COMPUTER SCIENCE

Computer Science

COMPSCI 162 COMPUTER APPLICATIONS (GM) ... A thorough introduction to using computers covering word processing, spreadsheets, data storage and retrieval, computer graphics and applications, uses of computers, e-mail and the Internet, hardware, history, and problems arising from the use of computers.

COREQ: MATH 141 OR MATH 140 OR WAIVER

#1678 Section 01 [units: 3] Gen Ed Math/Natural Sciences (GM) NOTE: This a hybrid course which meets both online and in the classroom.

01/17-05/19 M 08:00 AM - 09:15 AM MG0115 Jiehui Ma

01/17-05/19 Arranged Arranged WEB BASED Jiehui Ma

#1679 Section 02 [units: 3] Gen Ed Math/Natural Sciences (GM) NOTE: This a hybrid course which meets both online and in the classroom.

01/17-05/19 M 03:30 PM - 04:45 PM HY0210 Yuheng Cao

01/17-05/19 Arranged Arranged WEB BASED Yuheng Cao

#1685 Section 03 [units: 3] Gen Ed Math/Natural Sciences (GM) NOTE: This a hybrid course which meets both online and in the classroom.

01/17-05/19 W 08:00 AM - 09:15 AM MG0115 Jiehui Ma

01/17-05/19 Arranged Arranged WEB BASED Jiehui Ma

#1687 Section 04 [units: 3] Gen Ed Math/Natural Sciences (GM) NOTE: This a hybrid course which meets both online and in the classroom.

01/17-05/19 W 03:30 PM - 04:45 PM HY0210 Yuheng Cao

01/17-05/19 Arranged Arranged WEB BASED Yuheng Cao

#1690 Section 05 [units: 3] Gen Ed Math/Natural Sciences (GM) NOTE: This a hybrid course which meets both online and in the classroom.

01/17-05/19 F 09:30 AM - 10:45 AM MG0115 Yuheng Cao

01/17-05/19 Arranged Arranged WEB BASED Yuheng Cao

#1716 Section 06 [units: 3] Gen Ed Math/Natural Sciences (GM) NOTE: This is a web-based class. Required additional course fee is $150.00. This class uses Office 2013; students will need to have access to this software to successfully complete this class.

01/17-05/19 Arranged Arranged WEB BASED Hien Nguyen

#1720 Section 07 [units: 3] Gen Ed Math/Natural Sciences (GM) NOTE: This is a web-based class. Required additional course fee is $150.00. This class uses Office 2013; students will need to have access to this software to successfully complete this class.

01/17-05/19 Arranged Arranged WEB BASED Athula Gunawardena

#4552 Section 08 [units: 3] Gen Ed Math/Natural Sciences (GM) NOTE: Restricted to students in the Partners in Education (PIE) program at Cedarburg High School

01/17-05/19 Arranged Arranged OFF CAMPUS Mark Fuerbringer PIE PROGRAM

01/17-05/19 Arranged Arranged OFF CAMPUS Sobitha Samaranayake PIE PROGRAM

COMPSCI 170 INTRODUCTION TO PYTHON PROGRAMMING (GM) ... An introduction to computational thinking and computer programming using the Python language, with applications in science, business, education, and other areas. Students will develop structured programs based on simple algorithms that involve input, output, mathematical operations, decisions, and loops. No previous programming experience is needed.

PREREQ: MATH 141 OR WAIVER OF MATH 141

#1722 Section 01 [units: 3] Gen Ed Math/Natural Sciences (GM) NOTE: This a hybrid course which meets both online and in the classroom.

01/17-05/19 R 09:30 AM - 10:45 AM MG0115 Robert Kuzoff

01/17-05/19 Arranged Arranged WEB BASED Robert Kuzoff

#3947 Section 02 [units: 3] Gen Ed Math/Natural Sciences (GM) NOTE: This is a web based course. Required additional course fee is $150.00.

01/17-05/19 Arranged Arranged WEB BASED Robert Kuzoff

COMPSCI 171 INTRODUCTION TO PROGRAMMING (GM) ... An introduction to computer programming and its applications to science, business and education. Opportunity for extensive experience in designing and writing structured programs in the Visual Basic language.

PREREQ: MATH 141 OR WAIVER OF MATH 141

#1680 Section 01 [units: 3] Gen Ed Math/Natural Sciences (GM)

01/17-05/19 TR 08:00 AM - 09:15 AM MG0115 Jiehui Ma

COMPSCI 172 INTRODUCTION TO JAVA (GM) ... This course will give students the essentials of object-oriented programming in Java. Students will learn to formulate algorithms, to solve problems and to implement those solutions with a Java program that employs objects and classes. The student will be introduced to object-oriented design, applications and applets, class construction, methods and message passing arrays, string processing, file processing, and some event-handling and Graphical Use Interface programming. This course is designed for students with some prior programming experience.

PREREQ: MATH 152 WITH A GRADE OF C OR BETTER, OR MATH 143 WITH A GRADE OF C OR BETTER, OR CALCULUS PLACEMENT, OR CONSENT OF INSTRUCTOR

#1683 Section 01 [units: 3] Gen Ed Math/Natural Sciences (GM)

01/17-05/19 MW 09:30 AM - 10:45 AM MG0115 Jiehui Ma

#1684 Section 02 [units: 3] Gen Ed Math/Natural Sciences (GM)

01/17-05/19 TR 05:00 PM - 06:15 PM MG0115 Jiehui Ma

#4702 Section 03 [units: 3] Gen Ed Math/Natural Sciences (GM) NOTE: Restricted to students in the Partners in Education (PIE) program at Homestead High School

03/13-05/19 Arranged Arranged OFF CAMPUS Scott Nettesheim PIE PROGRAM

03/13-05/19 Arranged Arranged OFF CAMPUS Hien Nguyen PIE PROGRAM

COMPSCI 174 INTRODUCTION TO C++ (GM) ... This course teaches basic programming skills using the structured high-level language C++. Topics include basic input and output, declaration and use of variables, use of control statements, implementation of functions usig value and reference parameters, arrays, and structures. Students will write moderately complex applications using C++.

PREREQ: MATH 152 WITH A GRADE OF C OR BETTER, OR MATH 143 WITH A GRADE OF C OR BETTER, OR CALCULUS PLACEMENT, OR CONSENT OF INSTRUCTOR

#1692 Section 01 [units: 3] Gen Ed Math/Natural Sciences (GM)

01/17-05/19 MW 02:00 PM - 03:15 PM HY0210 Yuheng Cao

#1702 Section 02 [units: 3] Gen Ed Math/Natural Sciences (GM) NOTE: This a hybrid course which meets both online and in the classroom.

01/17-05/19 T 09:30 AM - 10:45 AM MG0115 Jiazhen Zhou

01/17-05/19 R Arranged WEB BASED Jiazhen Zhou

COMPSCI 180 DATA SCIENCE FOR EVERYONE (GM) ... An introduction to data science and its implementation using the R language, with applications in natural and social science, public health and welfare, and other areas. Students will explore methods of data analysis and visualization and cultivate marketable data-literacy skills. No prior knowledge of statistics or programming is needed.

PREREQ: MATH 141 OR WAIVER OF MATH 141

#4029 Section 01 [units: 3] Gen Ed Math/Natural Sciences (GM)

01/17-05/19 TR 11:00 AM - 12:15 PM HY0210 Robert Kuzoff

COMPSCI 181 INTRODUCTION TO DATABASE AND THE WEB (GM) ... This course provides the student with a comprehensive working knowledge of a modern database package including the creation of a database, construction of a wide range of queries, use of forms, and report writing features. The course also gives an introduction to the creation of World Wide Web pages using the Extended Hypertext Markup Language (XHTML).

PREREQ: MATH 141 OR WAIVER OF MATH 141

#1689 Section 01 [units: 3] Gen Ed Math/Natural Sciences (GM)

01/17-05/19 TR 12:30 PM - 01:45 PM MG0117 Robert Siemann

COMPSCI 215 DISCRETE STRUCTURES ... The course offers a formal approach to the logic of Computer Science, including set theory, methods of proof, discrete probability, sequences, recurrence relations, introduction to graphs, and algorithmic analysis. It also introduces finite state machines, Turing machines, and formal languages and grammars.

PREREQ: MATH 152 OR MATH 243 OR MATH 250

#1713 Section 01 [units: 3]

01/17-05/19 MW 11:00 AM - 12:15 PM MG0117 Lopamudra Mukherjee

COMPSCI 220 INTERMEDIATE JAVA ... This course teaches more advanced topics in object-oriented program design and the Java programming language. Coverage includes multi-dimensional arrays, methods, error handling, strings, regular expressions, encapsulation, inheritance, polymorphism, generic types, program debugging and testing, database and file processing, event-handling, and graphical user interfaces.

PREREQ: COMPSCI 172 OR (COMPSCI 174 AND CONSENT OF INSTRUCTOR)

#1703 Section 01 [units: 3]

01/17-05/19 MW 03:30 PM - 04:45 PM MG0115 Cheng Thao

COMPSCI 222 INTERMEDIATE C++ ... This course will cover more advanced issues of C++, including memory management, pointers and user-defined data types. Topics will include reading and writing files, dynamic arrays, implementation of the principles of object oriented design including encapsulation, and inheritance, planning and testing. Students will write complex applications using C++.

PREREQ: COMPSCI 174 OR (COMPSCI 172 AND CONSENT OF INSTRUCTOR)

#1693 Section 01 [units: 3]

01/17-05/19 MW 11:00 AM - 12:15 PM MG0115 Jiazhen Zhou

#1710 Section 02 [units: 3]

01/17-05/19 TR 12:30 PM - 01:45 PM HY0210 Jiazhen Zhou

COMPSCI 223 DATA STRUCTURES ... This course covers issues of data structures, professional software development methodologies including software patterns and advanced object oriented techniques. Topics include lists, queues, stacks and trees. Complex data structure and object-oriented design technique, including inheritance and polymorphism, are applied to develop and large projects.
UNREQ: MCS 231, COMPSCI 231, COMPSCI 223

PREREQ: COMPSCI 222 OR MCS 220

#1694 Section 01 [units: 3] NOTE: This course is taught in the C++ Programming Language.

01/17-05/19 MW 09:30 AM - 10:45 AM HY0210 Hien Nguyen C++ language

#1708 Section 02 [units: 3] NOTE: This course is taught in the Java Programming Language.

01/17-05/19 TR 02:00 PM - 03:15 PM MG0115 Cheng Thao JAVA language

COMPSCI 271 ASSEMBLY PROGRAMMING ... This course covers the use of an assembly language based on the RISC processor architecture including writing, linking, and executing a program. Also covered are number systems, instructions for arithmetic and logical operations, memory access, loops, declaring variables, interrupts, machine language, segments, stacks, procedure writing, and file handling.

PREREQ: COMPSCI 172 OR COMPSCI 174

#1682 Section 01 [units: 3]

01/17-05/19 MW 02:00 PM - 03:15 PM MG0115 Lopamudra Mukherjee

#1711 Section 02 [units: 3]

01/17-05/19 TR 12:30 PM - 01:45 PM MG0115 Lopamudra Mukherjee

COMPSCI 322 COMPUTER LANGUAGES AND COMPILERS ... This course is an introduction to the theory of computer languages and the construction of assemblers and compilers. Students will write a small assembler and a small compiler and will compare features of many computer languages.

PREREQ: COMPSCI 271 AND EITHER COMPSCI 223 OR MCS 231

#1712 Section 01 [units: 3]

01/17-05/19 MW 03:30 PM - 04:45 PM MG0117 Zachary Oster

COMPSCI 332 INTRODUCTION TO ARTIFICIAL INTELLIGENCE ... This course introduces basic artificial intelligence principles including simple representation schemes, problem solving paradigms, constraint propagation, search strategies and learning approaches. Knowledge representation, natural language processing, gaming, machine learning and user modeling will be explored. Students should have written moderately complex computer programs in a high level language.

PREREQ: COMPSCI 222 OR MCS 220

#3927 Section 01 [units: 3]

01/17-05/19 TR 11:00 AM - 12:15 PM MG0115 Hien Nguyen

COMPSCI 347 SCIENTIFIC COMPUTING ... This course provides the applied scientist with the basic tools needed to perform computing within a scientific context. The computational aspects focus on two major areas: (1) the development and implementation of numerical algorithms in computer programs, and (2) the analysis and visualization of complex data sets. Numerical methods covered include finding roots of nonlinear equations, solving linear systems, the eigenvalue problem, numerical integration, the initial value problem, and data fitting. The high-level computer packages used are Mathematic and Matlab.

PREREQ: MATH 253 WITH A C OR BETTER OR CONSENT OF INSTRUCTOR

#1717 Section 01 [units: 3]

01/17-05/19 TR 02:00 PM - 03:15 PM HY0210 Leon Arriola

COMPSCI 381 JAVASCRIPT AND DHTML ... JavaScript is a computer language for adding flexibility and functionality to web pages. A powerful language in its own right, it also has the capability to interact with HTML forms, browsers, Java applets, and other objects found on a web page. Students in this course will gain a thorough understanding of JavaScript, and learn to harness it abilitities to manage windows, forms, events, cookies, etc.

PREREQ: COMPSCI 172 OR COMPSCI 174 OR EQUIVALENT PREPARATION AND CONSENT OF INSTRUCTOR

#1704 Section 01 [units: 3]

01/17-05/19 TR 09:30 AM - 10:45 AM HY0210 Yuheng Cao

#3899 Section 02 [units: 3] NOTE: This is a web based course. Required additional fee is $150.00.

01/17-05/19 Arranged Arranged WEB BASED Sobitha Samaranayake

COMPSCI 382 SERVER-SIDE SCRIPTING ... Server-side scripting is key to processing web forms, as well as for automating a wide range of server tasks. This course will provide a thorough introduction to the Server-side scripting languages. Students will learn to create a data-driven web application that uses Structured Query Language (SQL) to access and update the information in a database.

PREREQ: COMPSCI 172 OR COMPSCI 174 OR EQUIVALENT PREPARATION AND CONSENT OF INSTRUCTOR

#1705 Section 01 [units: 3]

01/17-05/19 TR 03:30 PM - 04:45 PM HY0210 Sobitha Samaranayake

COMPSCI 412 COMPUTER ORGANIZATION AND SYSTEM PROGRAMMING ... Introduction to organization of modern digital computers - understanding the various components of a computer and their interrelationships. Study of systems programming in C/Linux.

PREREQ: COMPSCI 271 OR CONSENT

#1714 Section 01 [units: 3]

01/17-05/19 MW 11:00 AM - 12:15 PM HY0210 Athula Gunawardena

COMPSCI 424 OPERATING SYSTEMS ... This course covers problems encountered by computer operating systems including resource management, memory management, virtual memory, concurrent programming, and distributed systems. Algorithms are presented for deadlock, memory paging, job scheduling, memory allocation, and performance measurement. Operating systems such as WINDOWS, DOS, UNIX, VMS, and MVS are discussed.

PREREQ: COMPSCI 271 AND EITHER COMPSCI 223 OR MCS 231 OR CONSENT OF INSTRUCTOR

#1721 Section 01 [units: 3]

01/17-05/19 MW 02:00 PM - 03:15 PM MG0117 Zachary Oster

COMPSCI 433 THEORY OF ALGORITHMS ... This course is a survey of algorithms needed for searching, sorting, pattern matching, analyzing graphs, and a variety of other problems of discrete mathematics. Analysis of algorithm efficiency and space/time tradeoffs are discussed.

PREREQ: COMPSCI 223 AND (COMPSCI 215 OR MATH 280)

#1707 Section 01 [units: 3]

01/17-05/19 TR 09:30 AM - 10:45 AM MG0117 Lopamudra Mukherjee

COMPSCI 434 THEORY OF COMPUTATION ... This course is an introduction to the theory of computation. It discusses finite automata and Turing machines as models of computation. It includes discussions of regular sets, recursive and partially recursive functions, context free grammars, the halting problem, undecidable problems, complexity, and Np-completeness.

PREREQ: MATH 280 OR COMPSCI 215

#1706 Section 01 [units: 3]

01/17-05/19 TR 11:00 AM - 12:15 PM MG0117 Thomas Drucker

COMPSCI 448 BIOINFORMATICS ... Bioinformatics is an introduction to computer applications and algorithms currently used in the analysis of biological data, especially genomic and sequence data. The course entails lectures, discussions, readings and hands-on experience with bioinformatic software. Through exercises and individual research projects students acquire a working knowledge of contemporary computational methods and software.

#3955 Section 01 [units: 3]

01/17-05/19 TR 02:00 PM - 03:15 PM UH0238 Robert Kuzoff

COMPSCI 461 MOBILE COMPUTING ARCHITECTURE ... This course discusses fundamentals of wireless communication and mobile computing, and emphasizes the analysis and design of network architectures in support of mobility related services. It involves intensive critical thinking practices, programming, and hands-on experiments.

PREREQ: COMPSCI 223 AND COMPSCI 271 OR CONSENT OF INSTRUCTOR

#3959 Section 01 [units: 3]

01/17-05/19 MW 09:30 AM - 10:45 AM MG0117 Jiazhen Zhou

COMPSCI 476 SOFTWARE ENGINEERING ... This course introduces concepts and techniques relevant to the production of large software systems. Students are taught a programming method based on the recognition and description of useful abstractions. Topics include: modularity; specification; data abstraction; object modeling; design patterns; and testing.

PREREQ: MCS 231 OR COMPSCI 223 OR CONSENT OF INSTRUCTOR

#1715 Section 01 [units: 3]

01/17-05/19 TR 03:30 PM - 04:45 PM MG0115 Cheng Thao

COMPSCI 482 ADVANCED WEB APPLICATION DEVELOPMENT ... This course will introduce students to popular technologies utilized in building database-driven Web applications. These include scripting languages (PHP, Ruby, JSP, NET), Web application frameworks, Web application design patterns, Web services, databases, and security.

PREREQ: COMPSCI 381 AND COMPSCI 382 OR EQUIVALENT PREPARATION OR CONSENT OF INSTRUCTOR

#1686 Section 01 [units: 3]

01/17-05/19 TR 05:00 PM - 06:15 PM HY0210 Sobitha Samaranayake

COMPSCI 498 INDEPENDENT STUDY IN COMPUTER SCIENCE ... Study of a selected topic or topics under the direction of a faculty member. Repeatable. Department Consent required.

#4528 Section 01 [units: 3] Dept. Consent

01/17-05/19 Arranged Arranged Cheng Thao ADV DATA STRUCTURE ALGORITHMS

#4587 Section 02 [units: 1-3] Dept. Consent

01/17-05/19 Arranged Arranged Hien Nguyen PROCEDURAL KNOWLEDGE IN GAMES

#4588 Section 03 [units: 1-3] Dept. Consent

01/17-05/19 Arranged Arranged Hien Nguyen MACHINE LEARNING

COMPSCI 498R INDEPENDENT STUDY - UNDERGRADUATE RESEARCH ... Study of a selected topic or topics under the direction of a faculty member. Repeatable. Department Consent required.

#4603 Section 01 [units: 1-3] Dept. Consent

01/17-05/19 Arranged Arranged Jiazhen Zhou

*** **GRADUATE LEVEL COURSES** ***

COMPSCI 735 OPTIMIZATION: TECHNIQUES AND APPLICATIONS ... The course takes a unified view of optimization, covering the main areas of application and the main optimization algorithms. The topics include linear optimization, robust optimization, network flows, discrete optimization, dynamic optimization and nonlinear optimization. The course involves learning about, using, and analyzing the results of state of the art optimization software.

PREREQ: ADMISSION TO GRADUATE PROGRAM IN COMPUTER SCIENCE

#4030 Section 01 [units: 3] Dept. Consent

01/17-05/19 M 05:00 PM - 07:30 PM MG0115 Athula Gunawardena