# **C:\Users\Kathy\Pictures\logo-horiz.gif *Fall 2022 Course Syllabus***

**CIS 112** (*Comp Science III: Data Structures & Algorithms*)

# (Section ONL01)

**PROFESSOR:** Kathy Kelly

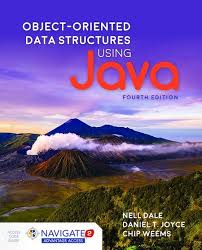
**OFFICE** : ATC 303

**ONLINE OFFICE HOURS :** Day/Time announced each week

How to contact me: **E-MAIL:** [kkelly1@mc3.edu](mailto:kkelly1@mc3.edu) ( reply within 24 hours on weekdays)

## 

## ***Required Textbook:*** (ok to buy “used” or rent; online access card not required)

Dale,Nell, Joyce, Daniel T.*,* and Chip Weems. *Object-Oriented Data Structures Using Java,*

4th Edition, Jones & Barlett, 2018*.*

*ISBN* 978-1284089097

## ***Course Description:***

## Building on the concepts learned in CIS 111B, the fundamental concepts of data structures and algorithms are explored. This course will apply software engineering techniques to the design and implementation of programs that manipulate complex data structures. Effective software engineering methods are stressed as well as developing good programming style. A high-level compiler language such as Java will be used. This is the third course for computer majors.

## ***Prerequisites:***

## CIS 111B - Computer Science II: Object-Oriented Programming, with a “C” or better, or equivalent object-oriented programming experience

## ***Course Objectives:***

## After completion of this course, the student should be able to:

* Demonstrate the application of fundamental data structures including stacks, queues, linked lists, hash tables and trees.
* Practice principles of software engineering by designing and implementing programs with an emphasis on algorithm analysis, top-down design, and creating good documentation.
* Design programs that demonstrate an understanding of fundamental computing algorithms such as binary search trees, depth-first traversals and breadth-first traversals.
* Demonstrate fundamental algorithmic strategies such as brute-force divide and conquer, backtracking, branch-and-bound and pattern matching.
* Use more advanced features of the Java programming language, such as abstract classes and inheritance, to implement data structures and algorithms.

***Course Policies & Procedures***

## ***Course Process:***

## The course will be divided into “weeks”. Each week, you will be given a “to do” list on a certain day of that week and you will be expected to finish the required tasks within 7 calendar days (by 11:59 PM). In other words, you will have ONE week to complete the tasks. After that, any work will be considered late. The only exception will be either a first week or a holiday week which may be a “shortened” week in which case assignments will be due in less than 7 days. See the Course Schedule below for the “weeks” for this semester.

## ***Grading:***

|  |  |
| --- | --- |
| **Requirement** | **Percent of Final Grade** |
| **Tests (4)** | **40%** |
| **Labs (10 x 2pts each)** | **20%** |
| **Final Exam** | **40%** |

## ***Important Grading Notes:***

* **All computer programs that you hand in must compile and run. Additionally, the programs must be your own original work and cannot be copied from somewhere on the web or from your classmate (this is plagiarism!). If you plagiarize, you will receive an XF (F with academic dishonesty).**
* **Labs can NOT be handed in late.**

## ***Course Schedule:***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Class Date*** | ***Topic*** | | ***Reference*** | ***Assignment*** |
| *Week #1:*  Wed., Aug 31  – Sun., Sep 4 | ***Course Overview;***  *“Getting Organized”* | | Syllabus;  **Chap 1 (p.1-55)** | **LAB1:** assignment on BB |
| *Week #2:*  Mon., Sep 5  – Sun., Sep 11 | ***“The Stack ADT”*** | | **Chap 2 (p. 67-147)** | **LAB2:** assignment on BB |
| *Week #3:*  Mon., Sep 12  – Sun., Sep 18 | *“Recursion”* | | **Chap 3 (p. 161-202)** | **LAB3:** assignment on BB |
| *Week #4:*  Mon., Sep 19  – Sun., Sep 25 | TEST #1 (Chap 1, 2, 3) | |  |  |
| *Week #5:*  Mon., Sep 26  – Sun., Oct 2 | | *“The Queue ADT”* | Chap 4 (p. 217-284) | **LAB4:** assignment on BB |
| *Week #6:*  Mon., Oct 3  – Sun., Oct 9 | | ***“The Collection ADT”*** | **Chap 5 (p. 297-337)** | **LAB5**:assignment on BB |
| *Week #7*:  Mon., Oct 10  – Sun., Oct 16 | | **TEST #2 (Chap 4, 5)** |  |  |
| *Week #8*:  Mon., Oct 17  – Sun., Oct 23 | | ***“The List ADT”*** | **Chap 6 (p. 345-409)** | **LAB6:** assignment on BB |
| *Week #9:*  Mon., Oct 24  – Sun., Oct 30 | | *“The Binary Search Tree ADT”* | **Chap 7 (p. 421-486)** | **LAB7**: assignment on BB |
| *Week #10:*  Mon., Oct 31  – Sun., Nov 6 | | ***“The Map ADT”*** | **Chap 8 (p. 499-543)** | **LAB8:** assignment on BB |
| *Week #11:*  Mon., Nov 7  – Sun., Nov 13 | | TEST #3 (Chap 6, 7, 8) |  |  |
| *Week #12:*  Mon., Nov 14  – Sun., Nov 20 | | *“The Priority Queue ADT”* | **Chap 9 (p.552-576)** | **LAB9:** assignment on BB |
| *Week #13:*  Mon., Nov 21  – Wed., Nov 23 | | *“The Graph ADT”* | **Chap 10 (p.583-612)** | **LAB10:** assignment on BB |
| *THANKSGIVING BREAK (Thu., Nov 24 – Sun., Nov 27) – ENJOY* | | | | |
| *Week #14*:  Mon., Nov 28  – Sun., Dec 4 | | *“Sorting and Searching Algorithms”* | Chap 11 (p.621-667) | **LAB11:** assignment on BB  (extra credit lab) |
| *Week #15:*  Mon., Dec 5  – Sun., Dec 11 | | **TEST #4(Chap 9, 10,11);**  **Prep for Final Exam** | |  |
| *Final Exam:*  Tues., Dec 13 OR  Wed., Dec 14 | | ***“Proctored” Final Exam on Zoom*** | |  |

**College Policies & Resources**

***College Policies***

Students are expected to review, understand, and follow all College Policies. The current academic-related policies are in the [Policies](https://courses.mc3.edu/webapps/portal/execute/tabs/tabAction?tab_tab_group_id=_42_1) tab on the top of the student’s Blackboard page or on the website under all College Policies (<https://www.mc3.edu/about-mccc/policies-and-procedures> ).

# ***Comprehensive Grading Policies***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **GRADED DESIGNATIONS** | | | **INSTITUTIONAL GRADING SCALE** | |
| **GRADES** | **QUALITY POINTS** | **DEFINITION** | **GRADES** | **NUMERICAL EQUIVALENCIES** |
| **A** | **4.00** | **SURPASSES EXPECTATIONS** | **A** | **93-100** |
| **A-** | **3.67** | **A-** | **90-92** |
| **B+** | **3.33** | **ABOVE EXPECTATIONS** | **B+** | **87-89** |
| **B** | **3.00** | **B** | **83-86** |
| **B-** | **2.67** | **B-** | **80-82** |
| **C+** | **2.33** | **MEETS EXPECTATIONS** | **C+** | **77-79** |
| **C** | **2.00** | **C** | **70-76** |
| **D** | **1.00** | **BELOW EXPECTATIONS** | **D** | **60-69** |
| **F** | **0.00** | **ACADEMIC FAILURE** | **F** | **0-59** |
| **XF** | **0.00** | **ACADEMIC MISCONDUCT** | **XF** | **0.00** |

# ***Student Success Resources***

# Students are expected to review and understand the resources that are available to you as a MontCo student to support your personal and academic growth and success. Summaries to the current resources are linked to the tab on the top of the student’s Blackboard page under [Student Success](https://courses.mc3.edu/webapps/portal/execute/tabs/tabAction?tab_tab_group_id=_54_1). Additional Student resources can be found on the website under For students (<https://www.mc3.edu/resources-for/students>).

# ***Free Online Physical and Mental Health Resources for Students***

# The College provides all current students free and unlimited access to telehealth services through our partner, TimelyCare.  TimelyCare offers 24/7 virtual care from anywhere at no cost to you!  You will have access to counselors, doctors, nurse practitioners, and more to address concerns that can be safely diagnosed and treated remotely.  In addition, the MindWise Mental Health Screening confidential online tool and links to other community services are available on the College’s Health and Wellness page. The College’s Health and Wellness page can be accessed via the link “[Wellness Resources” i](https://www.mc3.edu/choosing-montco/resources-for-students/health-and-wellness)n Blackboard.  Recognizing when you need help and taking the steps to get it is a sign of strength that we support!  Signing up for TimelyCare and accessing MindWise is safe, quick, confidential, and totally free (if they are asking for a credit card, you are in the wrong place). If you have questions, please email [Wellness@mc3.edu](mailto:Wellness@mc3.edu).

## ***Class Attendance***

To be eligible for financial aid funds, you must begin attending all of your classes within 1-2 days of the first day of our start date. This entails more than merely showing up for the first session or clicking into the online course on the first day of the semester. If you are not attending, the College is obligated to drop you from the class. If you are attending but doing so irregularly you may be dropped from your class. If you are enrolled in an accelerated online, asynchronous course, attendance equals engagement in course-required activities, not just logging into the course. Please send me an email if you have questions regarding this policy.

# Sometimes circumstances change and plans have to change, too. Here are some things to keep in mind if you find yourself in this situation:

# ***Withdrawal from the Course***

Students initiate the process of course withdrawal after consultation with the instructor and/or an academic advisor/counselor. After the Add/Drop period ends and prior to completion of 60% of the course time, a student wishing to withdraw must submit an official drop/add/withdrawal form. An official grade of “W” (Withdrawal) is assigned to the course. After completion of 60% of the course time and prior to 75% of the course time the student must request and receive permission from the course instructor to withdraw from the course. The instructor completes an online Withdrawal Permission Form and indicates a final course status grade of “W” (Withdrawal). The College’s Registration Calendar outlines specific dates associated with the withdrawal process that must be followed.

***Withdrawal after Deadline***

# For a withdrawal after the deadline due to medical, catastrophic event or other circumstances beyond the student’s control, students can request a withdrawal with supporting documentation. View the Withdrawal section of the Comprehensive Grading policy on the College website.

***Library Services***

In addition to books and dvds, the College libraries provide outstanding online offerings, available 24/7 for current students, including: academic research databases, e-books, online journals, and streaming video. Help is available through online chat, in-person appointments, and at our service desks. The libraries also provide a peaceful place to study, use computers, and do research. To access the online library and for contact information, locations, and hours of operation, visit [library.mc3.edu](https://library.mc3.edu/).

***Emergency Closing Notification***

In the event of an emergency or weather-related closing, the College provides electronic notification for all students, employees, vendors and community members. All are encouraged to enroll in this free, up-to-the-minute electronic messaging service. Participants select their choice of delivery — cell phone or email. It is free to sign up but standard text messaging rates may apply from your service provider. To sign-up for electronic messaging or to update your current account, sign up through [https://www.mc3.edu/txt.](https://www.mc3.edu/choosing-montco/student-experience/campus-safety/emergency-text-alerts)

***Acceptable Use of Technology***

The College views technology and its use in instruction, in service delivery, in advising, in communications as a strategic asset. The College’s commitment to academic freedom and appreciation for creating an environment of free inquiry extends to the electronic information environment. Acceptable use policies preserve the stability and security of our information technology resources, protect the College from inappropriate use, and ensure reasonable accessibility to technology resources for our academic community. These policies govern desktop, network, email, telephone, internet, data security, and software uses of College-managed information technology equipment and resources. The full [Acceptable Use of Technology policy](https://www.mc3.edu/about-mccc/policies-and-procedures/acceptable-use-of-technology) is available on the College website.

***Registration Calendar***

The [Registration Calendar](https://www.mc3.edu/admissions/dates-and-deadlines) is available on the College website.