Boston University Metropolitan College

BOSTON UNIVERSITY
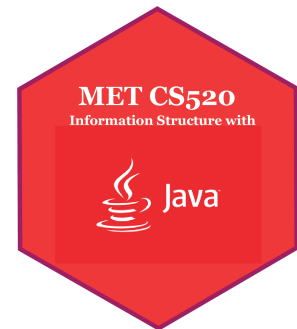
Information Structures with Java

Spring2024 MET CS520 A1 (Thursdays 18:00-20:45 ET)
Course Format (On Campus: CDS 463)

MET CS520
Information Structure with

Java

Instructor Name: Hong Pan, Ph.D., Professor Pan (He/Him/His)
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URL: https://www.bu.edu/csmet/profile/hong-pan/
Student Hours: **Instructor**: Thur 17:30-18:00, 20:45-21:15 ET in CDS 463 in person

Course Description
This course covers the concepts of object-oriented approach to software design and development using the Java programming language. It includes a detailed discussion of programming concepts starting with the fundamentals of data types, control structures methods, classes, applets, arrays and strings, and proceeding to advanced topics such as inheritance and polymorphism, interfaces, creating user interfaces, exceptions, and streams. Upon completion of this course the students will be able to apply software engineering criteria to design and implement Java applications that are secure, robust, and scalable.
Laboratory Course.
Prereq: MET CS 200 or MET CS 300 or Instructor's Consent. Not recommended for students without a programming background. For undergraduate students: This course may not be taken in conjunction with METCS232. Only one of these courses can be counted towards degree requirements.

Course Objectives/Outcomes:
By completion of the course, you will:
- Design and implement programs in the Java programming language based on the object-oriented paradigm for software development.
- Analyze source code and create classes that are best suited to implement the required functionality.
- Use the constructs Java provides for composition, inheritance, and polymorphism to create programs that are scalable, stable, readable, and easy to maintain and understand.

Books and Resources
Required Textbook: **Absolute Java 6th Edition, by Walter Savitch and Kenrick Mock, Pearson, 2016.** Print ISBN: 9780134041674, eText ISBN: 9780134089430. **Included Companion Website Access to Student Resources**:
- **VideoNotes** (Video tutorials illustrating key concepts from the text)
- **Chapter Quiz** (Test your knowledge of material from the textbook)
- **Source Code** (Download source code files that accompany this textbook)
- **Chapter 20: Applets and HTML** (Online bonus chapter in PDF)

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Visit / Contact: Barnes & Noble at BU (Store 480), 910 Commonwealth Ave, Boston, MA 02215. Phone: 617-415-9160, URL: bu.bncollege.com

Section Access Code to Pearson MyProgrammingLab: will be provided in classroom

Recommended Resources:

Contemporary programming languages like Java enjoy rich online documentation. Indeed, they are built on the premise that programmers are continually in contact with such documentation and are not expected to memorize any but a small fraction of it.

- **The Java Tutorials,** by Raymond Gallardo, Scott Hommel, Sowmya Kannan, Joni Gordon, and Sharon Biocca Zakhour. Last Updated 2022/03/04 Read Online | Download Link
- **Think Java: How to Think Like a Computer Scientist,** by Allen B. Downey. Read Online | Download Link
- **Think in Java (4th edition),** by Bruce Eckel, 2011. (covers Java 5/6) Download Link | Code
- **On Java 8**, by Bruce Eckel, eBook | Code (covers Java 8), and Version 2 (December 2021) includes independent supplemental subsections that cover features through Java 17.

Courseware

- **Blackboard** at https://learn.bu.edu/
- **JDK Development Kit 21.0.1** and **Apache NetBeans IDE 20**

Class Policies

- **Attendance & Absences** – This is an on-campus class. Class attendance is **mandatory** and will be recorded, and punctuality is expected. Computer Programming can be a challenging course at times and attending class is essential for your success in this course. If you have to miss a class, please email me as soon as possible in advance.
- **Reading Assignments** are specified in the Course Schedule, and it is recommended to utilize the **Source Code** files and the **VideoNote** provided in Student's Resources and the **Self-Test Exercises** in the textbook (with answers provided at the end of each chapter) in advance, and help form quality questions to be asked and discussed during class meeting time. It is recommended to use the **Chapter Quizzes** provided in Student's Resources and the **Interactive Practic**e via MyProgrammingLab to help check your understanding after each class meeting time, to consolidate your learning and help internalize new knowledge and skills.
- **Homework assignments** will be posted, on Assignment Day specified in the Course Schedule, on Blackboard. You should submit your homework assignments via Gradescope. If you need an extension due to illness, email me BEFORE the homework due date. The homeworks is meant for you to practice solving problems. **Do not search for homework solutions online**.
- **Late Policy**: The assignment due dates are created intentionally to help you manage time effectively, and for you to receive timely formative feedback to facilitate learning. It is expected that you are turning in your assignments by the due dates. Any late

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assignments are not guaranteed to receive timely feedback. **Assignments more than a week late without an official accommodation will result in a 0**.

- **Academic Conduct Code** – Cheating and plagiarism will not be tolerated in any Metropolitan College course. They will result in no credit for the assignment or examination and may lead to disciplinary actions. Please take the time to review the Student Academic Conduct Code: http://www.bu.edu/met/metropolitan_college_people/student/resources/conduct/code.html. This should not be understood as a discouragement for discussing the material or your particular approach to a problem with other students in the class. On the contrary – you should share your thoughts, questions and solutions. Naturally, if you choose to work in a group, you will be expected to come up with more than one and highly original solutions rather than the same mistakes.

Grading Criteria
- **Exams**: There will be 3 in-class 1-hour midterm exams as well as a cumulative 2-hour final exam during the semester **in pencil-n-paper form**, and the *lowest midterm exam score* may be replaced by the final exam score (if the final exam score is higher). All exams will be preceded with review / practice exam sessions.
    - o Exam 1 on 02/15 [5%]: Chapters 1-6
    - o Exam 2 on 03/21 [5%]: Chapters 1-12
    - o Exam 3 on 04/18 [5%]: Chapters 1-20
    - o Final Exam 05/09 [20%]: Cumulative (Chapters 1-20)
- **Class Activities** & **Participation**: [10%]: Students will be given class assignments to work on. To receive full credit, students will need to be present in class, actively participating, and turn in the assignment at the end of the class period. In-person class Exit Ticket activity will be submitted at the end of each class meeting**.** The *lowest 3 scores* will be dropped.
- **Homework Assignments** [25%]: There will be 5 Homework Assignments. This is a programming class, and it is essential that students have practice. Most homework assignments will consist of programming problems from the textbook. Due on the dates specified in the Course Schedule at the beginning of class meeting time. The *lowest score* will be dropped.
- **Reading Quizzes** [10%]: 9 online quizzes will be given weekly at the beginning of class meetings (except for the dates of Exams) to check that you have completed your reading assignments from the textbook and keeping up with the material. No make-up quizzes, and the *lowest score* will be dropped.
- **Final Project** [20%]: The final project is open ended and the topics can be chosen by the students, following a detailed guideline that will be provided on March 7, 2024. In the final project, students will frame and solve problems using quantitative capabilities of Java. Students will present their projects in the final week of the course.
    - o **Initial Proposal**: 1-2 double-spaced pages, due Thursday, March 21 5pm ET
    - o **Final Term Paper**: At least 8 double-spaced pages, due Thursday, April 18 5pm ET

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> o **Final Term Project Presentation**: 5-minute presentation, due Thursday, April 25 6pm ET
- **Reflective Journal**: Keep a personal journal of critical reflections: To reflect on one's own individual journey throughout the learning process, to log important moments of growth and key learning during this process, to reflect on personal development or change in relation to learning, including lessons learned about self, the way of learning, and any accomplishments or challenges. A link to the live google doc of your reflective journal shall be included at the end of each Homework Assignment submission.

Class Meetings, Lectures & Assignments

Week	January 2024							Week	February 2024							Week	March 2024							Week	April 2024							Week	May 2024						
	Su	Mo	Tu	We	Th	Fr	Sa		Su	Mo	Tu	We	Th	Fr	Sa		Su	Mo	Tu	We	Th	Fr	Sa		Su	Mo	Tu	We	Th	Fr	Sa		Su	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5	6	3					1	2	3	7					1	2		12		1	2	3	4	5	6	16				1	2	3	4
	7	8	9	10	11	12	13	4	4	5	6	7	8	9	10	8	3	4	5	6	7	8	9	13	7	8	9	10	11	12	13	17	5	6	7	8	9	10	11
1	14	15	16	17	18	19	20	5	11	12	13	14	15	16	17	9	10	11	12	13	14	15	16	14	14	15	16	17	18	19	20		12	13	14	15	16	17	18
2	21	22	23	24	25	26	27	6	18	19	20	21	22	23	24	10	17	18	19	20	21	22	23	15	21	22	23	24	25	26	27		19	20	21	22	23	24	25
3	28	29	30	31				7	25	26	27	28	29			11	24	25	26	27	28	29	30	16	28	29	30						26	27	28	29	30	31	
																12	31																						

X HW Assigned	**X** HW Due Date	**X** Project Presentation	**X** Midterm Exam	**X** Spring Break, Yay!
X Lecture Only	**X** Weekly Quiz	**X** Course Final Review	**X** Final Exam	**X** Study Period, No Class

Grading Scale for this Course:
Final grades will be assigned according to the following ranges:

A 93.50-100%	B+ 86.50-89.49%	C+ 76.50-79.49%	D+ 66.50-69.49%	F <60%
A- 89.50-93.49%	B 83.50-86.49%	C 73.50-76.49%	D 63.50-66.49%	
	B– 79.50-83.49%	C– 69.50-73.49%	D– 60.00-63.49%	

Our Classroom Community
At Boston University, faculty and students work together to build an equitable and inclusive learning environment. Our aim is to create and maintain a positive and supportive classroom atmosphere where the diversity, backgrounds, and perspectives of all members are valued and respected. The following guidelines will help us work toward this goal and clarify expectations for engagement in this course and with each other.

1. **Cooperative Learning:** While cooperative learning via group discussion is encouraged (and the final grades will not be curved, for the purpose of promoting peer learning), you should write your answers independently. Exam problems will often be similar in nature to assigned homework problems and chapter quizzes. Therefore you are personally responsible for knowing how to do each homework problem (even if you worked in a group on the homework). **So it is important that you understand how to solve the homework problems and chapter quizzes!**
2. **During Class**: No cell phones may be on during class. Laptop computers must be put away during class time, except for class activity time. Tablets (e.g., iPads) may be used only for note-taking, only if flat on the desk like a traditional notebook. Students may not use tablets to look at web pages, play games, etc. **Pencil-and-Paper note taking is encouraged, and Cornell Note Taking Method is recommended.**

3. **Communication:** The best way to contact me is through email. Please give me 48 hours to respond. After that time, please follow up if you have not heard from me in case your email was lost in the shuffle.

Statement of Support
- Take care of yourself. Do your best to maintain a healthy lifestyle this semester by eating well, exercising, avoiding substance abuse, getting enough sleep and taking some time to relax. This will help you achieve your goals and cope with stress.
- All of us benefit from support during times of struggle. There are many helpful resources available on campus and an important part of the college experience is learning how to ask for help. Asking for support sooner rather than later is almost always helpful.
- If you or anyone you know experiences any academic stress, difficult life events, or feelings like anxiety or depression, we strongly encourage you to seek support.

Tips for Success:
1. **Three Simple Rules for Success** (that can benefit anyone who wants to be better in life):
   a. **Know the text**: Complete the reading assignments before class meeting time
   b. **Have a head full of ideas**: Bring questions to the classroom & willing to participate
   c. **Show up on time**: Coming in a few minutes early liberates you, allowing you time to get comfortable and composed before you need to be at your very best
2. **Learning** Object-Oriented Programming (OOP) **by doing** OOP:
   a. **Conceptual understanding** over memorizing
   b. **Experimenting** over being perfect
   c. **Process** over product
3. **Learning OOP is like learning a new language**: <u>**Practice makes perfect!**</u>
4. **Time** commitment and management (**at least 9 hours per week outside of class**) and **practice regularly** (**at least 15 minutes per day** will make a big difference within the short period of a semester).
5. *"The secret of getting ahead is getting started." – Mark Twain*

Syllabus Statement
This syllabus is not a contract. The instructor reserves the right to alter course requirements and/or assignments based on new materials, class discussions, or other legitimate pedagogical objectives.