Alexander College
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CURRICULUM GUIDE: OFFICIAL COURSE OUTLINE

<table>
<tr><td>Course Code</td><td>CPSC 115</td><td>Course Title</td><td colspan="4">Discrete Structures I</td></tr>
<tr><td>Credit Value</td><td>3</td><td>Department</td><td colspan="4">Mathematics and Science</td></tr>
<tr><td rowspan="2">No. of weeks</td><td rowspan="2">14</td><td rowspan="2">Hrs. per week</td><td>Lecture</td><td>Tutorial</td><td>Laboratory</td><td>Total</td></tr>
<tr><td>3</td><td>1</td><td>0</td><td>4</td></tr>
<tr><td>Course Description</td><td colspan="6">An introduction to elementary discrete mathematics as it is used in computer science. The topics include logic and proofs, sets, functions, sequences, algorithms, number theory, induction, recursion, counting, and relations.
Students with credit for MATH 115 may not take CPSC 115 for further credit</td></tr>
<tr><td>Prerequisite(s)</td><td colspan="6">ENGL 088 (formerly EASL 089/ENGL 097), MATH 12 (C) or MATH 100 (C)</td></tr>
<tr><td rowspan="2">Initial Articulation Targets</td><td>UBC</td><td>SFU</td><td>UVic</td><td>UNBC</td><td colspan="2">TRU</td></tr>
<tr><td>CPSC 1st (3)
Exempt CPSC 121</td><td>MACM 101 (3)
Q/B-Sci</td><td>MATH 122 Lev (1.5)</td><td>CPSC 141 (3)</td><td colspan="2">COMP 1380 (3)</td></tr>
<tr><td colspan="6">For updated information on the transferability of this course, please consult the BC Transfer Guide, www.bctransferguide.ca</td></tr>
<tr><td>Learning Outcomes</td><td colspan="6">Upon successful completion of this course, the student will be able to:
Construct mathematical arguments using logical notation and determine its validity.
Explain the basic principles of sets and operations in sets.
Construct elementary proofs using mathematical induction and proof by contradiction.
Determine the number of possible outcomes using permutation and combinations.
Explain terminology related to functions and whether a function is one-to-one and onto.
Explain terminology related to relations and determine whether a binary relation on a set is an equivalence relation.</td></tr>
<tr><td>Content</td><td colspan="6">Core topics – all of the following will be covered:
Logic and Proofs
Basic Structures: Sets, Functions, Sequences, Sums, Matrices
Algorithms
Number Theory
Induction and Recursion
Counting
Relations
Additional topics may also be covered, at the discretion of the instructor.</td></tr>
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Methods of Instruction	Lectures, assignments, assigned reading, quizzes, examinations		
Required Textbook(s)	The following textbook(s) is/are required, or approved equivalent(s). Ralph P. Grimaldi. Discrete and Combinatorial Mathematics (Classic Version) (5th Edition), Addison-Wesley, 2018. Rosen, Kenneth. Discrete Mathematics and its Applications. 8th Ed. New York: McGraw-Hill, 2019.		
Required Equipment and Technology	Students are required to have a computer with internet access. The following resources are provided by the College: • Office 365 • Student email		
Homework Hours	At minimum, students can expect one hour of homework for every hour of instructional time.		
Evaluation	*Component* Assignments and quizzes Midterm examinations (1-2) Final examination	*% Value* 20-30% 20-40% 30-35%	
Completion Requirements	The minimum grade to pass this course is D (50%). Unless otherwise stated, a minimum grade of C- (55%) is required for this course to fulfil a prerequisite.		
Course Designer(s)	Alexandra Fedorova, Simon Fraser University	Consultant(s), *if applicable*	Tiko Kameda, Ph.D. Professor Emeritus, Department of Computing Science, Simon Fraser University
Dean's Approval	Barbara Moon, Ph.D., Dean of Arts and Sciences, Alexander College	Dean's Approval Date	October 9, 2007
Curriculum Committee Approval Date	October 9, 2007	First Term Offered	Spring 2008
Last Review Date	September 28, 2022	Next Review Date	September 28, 2027
Revision History	September 24, 2007-Revised by Alexandra Fedorova, SFU August 2, 2014-Revised by Tiko Kameda, SFU April 29, 2015-Library resources added by Librarians, AC June 30, 2016-Noted that students with credit for MATH 115 may not take CPSC 115 for further credit, added by Mandie Brooks and approved by Tiko Kameda. Prerequisite also modified to match with MATH 115 prerequisites. Old prerequisites: ENGL 097, MATH 12(P) New prerequisites: ENGL 097, MATH 12 (C) or MATH 100 (C) September 28, 2022-Major revision (learning outcomes, content, textbook, assessment, resources) by Kelly Cheung.		

	July 29, 2024 - Added one tutorial hour per week, Kelly Cheung.

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