Data Structures and Algorithms
CS526 B1, Spring 2019

- **Course Format**: On Campus
- **Time and Location**: Tuesday 6:00 – 8:45 PM, PHO 202

- **Instructor**: Jae Young Lee
- **Office**: Room 303, 1010 Commonwealth Ave.
- **Phone**: 617-358-5165, **E-mail**: jaeylee@bu.edu
- **Office Hours**: 4:00 – 5:15 PM, Monday and Wednesday, and by appointment

- Course Objectives

  Upon successful completion of this course, students will be able to:

  1. Describe and illustrate fundamental data structures.
  2. Use fundamental data structures to support the implementation of algorithms.
  3. Given a problem definition, develop an algorithm to solve the problem.
  4. Write an algorithm using a pseudocode.
  5. Illustrate the execution of a pseudocode of an algorithm using a sample input.
  6. Analyze the performance of an algorithm.
  7. Implement a given algorithm using a high-level programming language.
  8. Solve computational problems using algorithms.

- This course is a core course for MSSD and an elective course for MSCIS.
- **Prerequisites**:
  - MET CS300 and either MET CS520 or MET CS521, or instructor consent.
  - Must have knowledge of or experience in at least one high-level programming language, such as Java, C++, C#, Python, etc.

- **Text**: Michael T. Goodrich, Roberto Tamassia, and Michael T. Goldwasser, "Data Structures and Algorithms in Java," John Wiley & Sons, 6th Edition, January 2014.

- **Courseware**: Blackboard Learn

- **Grading**:
  - Midterm: 30%, Final: 30%
  - Homework: 30%
  - Project: 10%

- **Letter Grade**:
  $90 \le G < 94$: A- $94 \le G$: A,
  $80 \le G < 83$: B- $83 \le G < 87$: B $87 \le G < 90$: B+
  $70 \le G < 73$: C- $73 \le G < 77$: C $77 \le G < 80$: C+
  $60 \le G < 70$: D

G < 60: F

Note: Course grades will not be rounded up. For example, a course grade of 93.9 will receive a letter grade A-, not A.

- **Assignment**: There will be 10 homework assignments (the number of assignments is subject to change according to the actual progress of the class) and all assignments include Java programming.

- **Project**: This is a programming project. Details will be discussed in the class.

- **Academic Integrity Policy**
  - 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.
- **Attendance and Absence**: Attendance is not required but strongly encouraged. If a student misses a class it is his/her responsibility to catch up with the material discussed during the missed class.

- **Late Policy**
  - All assignments are due at the beginning of the class on the due date.
  - There is a 2-day grace period.
  - If you submit an assignment beyond the grace period, a penalty of 10% per day will be deducted.

- **Make-up Exam**
  - A make-up examination for the midterm can be arranged only when a student has an emergency (e.g., a medical emergency or an urgent family matter). Students may need to provide the instructor with an appropriate document (such as a letter from a physician).
  - There will be **no make-up exam for the final exam**. If a student cannot take the final exam on the designated day, she/he will receive an incomplete grade.

- **Tentative Schedule**
  - The schedule is subject to change according to the actual progress of the class.
  - Students are strongly encouraged to read book chapters assigned for each lecture before coming to the class.

Week	Date	Lecture	Reading Assignment (Book chapters)
1	1/22	Java review	1, 2
2	1/29	OO design, fundamental data structures	2, 3
3	2/5	Fundamental data structures, algorithm analysis	3, 4
4	2/12	Recursion	5
5	2/19	**No class**	
6	2/26	Stacks, queues, and deques	6
7	3/5	List and iterator ADTs, trees	7, 8
8	3/12	**No class**	
9	3/19	**Midterm**	
10	3/26	Trees, priority queues	8, 9
11	4/2	Maps and hash tables	10
12	4/9	Search trees	11
13	4/16	Sorting and selection	12
14	4/23	Greedy algorithm, dynamic programming	13
15	4/30	Graph algorithms, P and NP	Note
16		**Final Exam**	

- **Communication**
  - All official announcements will be made in the class.
  - All assignments will be posted on the class web page.
  - **Important:** The primary method of communication is through in-class announcements. The class web page is only supplementary. So, if you miss a class you need to talk to a friend in the class or contact me to find out whether there was any important announcement.
  - **Email communication**: When it is necessary to communicate to you, I will send an email to your BU email account. So, you need to check your BU email regularly (e.g., once a day).