

ILLINOIS VALLEY COMMUNITY COLLEGE



COURSE OUTLINE

DIVISION: Workforce Development

COURSE: CSI 1013; Discrete Mathematics

Date: Spring 2014

Credit Hours: 3

Prerequisite(s): Math 0907 (with a grade of C or better) or appropriate placement testing

Delivery Method: **Lecture** **3 Contact Hours** (1 contact = 1 credit hour)
 Seminar **0 Contact Hours** (1 contact = 1 credit hour)
 Lab **0 Contact Hours** (2 contact = 1 credit hour)
 Clinical **0 Contact Hours** (3 contact = 1 credit hour)
 Online
 Blended

Offered: **Fall** **Spring** **Summer**

IAI Equivalent –**Only for Transfer Courses**-go to <http://www.itransfer.org>: IAI CS 915

CATALOG DESCRIPTION:

CSI 1013 Discrete Mathematics
3 credit hours

Offers an intensive introduction to discrete mathematics as it is used in computer science. Topics include functions, relations, sets, propositional and predicate logic, simple circuit logic, proof techniques, elementary combinatorics, and discrete probability. 3 hours lecture.

GENERAL EDUCATION GOALS ADDRESSED

[See the last page of this form for more information.]

Upon completion of the course, the student will be able:

[Choose those goals that apply to this course.]

- To apply analytical and problem solving skills to personal, social and professional issues and situations.
- To communicate orally and in writing, socially and interpersonally.
- To develop an awareness of the contributions made to civilization by the diverse cultures of the world.
- To understand and use contemporary technology effectively and to understand its impact on the individual and society.
- To work and study effectively both individually and in collaboration with others.
- To understand what it means to act ethically and responsibly as an individual in one's career and as a member of society.
- To develop and maintain a healthy lifestyle physically, mentally, and spiritually.
- To appreciate the ongoing values of learning, self-improvement, and career planning.

EXPECTED LEARNING OUTCOMES AND RELATED COMPETENCIES:

[Outcomes related to course specific goals.]

Upon completion of the course, the student will be able to:

1. Illustrate the basic concepts of sets, relations and functions.
2. Use mathematical logic and Boolean algebra.
3. Apply combinations, permutations, and the pigeonhole principle.
4. Solve simple graph problems.
5. Explain the algorithms for traversing trees.
6. Illustrate the concepts of languages and finite-state machines.

COURSE TOPICS AND CONTENT REQUIREMENTS:

Logic and Proofs

Sets, Functions, Sequences, Sums, and Matrices

Algorithms

Number Theory and Cryptography

Induction and Recursion

Counting, Permutations and Combinations

Probability

Recurrence Relations, Inclusion, Exclusion

Relations and Ordering

Graphs

Trees

Boolean Algebra

INSTRUCTIONAL METHODS:

Lecture
Instructor Demonstration
Homework Assignments
Testing

INSTRUCTIONAL MATERIALS:

Textbook: *Discrete Mathematics and Its Applications, 7th edition*, Ken Rosen.
ISBN-13: 978-0-07-338309-5

STUDENT REQUIREMENTS AND METHODS OF EVALUATION:

Develop an understanding and/or a comprehensive knowledge of the items listed as course content.

Complete assignments and individual projects.

1. Read required material on the topic
2. Attend class on current topic
3. Complete all tests and homework
4. Ask questions about any misunderstood area either in class, during office hours, or of the tutor
5. Join discussions

Grading Scale

A 90-100%
B 80-89%
C 70-79%
D 60-69%

There will be 2 exams, midterm and final, given worth 250 pts each. 10-12 homework assignments will be completed worth about 100 pts each.

OTHER REFERENCES

IAI Major Course Description - CS915 : Discrete Structures
(3 semester credits)

An introduction to analysis of finite collections and mathematical foundations of sequential machines, computer system design, data structures, and algorithms. Includes sets and logic, subscripts, arrays, number systems, counting, recursion, graph theory, trees, nets, and Boolean algebra. (Prerequisite: Intermediate algebra or higher, as determined by the specific school.)¹

¹ Retrieved from
<http://www.itransfer.org/iai/majors/default.aspx?file=iai§ion=students&t=cs&p=da&key=CS915> on 11/4/2011

Course Competency/Assessment Methods Matrix

CSI 1013; Discrete Mathematics		Assessment Options																															
For each competency/outcome place an "X" below the method of assessment to be used.	Assessment of Student Learning	Article Review	Case Studies	Group Projects	Lab Work	Oral Presentations	Pre-Post Tests	Quizzes	Written Exams	Artifact Self Reflection of Growth	Capstone Projects	Comprehensive Written Exit Exam	Course Embedded Questions	Multi-Media Projects	Observation	Writing Samples	Portfolio Evaluation	Real World Projects	Reflective Journals	Applied Application (skills) Test	Oral Exit Interviews	Accreditation Reviews/Reports	Advisory Council Feedback	Employer Surveys	Graduate Surveys	Internship/Practicum /Site Supervisor Evaluation	Licensing Exam	In Class Feedback	Simulation	Interview	Written Report	Assignment	
	Direct/ Indirect	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	I	I	I	I	D	D							
Assessment Measures – Are direct or indirect as indicated. List competencies/outcomes below.																																	
1. Illustrate the basic concepts of sets, relations and functions.									X						X					X													X
2. Use mathematical logic and Boolean algebra.									X						X					X													X
3. Apply combinations, permutations, and the pigeonhole principle.									X						X					X													X
4. Solve simple graph problems.									X						X					X													X
5. Explain the algorithms for traversing trees.									X						X					X													X
6. Illustrate the concepts of languages and finite-state machines.									X						X					X													X