

**LeMoyne-Owen College**  
**Division of Natural and Mathematical Sciences**  
**Discrete Structures, COSI 240**  
**Spring 2012**

**Instructor:** Valerie Chu, Ph.D.  
**Office Room:** GOH400D  
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**Office Hours:** MWF 9:00 to 10:00 a.m., MW 11:00 a.m. to 1:00 p.m. & TuTh 12:30 to 2:00 p.m.  
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**Credit Hours:** Three  
**Prerequisites:** COSI 223 & MATH 145 or permission of instructor.  
**Class Meeting:** TTh 9:30 to 10:45 a.m.

### **Syllabus**

**Texts:** **Discrete Mathematics**, *Richard Johnsonbaugh*, 7<sup>th</sup> edition, ISBN-13: 978-159318-3, © 2009  
Pearson Education, Inc. The website of this textbook is <http://condor.depaul.edu/~rjohnson/dm7th/>

**Supplemental Materials:** N/A

#### **Course Description:**

The course includes set algebra, mapping, relations, elements of graph theory, Boolean algebra, propositional logic, and introduction to finite state machines and applications. Three hours of lecture per week. Prerequisites: COSI 223 and MATH 145 or permission of instructor.

#### **College Graduate Competencies:**

The two college graduate competencies (CGC) that are directly addressed in Java How to Program are:

1. Think creatively, critically, logically, and analytically using both quantitative and qualitative methods for problem solving.
2. Communicate effectively (listen, speak, read, and write) on formal and informal levels;
8. Maintain levels of literacy that allow them to understand the impact of science and technology on individuals, society, and the environment.

**Major Area Competency Levels:**

The college graduate competencies are developed specifically for this course through major area competency levels (MAC). By the end of this course, students should have attained proficiency in the following major area competencies:

1. To demonstrate an ability to think creatively, critically, logically, and analytically using both quantitative and qualitative methods for solving problems (CGC#1).
2. To demonstrate an ability to address problems, and communicate solutions clearly. (CGC#2).
3. To understand existing algorithm to solve a problem in the real life. (CGC#8).

**Course Objectives:**

The identified major area competencies focus on how students enhance their logical understanding and critical comprehension of Discrete Structures. Therefore, students are expected to show proficiency in the following:

1. Students are able to understand and explain mathematical reasoning in order to read, comprehend, and construct mathematical arguments.
2. Students are able to do combinatorial analysis; that is, they can apply counting method to their real life.
3. Students are able to apply theorems of discrete structures such as sets, permutations, relations, graphs, and trees to real life problems.
4. Students are able to use an algorithm to solve a problem and convert the algorithm to a computer program to get the solution.

**Attendance Policy:** In accordance with college policy, classroom attendance is required. The following standard will be applied:

1. If unexcused absences total 15% of the regularly scheduled class meetings, the instructor has the authority to lower the final grade by one letter.
2. If unexcused absences total 20% of the regularly scheduled class meetings, the instructor has the authority to give a failing grade.
3. Five classes tardy —arrival to class five minutes after class has begun—will equal one unexcused absence.

**Technology Use:** LeMoyne-Owen College is committed to enhancing student learning through the use of a variety of applicable technology. In this course, students will use and be exposed to Java Compiler and Interpreter and Microsoft Excel.

**Demeanor:** Suitable demeanor, posture and attire are required. For guidelines and the dress code, please refer to the 2011/2012 Student Handbook (8-9; 13).

**Classroom Policies and Procedures:**

The classroom learning experience provides opportunities for faculty and students to engage in interactive exchanges of course content. To facilitate this exchange, the following guidelines are provided:

1. Because each class session covers vital material and information, it is important that students arrive on time to each class session.
2. In order to enhance students' performance and confidence in acquiring the material, it is critical that students come to each class session prepared. This includes bringing to class required texts, supplemental materials, and assigned work, which is provided on the course outline.
3. In order to limit unnecessary distractions which would deter learning, cell phones, multi-media devices, and laptops are required to be turned off or on vibrate when class is in session, except by permission of the faculty.

Faculty reserve the right to apply penalties for noncompliance to either or all of the above guidelines.

**Assignments, Assessment and Submission Requirements:**

Several quizzes, three mid-term tests and a final comprehensive examination will be given. There are **no make-up tests** except for a valid document from a doctor; however, a note from home is not acceptable.

Programming or written assignments will be assigned frequently. It has to be sent through the e-mail by the deadline (noon of the due day). **Late assignments will receive the following penalties:** 1 day late, minus 10 points; 2 days late, minus 20 points; 3 days late, minus 30 points; ...and so on until zero credit. Students are responsible to check a return e-mail for assignment credits. If a student has turned in assignments and there is no response from the instructor, the student has to contact the instructor directly; otherwise, the student would get a zero credit for the assignment. **Duplication of programming or written assignments will not be permitted. Duplicated programming assignments as well as the original will be assigned a grade of "F".**

**Policies Related to Students with Disabilities:**

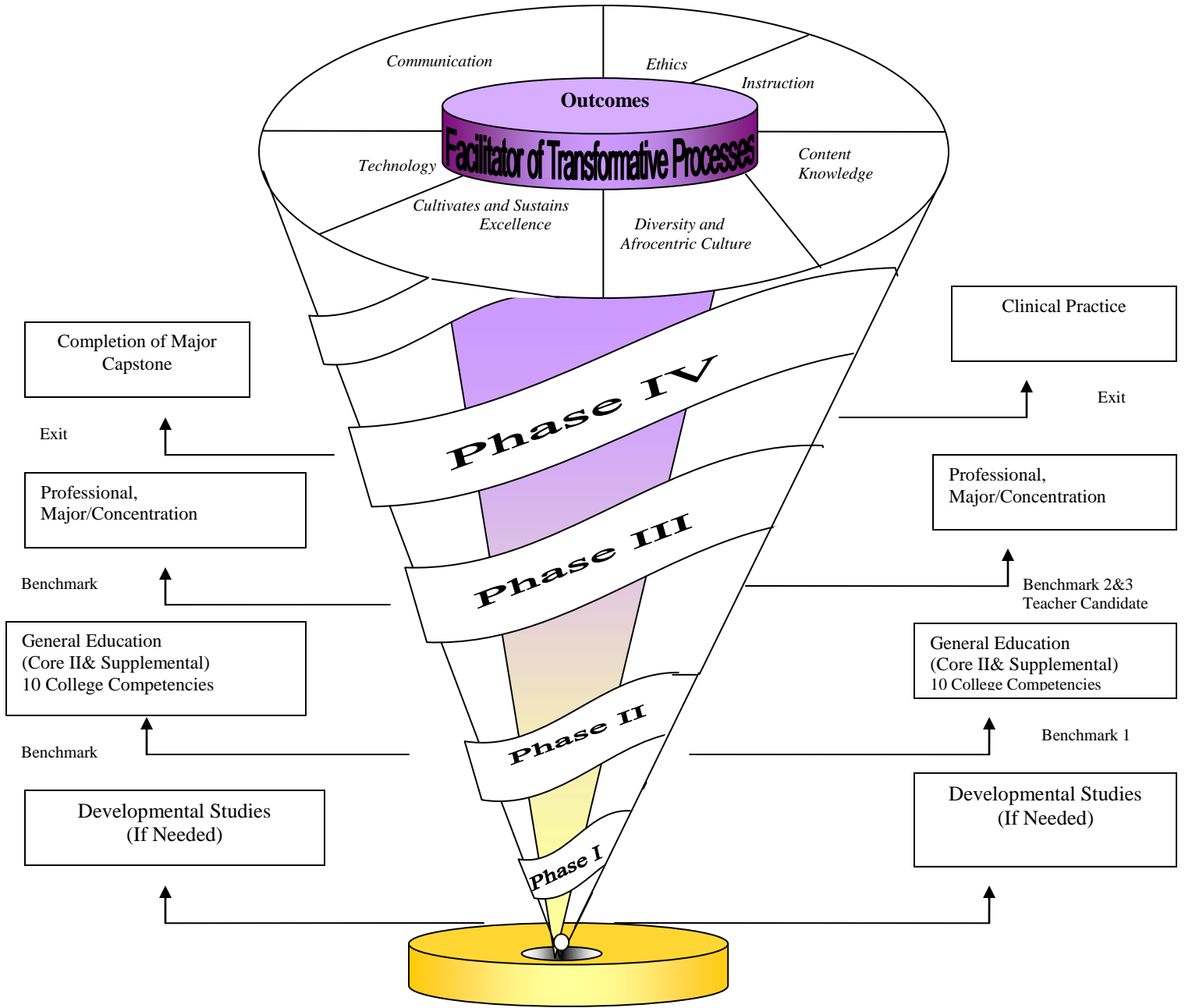
If you need course adaptations or accommodations because of a disability, if you have emergency medical information to share, or if you need special arrangements in case the building must be evacuated, please make an appointment with Jean Saulsberry, Director of Student Development, as soon as possible at (901) 435-1727. The Student Development Office is located in the Alma C. Hanson Student Center, Room 208.

**Student Performance Evaluation and Grading Scale:**

The course grade will be calculated on the following distribution:		Grades will be recorded in numerical form until the final averages are determined at the end of the semester. <i>Grading Scale</i> will be	
Assignments	20%	90 to 100	A,
Quizzes	20%	80 to 89	B,
Mid-term Tests	45%	70 to 79	C,
Final Comprehensive Exam	15%	60 to 69	D,
		others	F.

**LeMoyne-Owen College Graduate Competencies (CGC)****LeMoyne-Owen College graduates should be able to:**

1. Think creatively, critically, logically, and analytically using both quantitative and qualitative methods for problem solving;
2. Communicate effectively (listen, speak, read, and write) on formal and informal levels;
3. Distinguish, clarify, and refine personal values for the attainment of richer self-perception and relate those values to the value system of others;
4. Appreciate, understand, and know the foundations of the Afrocentric perspective;
5. Appreciate, understand, and know the foundations of diverse cultures in the context of a global community;
6. Appreciate, understand, now and pursue the principles, methods and subject matter that underlie the major discipline(s);
7. Accept social responsibility and provide service to humankind;
8. Maintain levels of literacy that allow them to understand the impact of science and technology on individuals, society, and the environment;
9. Attain motivational, personal management, interpersonal skills, professional development and research experience, as well as resourcefulness that will form the basis for a career and/or further educational experiences;
10. Attain critical skills, frame of reference, and understanding needed to appreciate and discriminate between artistic achievements.



Student

Teacher Education Pre-Candidate

**The Conceptual Framework Model**  
 Theme: **Teacher as a Facilitator of Transformative Processes**

<b>Discrete Structures</b> <b>Course Outline (tentative)</b>
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<i>Weeks</i>	<i>Chapters</i>	<i>Topics</i>
1-2	1	Sets and Logic
3	2	Proofs
	3	Functions, Sequences, and Relations
4	4	Algorithms
5	<b>Review and Test I</b>	
6	5	Introduction to Number Theory
7	6	Counting Methods and the Pigeonhole Principle
8-9	7	Recurrence Relations
10	<b>Review and Test II</b>	
11	8	Graph Theory
12	9	Minimum Spanning Tree
13	11	Boolean Algebras and Combinatorial Circuits
14	<b>Review and Test III</b>	
15	<b>Final Comprehensive Exam (8:00 a.m. to 9:50 a.m. Thursday, April 26)</b>	

**Instructor reserves the right to add or subtract assignments or assessments.**