

## Abridged Syllabus: Introduction to Discrete Structures

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# 1 Details

<b>Course &amp; Section:</b>	<i>Introduction to Discrete Structures</i> , CISC 2210, MW3
<b>Days &amp; Time:</b>	Mondays, Wednesdays (MoWe), 03:40 PM – 04:55 PM
<b>Location:</b>	Ingersoll Hall, Room 3143 (IH-3143 in short)
<b>Instructor:</b>	Miriam Briskman
<b>E-mail:</b>	<a href="mailto:miriam.briskman@brooklyn.cuny.edu">miriam.briskman@brooklyn.cuny.edu</a>
<b>Response Time:</b>	Within 24 – 48 hours, between 12 PM to 9:30 PM
<b>Office Hours:</b>	Wednesdays, 07:30 PM – 09:30 PM, online through Zoom. Alternatively, please email me to schedule an appointment.
<b>Course Materials:</b>	<p>[Free] <i>Discrete Math</i>, by Mohamed Jamaloodee et al.. Link: <a href="http://ggc-discrete-math.github.io/">http://ggc-discrete-math.github.io/</a>.</p> <p>[Free] <i>A Cool Brisk Walk Through Discrete Mathematics</i>, by Davis Stephen. Link: <a href="http://stephendavies.org/brisk.pdf">http://stephendavies.org/brisk.pdf</a>.</p> <p>[Free] <i>Introduction to Discrete Mathematics: An OER for MA-471</i>, by Mathieu Sassolas. Link: <a href="https://academicworks.cuny.edu/cgi/viewcontent.cgi?article=1183&amp;context=qb_oers">https://academicworks.cuny.edu/cgi/viewcontent.cgi?article=1183&amp;context=qb_oers</a>.</p> <p>[Free] <i>Discrete Mathematics: An Open Introduction</i>, by Oscar Levin. Link: <a href="https://discrete.openmathbooks.org/dmoi3/">https://discrete.openmathbooks.org/dmoi3/</a>.</p> <p>[Free] <i>Notes on Discrete Mathematics</i>, by James Aspnes. Link: <a href="https://www.cs.yale.edu/homes/aspnes/classes/202/notes.pdf">https://www.cs.yale.edu/homes/aspnes/classes/202/notes.pdf</a>.</p> <p>[Free] <i>Applied Discrete Structures</i>, by Al Doerr and Ken Levasseur. Link: <a href="https://discretemath.org/ads-latex/ads.pdf">https://discretemath.org/ads-latex/ads.pdf</a>.</p> <p>[Free] <i>CS202: Discrete Structures</i>, by Saylor Academy. Link: <a href="https://learn.saylor.org/course/view.php?id=67">https://learn.saylor.org/course/view.php?id=67</a>.</p> <p><b>Note:</b> This course uses only free, open-source materials.</p>
<b>Prerequisites:</b>	(CISC 1110 or CISC 1115 or (both CISC 1113 and CISC 1114) or CISC 1170 or CISC 1180 or CISC 1215) and (MATH 1011 or MATH 1012 or assignment to MATH 1201)
<b>Tools/Resources:</b>	Brightspace; Access to a computer (OS doesn't matter); A pdf $\text{\LaTeX}$ compiler or <a href="#">Overleaf</a> ; Adobe Acrobat Reader DC

## 1.1 Course Description

(3 credits) Elementary set theory, functions, relations, and Boolean algebra. Switching circuits, gating networks. Definition and analysis of algorithms. Applications of graph theory to computer science. Related algorithms. Introduction to combinatorial computing and counting arguments. Introduction to error analysis.

(Taken from CUNYFirst.)

## 1.2 Course Objectives

By the end of this course, you will master the following skills:

- Introduction to multiple math topics and tools that a Computer Scientist will benefit from knowing and using.
- Practice typesetting math with  $\text{\LaTeX}$  and compilation of PDF documents.
- Simple proofs of mathematical statements (mathematical induction, indirect arguments) and logical propositions (including quantifiers).
- Functional and relational properties (one-to-one, onto, reflexive, symmetric, transitive, equivalence, partial ordering), and operations (composition, transitive closure).
- Counting principles, countable and uncountable sets. Basic probability theory and applications.
- Big- $\mathcal{O}$  Notation. Recursive definitions and solutions of simple recurrence relations.
- Fundamental concepts of set theory and Boolean Algebra.
- Application of matrices, graphs, and trees as data structures/containers.
- Independent searching and verbal expression of answers based on given sources or your opinion.

Please refer to the Required Electronic Tools and Resources section at the end of the full version of the syllabus for information about how to obtain the software required for this course (for free, of course.)

## 2 Grading Components

The course's grade is influenced by the following components:

<b>Attendance</b>	10%
<b>Participation</b>	15%
<b>Homework</b>	20%
<b>Midterm</b>	25%
<b>Final</b>	30%
<b>Extra Credit</b>	5%

### 3 Grades

Students will receive a letter grade for the course according to the following score distribution established by CUNY:

<60	60-62	63-66	67-69	70-72	73-76	77-79	80-82	83-86	87-89	90-92	93+
F	D-	D	D+	C-	C	C+	B-	B	B+	A-	A

A grade of A+ will be granted for numerical grades of 97 or higher after all extra credit points you received are applied to the grade.

## 4 Important Brooklyn College Policies

### 4.1 Center for Student Disability Services

The Center for Student Disability Services (CSDS) is committed to ensuring students with disabilities enjoy an equal opportunity to participate at Brooklyn College. In order to receive disability-related academic accommodations students must first be registered with CSDS. Students who have a documented disability or suspect they may have a disability are invited to schedule an interview by calling (718) – 951 – 5538 or emailing

[Josephine.Patterson@brooklyn.cuny.edu](mailto:Josephine.Patterson@brooklyn.cuny.edu). If you have already registered with CSDS, email [Josephine.Patterson@brooklyn.cuny.edu](mailto:Josephine.Patterson@brooklyn.cuny.edu) or [testingcsds@brooklyn.cuny.edu](mailto:testingcsds@brooklyn.cuny.edu) to ensure the accommodation email is sent to your professor.

### 4.2 Nonattendance Because of Religious Beliefs

The Brooklyn College undergraduate Bulletin for the years 2025 – 2026 states:

The New York State Education Law provides that no student shall be expelled or refused admission to an institution of higher education because he or she is unable to attend classes or participate in examinations or study or work requirements on any particular day or days because of religious beliefs. Students who are unable to attend classes on a particular day or days because of religious beliefs will be excused from any examination or study or work requirements. Faculty must make good-faith efforts to provide students absent from class because of religious beliefs equivalent opportunities to make up the work missed; no additional fees may be charged for this consideration.

Based on the description above, if you are incapable of attending a class because of religious observance, you should e-mail me at least 48 hours before that class so that proper accommodations could be made. If this is an exam day, we will schedule a make-up exam when it is convenient to you, and if an assignment is due, the due date will be extended, and I will tell you when the new due date is.

### 4.3 Brooklyn College Policy on Academic Integrity

The faculty and administration of Brooklyn College support an environment free from cheating and plagiarism. Each student is responsible for being aware of what constitutes cheating and plagiarism and for avoiding both.

The complete text of the CUNY Academic Integrity Policy can be found at this site:

<https://www.cuny.edu/about/administration/offices/legal-affairs/policies-resources/academic-integrity-policy/>

If a faculty member suspects a violation of academic integrity and, upon investigation, confirms that violation, or if the student admits the violation, the faculty member **MUST** report the violation. Students should be aware that faculty may use plagiarism detection software.

**This means that if you cheat on a test or assignment, I **MUST** file a report which will initiate academic penalties. Additionally, the assignment in which you cheat will get an unfortunate score of 0.**

### 4.4 Brooklyn College Bereavement Policy

Students who experience the death of a loved one should refer to:

<https://www.brooklyn.edu/policies/bereavement/>

### 4.5 Brooklyn College Library

New student? Returning to campus? Looking for materials for your class or research? Check out the plethora of resources that the Brooklyn College Library is providing to you:

<https://library.brooklyn.cuny.edu/resources/>

You will certainly find something useful there!

### 4.6 More Information: Bulletin

For more information about the policies of Brooklyn College and other essential information, please refer to the Bulletin, which you can find on the following web-page:

<https://www.brooklyn.edu/registrar/bulletins/>

## 5 Important Dates

**January 26 (Mo):** Start of Spring 2026 Term

**January 26 (Mo):** First lecture of CISC 2210, section MW3

**February 01 (Su):** Registrar drops everyone waitlisted for Spring 2026 courses

**February 01 (Su):** Last day to add a course

**February 12 (Th):** Lincoln's Birthday: College Closed

**February 16 (Mo):** Presidents' Day: College Closed

**February 16 (Mo):** Grade of W is assigned for officially withdrawing from a course

**February 17 (Tu):** Lunar New Year: No classes scheduled

**March 20 (Fr):** Eid al-Fitr: No classes scheduled

**April 01 – 09 (We – Th):** Spring Recess/Passover/Easter: No classes scheduled

**April 13 (Mo):** Last day to withdraw from a course with a grade of W

**April 21 (Tu):** Conversion Day: Classes follow Thursday schedule

**May 19 (Tu):** Last day of classes!

**May 16 – 26 (Sa – Tu):** Week of Final Examinations for the Spring 2026 Term

Please refer to the Brooklyn College Academic Calendar for the Spring 2026 semester to view other important dates not mentioned above:

<https://www.brooklyn.edu/registrar/academic-calendars/#spring>

## 6 Schedule

Note that the schedule below is tentative; if changes are made, I will notify you and will post the updated syllabus/schedule on Brightspace.

**All assignments, excluding the exams, are due at 11:59 PM EST, on Brightspace.**

Week	Date	Topics, Exams, and Assignment Deadlines
1	01/26 (Mo)	<b>Welcome!</b> Syllabus Review <ul style="list-style-type: none"> <li>• Read the <a href="#">Abridged Syllabus</a> <u>before</u> this lecture</li> </ul>
	01/28 (We)	Topic 1: Discrete Structures: Overview <ul style="list-style-type: none"> <li>• Read slides <a href="#">1 – 16</a> of Topic 1, inclusively, <u>before</u> this lecture</li> </ul>
2	02/02 (Mo)	Topic 1: Discrete Structures: Overview – Cont’ <ul style="list-style-type: none"> <li>• Read slides <a href="#">17 – 28</a> of Topic 1, inclusively, <u>before</u> this lecture</li> </ul>
	02/04 (We)	Topic 2: Sets & Sequences <ul style="list-style-type: none"> <li>• Read slides <a href="#">1 – 20</a> of Topic 2, inclusively, <u>before</u> this lecture</li> </ul>
3	02/09 (Mo)	Topic 2: Sets & Sequences – Cont’ <ul style="list-style-type: none"> <li>• Read slides <a href="#">21 – 54</a> of Topic 2, inclusively, <u>before</u> this lecture</li> </ul>
	02/11 (We)	Topic 2: Sets & Sequences – Cont’ <ul style="list-style-type: none"> <li>• Read slides <a href="#">55 – 66</a> of Topic 2, inclusively, <u>before</u> this lecture</li> </ul>
4	02/16 (Mo)	College Closed: <b>No CISC 2210, MW3 lecture!</b>
	02/18 (We)	Topic 3: Logic & Simple Proof Methods <ul style="list-style-type: none"> <li>• Read slides <a href="#">1 – 18</a> of Topic 3, inclusively, <u>before</u> this lecture</li> <li>• Homework 1 on Topic 1 and the 1st half of Topic 2 due</li> </ul>

Week	Date	Topics, Exams, and Assignment Deadlines
5	02/23 (Mo)	Topic 3: Logic & Simple Proof Methods – Cont' • Read slides 19 – 30 of Topic 3, inclusively, <u>before</u> this lecture
	02/25 (We)	Topic 3: Logic & Simple Proof Methods – Cont' • Read slides 31 – 48 of Topic 3, inclusively, <u>before</u> this lecture
6	03/02 (Mo)	Topic 3: Logic & Simple Proof Methods – Cont' • Read slides 49 – 67 of Topic 3, inclusively, <u>before</u> this lecture
	03/04 (We)	Topic 4: Relations • Read slides 1 – 16 of Topic 4, inclusively, <u>before</u> this lecture
7	03/09 (Mo)	Topic 4: Relations – Cont' • Read slides 17 – 28 of Topic 4, inclusively, <u>before</u> this lecture
	03/11 (We)	Topic 5: Functions • Read slides 1 – 17 of Topic 5, inclusively, <u>before</u> this lecture • Homework 2 on the 2nd half of Topic 2 and 1st half of Topic 3 due
8	03/16 (Mo)	Topic 5: Functions – Cont' • Read slides 18 – 29 of Topic 5, inclusively, <u>before</u> this lecture
	03/18 (We)	Topic 6: Counting & Combinatorics • Read slides 1 – 19 of Topic 6, inclusively, <u>before</u> this lecture
9	03/23 (Mo)	Topic 7: Discrete Probability • Read slides 1 – 11 of Topic 7, inclusively, <u>before</u> this lecture
	03/25 (We)	Topic 7: Discrete Probability – Cont' • Read slides 12 – 20 of Topic 7, inclusively, <u>before</u> this lecture • Homework 3 on the 2nd half of Topic 3 due
10	03/30 (Mo)	<b>Midterm Exam: 03:40 PM – 04:55 PM, at the West End Building (WEB), 1st floor, computers M123 – M188</b>
	04/01 (We)	No classes scheduled: <b>No CISC 2210, MW3 lecture!</b>
11	04/06 (Mo)	No classes scheduled: <b>No CISC 2210, MW3 lecture!</b>
	04/08 (We)	No classes scheduled: <b>No CISC 2210, MW3 lecture!</b>
12	04/13 (Mo)	Topic 8: Recurrence & Recursion • Read slides 1 – 9 of Topic 8, inclusively, <u>before</u> this lecture
	04/15 (We)	Topic 8: Recurrence & Recursion – Cont' • Read slides 10 – 20 of Topic 8, inclusively, <u>before</u> this lecture • Homework 4 on Topics 4 and 5 due
13	04/20 (Mo)	Topic 8: Recurrence & Recursion – Cont' • Read slides 21 – 31 of Topic 8, inclusively, <u>before</u> this lecture
	04/22 (We)	Topic 9: Boolean Algebra • Read <b>TBA</b>

Week	Date	Topics, Exams, and Assignment Deadlines
14	04/27 (Mo)	Topic 10: Matrices • Read <b>TBA</b>
	04/29 (We)	Topic 10: Matrices – Cont' • Read <b>TBA</b> • Homework 5 on Topics 6 and 7 due
15	05/04 (Mo)	Topic 10: Matrices – Cont' • Read <b>TBA</b>
	05/06 (We)	Topic 11: Graphs & Trees • Read <b>TBA</b>
16	05/11 (Mo)	Topic 11: Graphs & Trees – Cont' • Read <b>TBA</b>
	05/13 (We)	Topic 11: Graphs & Trees – Cont' • Read <b>TBA</b> • Homework 6 on Topics 8 and 10 due
Finals	05/20 (We)	<b>Final Exam: 03:30 PM – 05:30 PM, at the West End Building (WEB), 1st floor, computers M123 – M188</b>

– End of CISC 2210 Abridged Syllabus –