three times but in the case of the MAT 022 student, he/she will be highly encouraged to take the MAT 015/ MAT 016 sequence instead of a third attempt at MAT 022. After failing MAT 022 for a third time, a student will have to take MAT 015/ MAT 016.
4. Once students have passed the NJCBST and have completed MAT 022 with a grade of C, they may take any higher level mathematics course. Students who have completed MAT 022 with a grade of D may register for MAT 117 only. LPN students need a grade of C to continue in their program. RN students can continue with a grade of D.

IMPORTANT NOTES:



1. If a student never attended (NA), the proper grade is UF. If a student stopped attending, he/she receives a UF grade, and the date of last attendance should be recorded on the grade form.
2. The mathematics department policy states that no late withdrawals should be given, unless in extreme cases. A late withdrawal grade (W) is only given if the Late Withdrawal form, which must be obtained by the instructor, has been filled out by the student and signed and submitted (by the instructor) to the registrar. The Late Withdrawal forms can be obtained from the mathematics department secretary.
3. Grades should be submitted online using the UCC website. Memos and e-mails will be sent by the Registrar's office at the appropriate time explaining the process.

Section 7



Learning Communities

- Overview of Learning Communities
 - The Role of Faculty
 - The Role of Coordinators
- The Role of Student Development Specialist
 - The Role of Tutors/Mentors
- Who's Who in the Learning Communities with Contact Information

Overview of Learning Communities

Union County College received a 2.7 million, five-year, federal Title V grant in October 2007 to specifically focus on UCC's student persistence and graduation rate. Named The Center for Student Success, the program's basic components are:



1. Learning Communities:

This activity uses a holistic approach to address the persistence and academic needs of students during and after their first year. It includes the development of linked or paired courses with UCC 101 First Year Seminar as the foundation course linked to team teaching with developmental math, developmental English, and Eng 111.

2. Student Development Program:

This activity includes enhancing counseling through intrusive counseling, on-line counseling, student orientation program, implementation of degree audit, administration of the Community College Survey of Student Engagement to which helps to measure “aspects of the student experience that are linked to student success.” In addition, the project provides for an enhanced tutoring program for students in Learning Communities, on-line tutoring, and implementation of supplemental instruction for students in high risk courses.

3. Professional Development Program:

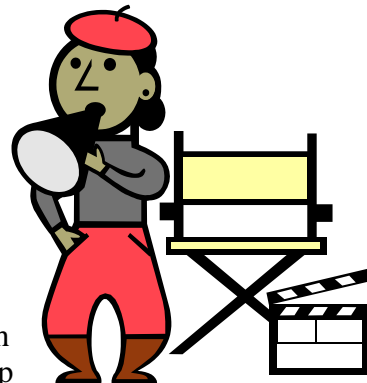
Professional development for faculty and staff focused on student persistence may contribute to the success of tutoring, advising, and instruction by providing new knowledge and skills about student learning strategies that positively affect retention. Professional development will be conducted through a coherent series of workshops, seminars, speakers, and on-line presentations focused on retention. In addition, the project provides stipends for adjunct faculty to attend professional development workshops, a call for faculty projects that positively impact retention, training of tutors and peer mentors, publication of Retention Strategy Handbooks (best practices) in Mathematics, English, and ESL, and project publication of two monographs of best practices in student persistence.

4. Endowment Challenge:

The UCC Foundation will match \$125,000 of federal dollars over the five year period to create an endowment to provide long term fiscal stability and plan for institutionalizing aspects of the grant project.

The Role of Faculty

Developmental Mathematics and UCC 101 courses are paired with the intention of bridging the content of the two courses and maximizing student success. The faculty members in the each course collaborate as they develop their own classes and work toward developing an integrated syllabus. Instructors should communicate with each other on student attendance and performance, and strive to develop class activities that build off each other.



Communication between instructors is vital in ensuring the success of a learning community. Faculty are initially encouraged to meet/communicate a few times before the start of the semester to share syllabi and develop some activities and assignments that will help bridge content between the two courses and make it apparent to the students that they are participating in a learning community class. At the beginning of the semester, faculty might want to meet weekly to share attendance issues in case immediate intervention of a Student Development Specialist (counselor) is necessary. It is also highly recommended that faculty share an attendance sheet to keep track of students' participation. Once the semester begins, meetings once or twice a month may suffice, if faculty are good at keeping in touch through email or other modes. A mathematics tutor especially hired for the Learning Community class shall visit the mathematics class within the first two weeks of the semester. The faculty member should communicate with the tutor throughout the semester to ensure that the tutor is aware of the needs of the students, and the dates of scheduled quizzes, tests or whenever a particularly difficult topic is introduced in the class room.

The LC faculty will also be encouraged to participate in professional development activities, attend Learning Community meetings, and help in updating the Developmental Mathematics/UCC 101 handbook that will be revised each year.

The Role of the Coordinator

The Coordinator's responsibilities include scheduling learning community classes, meeting with LC faculty and assisting them on academic and administrative matters, acting as a liaison between the Developmental Mathematics LC and the other LC sections and services, and coordinating the writing of the Developmental Mathematics/UCC 101 handbook.

The Role of Student Development Specialists (Counselors)

Student Development Specialists (counselors) are available to provide LC students information on skills and prerequisites, help students plan class schedules, discuss curriculum choices, explore career options, and provide academic and personal support. In addition, the three LC-designated counselors utilize intrusive counseling techniques to involve and motivate students. Intrusive counseling is a process of identifying students at academic crisis points and offering help and services. Counselors aggressively track down the students and use an “in-your-face” technique to ensure follow-through on a specified course of action.

Faculty are encouraged to use Student Development Specialists immediately at the beginning of the semester if they notice student(s) not showing up in class. These counselors are also helpful in talking to students if faculty notices that they are not participating in class or handing in their assignments.

The Role of Tutors

Free tutoring services are offered through the Academic Learning Center (ALC) at each campus. Each Learning Community (LC) has its own designated tutor who works closely with the faculty to provide targeted and specific assistance to LC students. Professional and peer tutors work with students on assignments and course work to help them develop course competencies and study skills. Instructors and tutor can meet/speak/email regularly throughout the semester to discuss topics being studied in class, how tutor can enhance classroom lessons, and address any problems that students may be experiencing with the material.

It is suggested that faculty meet with tutors on a semi-regular basis to inform them of class objectives and expectations. Faculty can also suggest activities /websites that tutors might want to use with the students.

The Role of Mentors

Mentors are connected to UCC 101 classes. As part of the student support system, they guide students in their academic life at UCC, but do not tutor.

Full-time and Adjunct Faculty members are encouraged to communicate often with tutors, counselors, and each other to provide a holistic system of support services to LC students. At the start of each semester, the Center for Student Success will provide contact information for faculty, counselor and tutor for each learning community.

Who's Who in the Learning Communities?



Center for Student Success:

Project Director	Dr. Jose Adames adames@ucc.edu 908-412-3590 Plainfield – Provost Office
Program Secretary	Ms. Avis Cabral cabral@ucc.edu 908-709-7460 Cranford – Rm. L106

LC Coordinators:

UCC 101	Dr. Susannah Chewing chewing@ucc.edu 908-709-7182 Cranford
Developmental English	Dr. Elise Donovan donovan@ucc.edu 908-709-7497 Cranford
Developmental Math	Prof. Linda Milteer milteer@ucc.edu 908-497-4228 Cranford
UCC 101	Prof. June Pomann jpomann@ucc.edu 908-659-5121 Elizabeth
English 111	Prof. Carrie Steenburgh steenburgh@ucc.edu 908-659-5193 Elizabeth

Counseling Services:

Director	Ms. Paulette Brower-Garrett brower-garrett@ucc.edu 908-709-7075 Cranford
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Student Development Specialist	Ms. Elizabeth McLean mclean@ucc.edu 907-709-4290 Cranford
Student Development Specialist	Ms. Debora Rivera derivera@ucc.edu 908-709-7139 Cranford
Student Development Specialist	Ms. Sonia Vargas svargas@ucc.edu 908-965-2989 Elizabeth

Professional Development:

Coordinator	Sara Lacagnino lacagnino@ucc.edu 908-709-7462 Cranford
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Tutoring Services (Academic Learning Center):

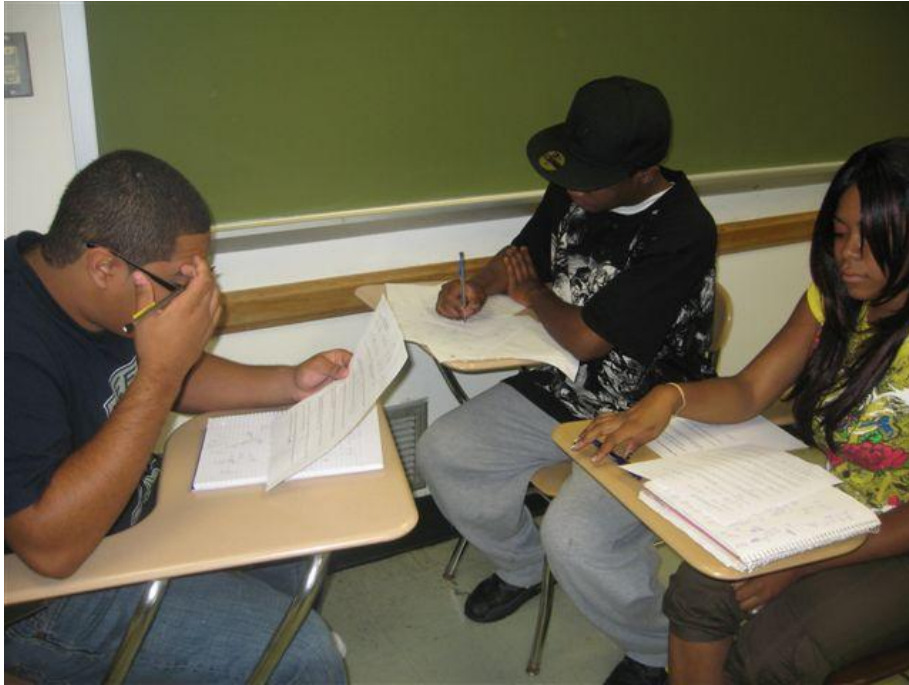
Director	Ms. Gail Hein hein@ucc.edu 908-709-7610 Cranford
Head Tutor	Ms. Jacqueline Leonard leonard@ucc.edu 908-965-6009 Elizabeth
Head Tutor	Ms. Sandra Drazinic-Petak petak@ucc.edu 908-412-3540 Plainfield
Educational Support Coordinator- Retention	Prof. Mary Greco mgreco@ucc.edu 908-497-4347 Cranford 908-659-5215 Elizabeth
Educational Support Coordinator	Mr. Jose Paez Figueroa paez@ucc.edu 908-709-7084 Cranford

<p align="center">Educational Support Specialist</p>	<p align="center">Mr. Lewis Cohen lcohen@ucc.edu 908-965-2350 Elizabeth</p>
<p align="center">Administrative Assistant</p>	<p align="center">Ms. Karen Platt platt@ucc.edu 908-709-7528 Cranford</p>
<p align="center">Tutoring Coordinator for Title 5 (pt)</p>	<p align="center">Ms. Carolyn Thomas thomas@ucc.edu 908-497-4352 Cranford</p>

Website:

<p align="center">IT Coordinator</p>	<p align="center">Ms. Nancy Deliman n_deliman@comcast.net Cranford</p>
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Section 8



Shared Assignments for Learning Communities/ Sample Teaching Techniques

- Overview
 - Outline of Essential Assignments
 - Shared Assignments
 - Studying for a Test and Taking Test
- Sample Teaching Techniques (for all developmental courses)

Overview

The assignments found in the Learning Community section were created for the Developmental Mathematics/ UCC 101 Learning Communities. These assignments are designed for paired courses or team teaching but some could be used in a developmental math class solely.



Outline of Essential Assignments for Developmental Mathematics/UCC 101 Learning Communities

1. Early in semester:
 - a. Schedule a class visit, with the Mathematics professor visiting UCC 101 and visa-versa.
 - b. In **both classes**, review the other class's syllabus as a class.
 - c. In **UCC 101**, have students complete a weekly schedule, showing all of their obligations, including homework time for all of their classes. Have students submit a copy to both instructors and discuss in both classes.
 - d. In either class, have students complete a semester-by-semester academic plan (listing the classes they plan to take each semester to complete their degree). Students can consult the catalogue and/or their counselor for assistance. Should be submitted to both professors and discussed in both classes.
 - e. Students can also complete an "autobiography" detailing their experience in previous Mathematics classes and their goals for the current class (can be in essay form, or answers to a list of questions). The auto biography should be revisited at the end of the semester to see whether student attitudes have changed.
 - f. In **Math class**, students could be given a homework assignment that must be submitted via email. In **UCC 101**, students are taught to use their email accounts, and sending their Math assignment (to both instructors) is their task.

2. Mid-semester/Late-semester

- a. Have a mid-semester meeting with each student in the class to discuss their progress.
- b. Have students revisit their Math Autobiographies.
- c. Have students prepare math study index cards in preparation for a test. Review study of math tips and test taking strategies.

3. On-going:

In **UCC 101 and Mathematics classes**, students can keep journals (with assignments specific to each class) and instructors can assign entries that ask them to reflect on work being done/experiences in the other class.

Common Assignment	UCC 101	MAT 011/MAT 015/MAT022
<p>Math Autobiography:</p> <p>Students write a reflection on their own math myths, fears, and solutions.</p>	<p>Core Chapter - Self Evaluation:</p> <p>Students watch “Math: A Four Letter Word” DVD (20 minutes) http://www.math-anxiety.com/the-video-book.html</p> <p>Autobiography assigned in UCC101</p>	<p>Autobiography collected in math class. Assignment is read by math instructor and then returned to UCC 101 instructor to be revisited later.</p> <p>Points can awarded in both classes</p>
<p>Weekly Schedule Grid:</p> <p>Students will create and fill in a weekly time grid with class times and all other commitments outside of school; etc. work, child care, social time...</p>	<p>Core Chapter – Time Management</p> <p>Students can do assignment at home but it is reviewed and collected in UCC 101. It can be graded and returned to students.</p>	<p>Assignment should be collected in math as well, instructor can review schedules and then return to students</p>

<p>Study Index Cards:</p> <p>Review study for math tips and test taking strategies.</p> <p>Students prepare a math study index cards in preparation for a test.</p>	<p>Core Chapter - Strategies for Remembering and Test Taking:</p> <p>Reviewing of studying and test taking strategies should be done in UCC 101. * attached</p> <p>Study index card assignment given in UCC 101 class.</p>	<p>Index cards can be collected in math with the test.</p> <p>Points toward the test can be awarded in math.</p>
<p>Describe the Solution:</p> <p>Students prepare a tutorial that provides the solution and written explanation for a math problem.</p>	<p>Core Chapter - Strategies for Listening/Note Taking:</p> <p>Assignment given in UCC 101 class.</p>	<p>Assignment collected in math class.</p>
<p>Stand and Deliver:</p> <p>Students watch the movie Stand and Deliver, a film about students who have been doing poorly in math and their teacher turns them in to the best math students, in their UCC 101 class.</p>	<p>Core Chapter – Self –Evaluation</p> <p>Students will have to write a short paper about the film for UCC 101. Students will answer questions about the film by their Math instructor.</p>	<p>Assignment should be e-mailed to both Math and UCC 101 instructor. Questions should be asked in Math class and UCC 101 class.</p> <p>Points can be awarded.</p>
<p>Word Problem Analysis:</p> <p>Students analyze word problems in small groups and explain the solution in a group presentation.</p>	<p>Core Chapter - Strategies for Improving Reading:</p> <p>Group projects (4-5 students) conducted in UCC 101 class.</p>	<p>Group presentation given in math class.</p> <p>See MAT 011 problems *attached</p>
<p>Math Autobiography: Revisited</p> <p>Students will write reflections on the math they have learned over the semester and express their feelings about math.</p>	<p>Core Chapter – Setting Career Goals and Preparing for next Semester</p> <p>Make additional entries in math autobiography assigned in UCC 101.</p>	<p>Autobiography collected in math class. Assignment is read by math instructor and then returned to UCC 101 instructor.</p> <p>Points can be awarded by both instructors.</p>

<p>Personal College Career Guide:</p> <p>After having researched their career interests, have students write out a yearly schedule of courses needed to complete the Associates degree. Have students include all developmental requirements.</p>	<p>Core Chapter – Setting Career Goals and Preparing for next Semester</p> <p>Assigned and collected in UCC 101.</p>	<p>Students should take time to see their math instructor in an office hour to inquire which math course they will need to take next.</p>
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Journal Entry

Possible entry content:

- Math myths:
 - I can't learn math because of my gender, culture
 - My past failures mean future failure
 - If I miss a day, I'll be lost forever
 - I'll never use math again, so why should I learn it?

- Math fears:
 - I'll never understand math
 - I'll never even pass this course (and there are more developmental courses to go, then college level)
 - Even if I can pass the class, I won't pass the basic skills test
 - I'm going to blank out during tests

- Solutions
 - Do the homework every day
 - Ask questions in class
 - Talk with the professor
 - Use the ALC
 - If I miss a class, get the notes from a fellow student
 - Practice difficult problems
 - Practice relaxation before tests – breathe, focus



Study Sheet

Sheets should be individualized – students record formulas and definitions (if applicable), sample problems, written explanations, pictures, diagrams, flowcharts – whatever their individual issues/learning style require. Students should be encouraged to complete at least one full sheet - checked for completion on the day of the test, if possible.

Describe the Solution

Each student is given a different problem on the same topic – fractions, for instance. Student prepares the solution, with a written description of the steps:

Example: $\frac{5}{8} + \frac{1}{16}$

Step one: Identify the problem

- When adding or subtracting fractions, the denominators must be the same.

Step two: Find the least common denominator

- In this case, the smaller denominator divides into the larger denominator equally
- The LCD is 16

Step three: Write equivalent fractions - etc



Instructors may opt to copy and distribute exceptional submissions to the class

Word Problem Analysis – Group Project

Each group is given a different word problem to analyze, solve and present as a group to the math class.

Weekly Schedule:

Fill in the attached weekly time grid for this semester. Include all time commitments throughout the week including:

- ✓ Sleep
 - The average adult requires 7 hours of sleep each night.
- ✓ Meals (including preparation and clean up).
- ✓ Classes
 - Each hour of class requires 2 additional hours of study/homework time
- ✓ Other commitments –
 - Job
 - Family responsibilities
 - Church activities
 - Sports /exercise
 - Social activities
 - Volunteer activities

Due Date: _____

Weekly Schedule

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
5:00 am							
6:00 am							
7:00 am							
8:00 am							
9:00 am							
10:00 am							
11:00 am							
12:00 pm							
1:00 pm							
2:00 pm							
3:00 pm							
4:00 pm							
5:00 pm							
6:00 pm							
7:00 pm							
8:00 pm							
9:00 pm							
10:00 pm							
11:00 pm							
12:00 am							
1:00 am							
2:00 am							
3:00 am							
4:00 am							

Study Index Cards:

Create a set of index cards to use when studying for math tests. List the type of problem on one side of the card and the steps that are needed to simplify, evaluate or solve the problem on the other side.

Example:

Front

<p>Multiply multiples of ten</p> <p>60×700</p>
--

Back

<p>Multiply the non-zero digits $6 \times 7 = 42$</p> <p>Count the zeros - 3 zeros</p> <p>Attach them to the product</p> <p>$60 \times 700 = 42000$</p>

Due Date: _____

Word Problem Analysis:

Working in groups, analyze the following word problem and present the solution to the rest of the class.

Steps:

- Read the problem
- Read the problem again, underlining important information
- Determine the correct operation:
 - Addition
 - Subtraction
 - Multiplication
 - Division
- Solve the problem

At Yorktown in October 1781, a total of 7,241 British soldiers and 840 British seamen surrendered to the Americans and the French.

a) Find the total number of British servicemen surrendering.

b) Round this number to the following place values: tens, hundreds, thousands, ten-thousands.

Word Problem Analysis:

Working in groups, analyze the following word problem and present the solution to the rest of the class.

Steps:

- Read the problem
- Read the problem again, underlining important information
- Determine the correct operation:
 - Addition
 - Subtraction
 - Multiplication
 - Division
- Solve the problem

Some of the Commanders during the American Revolution were men of substantial girth: George Washington weighed 210 lbs, General Benjamin Lincoln 244 lbs, General Henry Knox 280 lbs, and French Admiral de Grasse was an estimated 250 lbs.

- a) Find the total weight of the 4 leaders.
- b) Find the average weight of these 4 leaders.

Word Problem Analysis:

Working in groups, analyze the following word problem and present the solution to the rest of the class.

Steps:

- Read the problem
- Read the problem again, underlining important information
- Determine the correct operation:
 - Addition
 - Subtraction
 - Multiplication
 - Division
- Solve the problem

Given the following information on the dates of birth and death of prominent people during the American Revolution, determine the age of each person at the time of his/her death.

Name	Year of Birth	Year of Death	Age of Death
Benjamin Franklin	1706	1790	
George Washington	1732	1799	
John Adams	1735	1826	
King George III	1738	1805	
Benedict Arnold	1741	1801	
Thomas Jefferson	1743	1826	
Betsy Ross	1752	1836	
Molly Pitcher	1754	1832	

American Revolution - North and South; [Mathematical Concepts: An Interdisciplinary Approach by Todd M. Daley]

Word Problem Analysis:

Working in groups, analyze the following word problem and present the solution to the rest of the class.

Steps:

- Read the problem
- Read the problem again, underlining important information
- Determine the correct operation:
 - Addition
 - Subtraction
 - Multiplication
 - Division
- Solve the problem

In the American Revolution, there were 6,824 battle deaths, 18,500 other deaths, and 8,445 wounded. In the War of 1812 there were 2,260 battle deaths and 4,505 wounded.

- Find the total number of casualties in the American Revolution.
- Find the total number of casualties in the War of 1812
- How many more people died in the American Revolution than in the War of 1812?

American Revolution - North and South; [Mathematical Concepts: An Interdisciplinary Approach by Todd M. Daley]

Word Problem Analysis:

Working in groups, analyze the following word problem and present the solution to the rest of the class.

Steps:

- Read the problem
- Read the problem again, underlining important information
- Determine the correct operation:
 - Addition
 - Subtraction
 - Multiplication
 - Division
 -
- Solve the problem

General Henry Knox had budgeted \$54,262 for muskets for the Continental Army. If each musket costs \$26, how many muskets can be obtained?

Word Problem Analysis:

Working in groups, analyze the following word problem and present the solution to the rest of the class.

Steps:

- Read the problem
- Read the problem again, underlining important information
- Determine the correct operation:
 - Addition
 - Subtraction
 - Multiplication
 - Division
- Solve the problem

The ages of the 10 youngest men to become U.S. president are listed as follows:

President	Age	President	Age
T. Roosevelt	42	Kennedy	43
Grant	46	Clinton	46
G. Cleveland	47	Pierce	48
Polk	49	Garfield	49
Arthur	50	Fillmore	50

- a) Compute the average age of these 10 U.S. presidents when inaugurated.
- b) If Barak Obama becomes president at the age of 48, how would this change the average age of the 10 youngest U.S. presidents?

American Revolution - North and South; [Mathematical Concepts: An Interdisciplinary Approach by Todd M. Daley]

Studying for a Test and Taking a Test: How to study for a Math Test



Key Facts

- A. You must have already attempted and completed the previously assigned homework
- B. Practicing homework problems is the way to become familiar with what is required to solve them. The more you practice, the better your chances of knowing what to do when faced with a similar type problem.
- C. Rereading all notes and reworking all previously assigned problems prior to a test is an excellent way to familiarize yourself with the concepts and problems.

2- 3 Days Prior to the Test.

- 1.) Make sure you know exactly what material will be covered on the test.
- 2.) Start at the earliest chapter and section that will appear on the test and try to redo the homework problems for that section.
- 3.) If you come across a problem that you do not understand then seek help by either visiting your instructor's office hours or going to a tutor in the ALC.
- 4.) Create index cards listing the type of problem on one side of the card and then what steps are needed to simplify, evaluate or solve the problem on the other side.
- 5.) Work on problems in a study group.

The Night Before the Test

- 6.) Redo chapter review sections focusing on the least familiar types of problems.
- 7.) Get a good night's sleep. (Do not stay up all night studying)

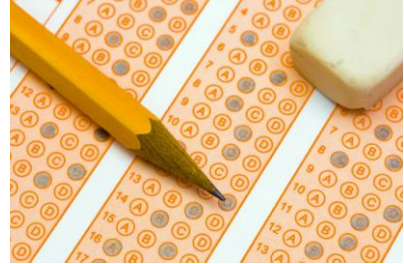
The Day of the Test

- 8.) Make sure you eat a good breakfast (meal) that includes protein.
- 9.) You may want to look over only the problems that you are not sure of but it is not necessary.

- 10.) Avoid studying up until test time, this could create extra anxiety and confusion and can be counterproductive.
- 11.) Avoid excessive talking to others about the test prior to the test this can also create additional anxiety and confusion.

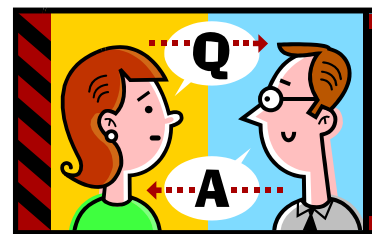
Taking a Math Test

Once you have received the test take a deep breath and remember to breathe.



- 1.) Read all directions and look over the test before you begin.
- 2.) Do all problems that you are certain you can solve, first.
- 3.) Then attempt the rest of the problems in the order of familiarity.
- 4.) Attempt all problems even those you are not completely sure of. If partial credit is given, you may receive some.
- 5.) If you have no clue how to solve a problem then skip it and don't waste your time.
- 6.) If you have the time, check all of your solutions before turning the test in. Look for simple errors like addition, subtraction, multiplication and division. But remember your first instinct is almost always correct. Do NOT change the method of solving a problem unless you are sure of the change.

Questions and Answers for Mathematics Students



Q1. What should I do if I miss a class and miss the lecture?

A1. You should contact your instructor through e-mail or phone to find out what was covered, or you can contact a class mate. If you do not understand the material you missed, go to your instructor's office hour or make an appointment to go over the material. Or go to see a tutor in the ALC.

Q2. Will it help to work with others?

A2. Yes, working with others helps you to learn by sharing your knowledge and allows you to learn from others. It will help to increase your confidence and to become better math students

Q3. What happens if I get stuck during a test?

A3. Getting stuck is a part of learning mathematics, everyone gets stuck at sometime. Take a deep breath, don't get frustrated and don't give up. Try to analyze what you have done and compare to other problems on the test. If you still don't know then skip the problem and work on other more familiar problems.

Q4. I always panic during a testing situation, what can I do to prevent it from happening?

A4. Students panic because they are anxious and do not feel confident with the material. Just because you get stuck on a couple of problems, does not mean that you cannot do math. In order to stop this cycle, put your exam down and talk to yourself, say to yourself STOP! Try to relax, clear your mind and tell yourself that you are certain that you can do these problems because you have done them before. Take slow deep breaths and search for problems you know how to solve. Work through those problems, they will build your confidence up once you have finished those problems then attempt the ones on which you were stuck. Do as much as you can, remember partial credit is given in most cases. Make sure you have checked all the problems you have completed.

Q5. The problems look exactly the same, how do I know which technique I need to solve the problem?

A5. Compare and contrast examples done in class. List the similarities and the differences. Do an example of each type next to the steps required to solve the problem.

Q6. I notice that everyone else finishes before me; does that mean that I am going to do poorly?

A6. Everyone work's at their own pace. Just because someone finishes quickly does not mean that they know what they are doing. Work at your own pace keeping in mind that there is a time limit.

Q7. How can I get help with my math?

A7. They are many resources available to you at UCC. You can visit your professor's office hours; see a tutor; work with a group of classmates; obtain online tutoring; and use software programs.

Q8. I have studied for my test but I still feel like I may not do so well, is there anything else I can do?

A8. Make up a practice exam for yourself using study cards, old tests, old quizzes, and examples from class. Take the exam using a timer and check your results. Review the problems that were incorrect and work on your speed. Write all relevant formulas, key ideas and warnings.

Q8. There is a comprehensive final exam at the end of the course, how do I study for that huge exam?

A9. You should start studying at least a week or two before the final exam. This means you will be reviewing old material as you learn new material. You will need to review: class notes, study cards, homework, tests, quizzes. Try to obtain a copy of a previous final exam given by your professor. Find out the format of the final (i.e. multiple choice, short answer, if partial credit is given, ...)

Q10. Why is the student who answers all of the questions so quickly in this class ? Are they really that smart?

A10. Some students are quick to answer a question but they are not always the best student in the class and many times they may not even have passing grades. Do not be intimidated by these students. If it really makes you feel uncomfortable or it bothers you, speak to the instructor about it.

Sample Teaching Techniques:

Sample Teaching Techniques for MAT 016 and MAT 022

Developmental education is a challenge for instructors as well as students. College students who place into developmental classes arrive at variety of levels, and often feel discouraged to have to complete preparatory work before moving on to credit courses. Instructors face a difficult situation, as they must focus on how each student learns as well as what they are learning. They must also be sensitive to student attitude and self-esteem to encourage students to persist and succeed in their developmental studies in order to move onto College level courses.

Developmental algebra is particularly difficult to master for many students. One topic that often proves to be an obstacle is factoring, specifically trinomials.

There are several methods of factoring trinomials taught at the College:

1. **Trial and Error:** This method is a theoretical approach to factoring trinomials. Students who master the trial and error method leave developmental classes well prepared for advanced math courses. Its drawback is that it is not procedural, but requires advanced analytical and cognitive skills. It is often a difficult method for developmental students to master. Trial and error becomes particularly difficult when problems involve large composite coefficients that result in multiple combinations.
2. **Box Method:** This method is essentially a controlled process for trial and error. It is procedural, yet still helps to develop analytical mathematical skills.
3. **AC Method:** This method provides a systematic procedure for finding the correct factors of a trinomial. While it is a dependable and reliable method for students, it lacks theory. Students often become dependent on the procedure and fail to develop important analytical skills. The AC method becomes cumbersome when the problems involve large composite coefficients.

Some instructors find it helpful to present more than one method to their students in order to provide a full understanding of this difficult topic.

This training document provides a basic outline of the three methods of factoring trinomials mentioned above, with an example of each. Its purpose is to assist in planning classroom lessons for developmental students on this topic.

Resources for you and your students are available in the form of Student/Tutor Help Sheets on all three methods of trinomials. They are available in paper form in the Academic Learning Centers on all three campuses, and in PDF format on-line. Go to www.ucc.edu and click on Academics, Academic Learning Center, and then Handouts.

The Trial and Error Method

$$Ax^2 + Bx + C$$

1. Factor the coefficients A and C.
2. Analyze the signs.
3. Using reverse FOIL, find the correct binomial combination, judging to see which inside and outside combinations result in B.

Example: $6x^2 + 19x + 15$

1. Factor the coefficients A and C.

$$\begin{array}{cc} 6*1 & 15*1 \\ 3*2 & 5*3 \end{array}$$

$$6x^2 + 19x + 15$$

2. Analyze the signs.

In this example, both signs are positive, therefore, both signs of the factored binomials will be positive.

3. Using reverse FOIL, find the correct binomial combination, judging to see which inside and outside combinations result in B.

$$(6x + 15)(x + 1)$$

$$(6x + 1)(x + 15)$$

$$(6x + 5)(x + 3)$$

$$(6x + 3)(x + 5)$$

$$(2x + 15)(3x + 1)$$

$$(2x + 1)(3x + 15)$$

$$(2x + 3)(3x + 5) = 6x^2 + 19x + 15$$

Answer: $(2x + 3)(3x + 5)$

The Box Method

$$Ax^2 + Bx + C$$

1. Factor coefficients A and C, listing all factors in boxes, with factors of A on top, and factors of C on bottom, listed twice – forward and reverse.
2. Multiply each combination, corner to corner.
3. Choose the combination resulting in the coefficient of the middle term.
4. List factors, and then assign signs.

Example: $6x^2 + 19x + 15$

List the factors of A and list the factors of C:

$6 * 1$	$15 * 1$
$3 * 2$	$5 * 3$

Try the smallest factor first, they usually work.

1. Factor coefficients A and C, listing all factors in boxes, with factors of A on top, and factors of C on bottom, listed twice – forward and reverse.

$3 \ 2$	$3 \ 2$	← Factors of A
$5 \ 3$	$3 \ 5$	← Factors of C listed twice, forward and reverse

2. Multiply each combination, corner to corner in the first box.

$3 \ 2$	$3 \ 2$	
$5 \ 3$	$3 \ 5$	
$3 * 3 = 9$	$2 * 5 = 10$	← Corner to corner products

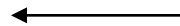
3. Choose the combination resulting in the coefficient of the middle term. The first box worked.

$$6x^2 + 19x + 15$$

3 2	3 2
5 3	5 3
$3 * 3 = 9$	$5 * 2 = 10$

$$9 + 10 = 19$$

Sum of products equal to 19



4. List factors, these will be in your final parentheses and then assign signs.

↓	↓
3	2
5	3

Answer: $(3x+5)(2x+3)$

The AC Method

$$Ax^2 + Bx + C$$

1. Find the product of coefficients A and C, then factor.
2. Select two factors that result in coefficient B
3. Re-write the trinomial splitting the second term into resulting factors.
4. Factor the expression by grouping.

Example: $6x^2 + 16x + 5$

1. Find the product of coefficients A and C and factor.

15	
15	1
5	3

2. Select two factors that result in coefficient B.

15	
15	1
5	3

3. Re-write the trinomial splitting the second term into resulting factors.

$$3x^2 + 15x + x + 5$$

4. Factor the expression by grouping.

$$3x(x + 5) + 1(x + 5)$$

$$(3x + 1)(x + 5)$$

Answer: $(3x + 1)(x + 5)$

Section 9



On-line Resources

Academic Learning Center



The ALC offers a variety of on-line practice exercises for developmental math students that are designed specifically for UCC courses. The links and descriptions are listed in the table below. If you are viewing this document on-line, use Ctrl + click to follow the links. Otherwise, you can assess the links from the ALC website through the following path:

www.ucc.edu

- ◆ Academics
 - ◆ Academic Learning Center
 - ◆ Computer Assisted Instruction
 - ◆ Math Interactive Practice Exercises

Link	Applicable Course	Description
Adding and Subtracting Fractions	MAT 011	Provides explanation of procedure with (10) multiple choice practice exercises, including feedback for wrong answers.
Adding and Subtracting Fractions with Like Denominators	MAT 011	Provides explanation of procedure with (5) multiple choice practice exercises, including feedback for wrong answers and detailed solutions.
Adding and Subtracting Fractions with Prime Denominators	MAT 011	Provides explanation of procedure with (5) multiple choice practice exercises, including feedback for wrong answers and detailed solutions.
Adding and Subtracting Fractions with Denominators that are Factors or Multiple of Each Other	MAT 011	Provides explanation of procedure with (5) multiple choice practice exercises, including feedback for wrong answers and detailed solutions.
Adding and Subtracting Fractions that include Mixed Numbers	MAT 011	Provides explanation of procedure with (5) multiple choice practice exercises, including feedback for wrong answers and detailed solutions.
Adding and Subtracting Fractions when the Denominators are Unlike	MAT 011	Provides explanation of procedure with (5) multiple choice practice exercises, including feedback for wrong answers and detailed solutions.

Link	Applicable Course	Description
Lowest Common Denominator	MAT 011	Provides explanation of procedure with (10) multiple choice practice exercises, including feedback for wrong answers.
Basic Math: Computational Skills Practice Problems	MAT 011	Provides (60) multiple choice practice problems for topics in MAT 011. Includes detailed solutions for each problem and text book references.
Algebra Practice Problems: Part 1	MAT 015 MAT 022	Provides (25) multiple choice practice problems for MAT 015 and MAT 022. Includes detailed solutions for each problem and text book references.
Algebra Practice Problems: Part 2	MAT 016 MAT 022	Provides (25) multiple choice practice problems for MAT 016 and MAT 022. Includes detailed solutions for each problem and text book references.

That Quiz www.thatquiz.org

“That Quiz” offers practice quiz problems on a variety of topics in computation and algebra.

Hot Math www.hotmath.com/learning_activities/algebra_activities.html

This website provides a visual representation of graphing concepts. Many topics are applicable to high level graphing courses; however [Slope-Intercept Form of a Line](#) is useful for MAT 016 and MAT 022 students. Using Flash technology, this site allows students to manipulate linear equations and visualize their transformations.

Purple Math <http://www.purplemath.com/>

Purple Math offers a wide variety of support for students and instructors. Areas of particular interest are:

Lessons: [“How do you really do this stuff?”](#) This area provides students with practical lessons for all levels of algebra and pre-algebra topics.

[Quizzes and Worksheets](#) lists free sites with prepared, downloadable quizzes and worksheets for basic math and algebra.

Study Skills Self-survey: [“Do I have what it takes?”](#) This survey addresses five topics in math study skills: Selecting a math class, time and place for studying, study strategies for the class, math tests, and math anxiety. Students complete the survey, receive a score with advice, and are taken to a page listing success strategies for math classes.

Math Power <http://www.mathpower.com/>

Ellen Freedman developed this site for her students at Camden County College. It contains innovative assignments and strategies for teaching developmental math.