

IT 123 - Introduction to Computational Reasoning

Syllabus

Autumn Quarter 2022-2023

Sections 420/421 (Asynchronous Modality)

No scheduled in-person class meetings

Instructor Information

Instructor: M J Davidson, PhD

Instructor E-Mail Address: m.j.davidson@depaul.edu

Office Hours:

Tu – 4:30 – 6:00 PM CT

Wed – 4:30 – 6:00 PM CT

Th – 4:30 – 6:00 PM CT

or by arrangement (request via email)

All Tutorial/Office Hours will be conducted on Zoom (Zoom link for regular office hours will be posted on the course D2L course website)

Important Dates

Consult the DePaul Academic Calendar to find:

- Last date to “swap” sections of this class
- Last date to drop this class (or any class) with tuition refund
- Last date to withdraw from this class (or any class)

<https://academics.depaul.edu/calendar/Pages/default.aspx>

Course Description

IT 123 – Introduction to Computational Reasoning will introduce computational reasoning, a problem-solving process that includes problem decomposition, pattern recognition, abstraction, and algorithmic thinking. Students will learn to formulate a problem statement, then plan and implement a solution.

The course will include a high-level introduction to the Internet, the World Wide Web, and Web application development. Students will create interactive web pages by writing HTML and CSS and by programming in JavaScript. Topics will include the origins and evolution of computers and of the Internet/World Wide Web, the roles and operations of web browsers and web servers, design principles for web sites, creating content for distribution on the Web, and development of interactive Web applications.

IT 123 will also include an introduction to computational tools in a second technological environment (Python). Students will learn the basics of that technological environment and will demonstrate the ability to create original artifacts in that environment.

Students will demonstrate an enhanced knowledge of computational reasoning by comparing and contrasting the work they have done in both technological environments.

Students will demonstrate the ability to discuss the potential harms and benefits of computing in a number of contexts.

Liberal Studies Program - Math and Computing Domain – Computational Reasoning

Students who successfully complete IT 123, will have fulfilled the Liberal Studies Program – Math and Computing Domain – Computational Reasoning category requirement.

Learning Outcomes of the Math and Computing Domain – Computational Reasoning and How They Will Be Met by IT 123

As a part of successful completion of IT 123, students will achieve the following Learning Outcomes of the Math and Computing Domain - Computational Reasoning category:

1. *Apply computational thinking skills to analyze and design solutions to problems or to express a creative concept. Students will complete a series of projects of increasing complexity that rely on computational reasoning skills (Modules 2,4-10). Students will complete a final project that demonstrates their improved ability to apply computational reasoning.*
2. *Develop, express, trace, and analyze algorithms. Students will apply computational thinking techniques, including algorithm creation, to solve a problem humans might encounter (Module 2). Students will trace and analyze algorithms, in the form of project instructions, that are intended to guide program implementation (Modules 4-10, Final Project).*
3. *Apply fundamental concepts of programming in implementing algorithms. Students will complete programs based on algorithms (Modules 4-10, Final Project).*
4. *Create original artifacts using computational tools and techniques. Students will complete projects that result in original artifacts (i.e. Web pages, Python programs) created using computational tools and techniques (Modules 4-10, Final Project).*
5. *Apply computational tools to transform and manipulate data. Students will complete projects that require application of computational tools (i.e. Web pages, Python programs) to transform and manipulate data (Modules 4-10, Final Project).*
6. *Explain the potential harms and benefits of computing in a number of contexts. Students will complete discussion postings that answer forum questions about assigned readings in the required textbook, Blown To Bits, and related articles. Blown To Bits focuses on the history of computing as well as the benefits and harms of computing (Modules 3-10).*

Writing Expectations of the Math and Computing Domain and How They Will Be Met by IT 123

As a part of successful completion of IT 123, students will achieve the following Writing Expectations of the Math and Computing Domain:

IT 123 will require both formal writing (e.g. critical analyses, reaction papers to readings, essays answering questions posed by the instructor, or technical reports) and supplemental written elements that are appropriate for the subject of the course, such as problem-sets, computer code, charts, and diagrams.

1. Students will demonstrate skills in writing at an appropriate level of detail (including the ability to summarize effectively), choosing an effective format, paraphrasing and citation of sources as required, technical accuracy, and quality of expression, including grammar, spelling and word usage.
Students will document the computational reasoning techniques they use to solve a problem humans might face. Students will complete seven journal entries to describe their use of computational reasoning. Students will complete eight discussion postings that answer questions about assigned readings in the required textbook, Blown To Bits, and related articles.
2. Students will be required to write the equivalent of a minimum of five to ten pages, distributed across a series of assignments. Specific types of writing required will be a part of the description of assignments appropriate to the topics covered.
In addition to the above-noted writing assignments, students will complete a final project that will require that they describe their progress in computational reasoning and relate it to the artifacts they have created.

Prerequisites

None

Course Management – D2L

We will use D2L <https://d2l.depaul.edu> for course management.

This course will require a wide variety of materials from many sources. All course materials will be available via links on D2L.

All assignments must be submitted via D2L (Submissions, Discussions, Quizzes) or posted to the course Web server. The assignment description will specify how the assignment must be submitted.

All grades will be posted to D2L.

Course Organization - Modules

This course is organized as a series of ten modules. These modules are sequential. Each module has a series of items *that must be completed during the time frame of the module.*

In D2L, course content will be organized to follow the module structure. That content will include combinations of readings, lecture and power point, video viewing, web-based resources, and discussion boards. Many modules will

require that you complete a project using computer software products. Some modules include quizzes to test your understanding of the module topics. There will be assigned readings in our required textbook, Blown To Bits and other related articles. You will need to post to discussion forums pertaining to those readings. You will need to complete a final project that summarizes your work during the quarter.

Each module on D2L begins with a brief descriptive overview and includes a checklist that is a step-by-step guide of everything you need to do to complete the module and when those things are due. The checklist has several links embedded so you can access online resources directly. You can complete this classwork in a way that suits your schedule within the time frame of each module.

Each module ends at 11:59 PM CT on a Monday.

All assignments for a module will be due by 11:59 PM CT of the last day of the module (Monday). All assignment due dates are posted on D2L.

The Final Project assignments for this class must be submitted before **Monday November 21, 2022 at 11:59 PM CT**, which is during Final Exam Week.

(See the course schedule included in this syllabus for more details.)

Course Modality: Online Asynchronous Learning

This course is an asynchronous online learning course, meaning we won't all be online at the same time. All online learning courses are generally independent in nature, but this is particularly true of asynchronous courses. There are no set meeting times and you are primarily responsible for your own learning. My job as an instructor is to provide you with the tools and vehicles for your learning. I cannot replicate a classroom experience online and I cannot coax you to do the necessary work for the course. ***You must be motivated to complete this course and do the work independently.***

Online asynchronous courses require you to schedule your learning time without the structure of attending a class at specific days and times- you will need to manage your time to be successful in the course! ***Please realize this online course is designed to be the equivalent of an on campus course that has 30 classroom hours and also includes all of the outside preparation and learning time that should go on with such a course (which are many additional hours).*** As such, the amount of time you will need to put into this class is extensive and ***I would recommend strongly that you pace yourself over each week and not leave everything until the very end of a module.*** Students who pace themselves tend to do very well. Students who do not, tend to do quite poorly. There is a relationship between time management and performance in this course! D2L is available to you 24 hours a day 7 days a week- so when you do your work is certainly up to you! Do be vigilant for maintenance and outages that affect D2L access.

Work Required - Assignments

You will complete:

- **a series of projects** that result in Computational Artifacts (e.g. Web pages, Python programs, algorithms). You will submit these artifacts for evaluation.
- **project journals.** These journals will be brief reflections on how you have used computational reasoning in the course of completing assigned projects and outside IT 123.

- **quizzes** that demonstrate your knowledge of course topics.
- **assigned readings in the required textbook, Blown to Bits. You will also read related articles as assigned.**
- **postings to course discussion forums** to reflect your understanding of assigned readings on benefits and harms of computing.
- **a final project** that will summarize your work throughout the quarter.

You must complete all of these assignments by yourself alone. If you have questions about assignments, you should consult your instructor or a CDM tutor.

While you may discuss these assignments with others, you may not use the work of others nor share your own work with others.

You may not communicate with other individuals during quizzes.

When you submit assignments to your instructor for evaluation (whether submitted via D2L or posted to the student web server) you are guaranteeing that you have completed the products yourself, individually.

Publicly sharing or posting online any prior or current materials from this course (including quiz questions/answers and completed assignments) is considered to be providing unauthorized assistance prohibited by the University Academic Integrity Policy. Both students who share/post and students who access or use such materials are considered to be cheating under the Policy and will be subject to sanctions for violations of Academic Integrity.

Any evidence of collaboration or sharing of work or other violations of the rules stated above will be treated as an Academic Integrity violation. Ask your instructor if you have questions about this.

Evaluation

55% Projects, including, projects that result in computational artifacts, computational reasoning/project journals, final project

25% Quizzes

20% Discussion Forum postings - commentary on assigned readings on the potential harms and benefits of computing in a number of contexts.

Due Dates and Late Work

All assignments (projects, project journals, quizzes, discussion threads) for a module will be due before 11:59 PM on the last day (Monday) of the Module. For example, the project, project journal, quiz, and discussion thread posting for Module 2 must be submitted before 11:59 PM (CT) of Monday, September 19, 2022. All due dates will be posted on D2L and are stated on the assignment schedule included in this syllabus.

Discussion responses (in response to a thread) may be posted at any time during the quarter but must be posted **before 11:59 PM (CT) Monday, November 21, 2022.**

The Final Project assignments for the course must be submitted **before 11:59 PM (CT) Monday, November 21, 2022.** No final project work will be accepted after that date/time.

Late Work

Late project submissions will be assessed a 20% penalty per day (or portion of a day) late (after the due date/time). Any project submitted more than 5 days after the due date/time will receive no points/credit.

No late quizzes will be accepted.

No late discussion postings will be accepted.

No late final projects will be accepted.

Grading Scale

Based on 1000 Possible Points**Grades Mapped to Points Earned:**

- A 930 and above
- A- 929-900
-
- B+ 899-870
- B 869-830
- B- 829-800
-
- C+ 799-770
- C 769-730
- C- 729-700
-
- D+ 699-670
- D 669-600
-
- F 599 and below

You will be able to determine your grade status at any time by comparing the number of points you have earned with the number of points available (see D2L | Grades).

Technology Requirements

Windows PC or Apple Mac

Students will need to have access to a personal computer that can communicate with the Internet/World Wide Web.

Students will need to use a personal computer (Windows/PC or Mac) for this class.

Students may use personal computers (Windows/PC Mac) that belong to them or those that are available on-campus in DePaul Computer Labs.

A list of locations of DePaul Labs can be found at DePaul | Information Services | Computer Labs

<https://offices.depaul.edu/information-services/services/labs-classrooms/computer-labs/Pages/default.aspx>

Software required to complete projects for this class will not run on a Chromebook, tablet, or phone.

Software

Specific software requirements will be listed on the D2L course website.

Required software is available for installation on your personal computer free of charge.

Required software is also available on personal computers located at DePaul Computer Labs.

Instructions for obtaining/installing/configuring/using required software will be posted on D2L for the modules that require the software.

Required types of software include:

Text Editor - Students will need text editor software. The class standard software is TextEdit for Mac and Notepad for Windows PC.

File Transfer Program - Students will also need to have a program to upload and download files to and from the World Wide Web. FileZilla software will be the class standard and is available free of charge for both Mac and Windows PC.

Image Manipulation – Students will need software that can reduce the file size of images and perform basic image editing tasks. Recommended software options will be described as a part of the module that requires that software. Many options are available free of charge for both Mac and Windows PC.

Web Browser(s) – Students should have at least two browsers available to test their work. Students should have at least Google Chrome and Mozilla Firefox browsers on their computer. Mac users will have the Safari browser, in addition to Chrome and Firefox.

Python desktop software – available free of charge for Windows PCs and Macs.

Required Textbook

Abelson, H., Ledeen, K., & Lewis, H. R. (2020). *Blown to bits: Your life, liberty, and happiness after the digital explosion. Second Edition*, Upper Saddle River, NJ: Addison-Wesley.

Assigned readings (in pdf format) are posted to D2L in each module.

The full text of the book is available for download under a Creative Commons license



Blown to Bits: Your Life, Liberty, and Happiness After the Digital Explosion is licensed under a [Creative Commons Attribution-Noncommercial-Share Alike 3.0 United States License](https://creativecommons.org/licenses/by-nc-sa/3.0/us/).

Download available at <http://www.bitsbook.com>

You **do not** need to purchase a copy of this book.

Recommended References

The following recommended references will be available as ebook reserves at the DePaul Library.

Links to the reserves will be posted on the D2L course website.

How Computers Work, The Evolution of Technology, Ron White

HTML and CSS: Visual Quickstart Guide , Joe Casabona

Python Crash Course , Eric Matthes

JavaScript Absolute Beginner's Guide, Kirupa Chinnathambi

Computational Thinking for the Modern Problem Solver, Riley and Hunt

E-Mail

Email will be the primary means of communication between your instructor and students enrolled in this course

All enrolled DePaul students have been issued a BlueM@il email address (**username@depaul.edu**) that provided expanded access to software like Office 365 and Zoom.

All DePaul-based communications will be sent to your BlueM@il email address. These communications include any emails from a DePaul office or college, or messages sent from classroom technology such as D2L.

Make sure to regularly log into and check your student email through any of the various Microsoft Outlook apps and/or URLs listed below.

DePaul students can get the Outlook App for personal computers or mobile devices. Ways to check email (use your DePaul login credentials):

- **Outlook web app:** Go to office365.depaul.edu and select the Outlook icon
- **Outlook desktop app:** Go to office365.depaul.edu, log in with your DePaul BlueKey account credentials and [download Office 365 including Outlook](#). Instructions for configuring Outlook for use with BlueM@il can be found [here](#)
- **Outlook mobile app:** Download the Outlook mobile app on [iPhone](#) or [Android](#) Instructions for configuring Outlook for use with BlueM@il can be found [here](#)

E-Mail to your Instructor

When sending e-mail to me, please include your name, the topic/question, and the class ID (IT 123) in the subject of the email.

My goal for e-mail response to student questions sent via e-mail is 24 hours. In many cases, a response will be sent much more quickly. If you send e-mail off-hours (6 pm → 9 am M-F or Saturday or Sunday) you will receive a response during the next weekday.

Tutoring

Tutoring for this course will be provided by the College of Computing and Digital Media (CDM). Students can schedule tutoring at:

<https://www.cdm.depaul.edu/Student-Resources/Pages/Student-Tutoring.aspx>

At this site, IT 123 students should choose a tutor (Find a Tutor) according to the tutor's Area of Expertise – HTML, CSS, JavaScript, Python.

In order to ensure a productive tutoring session, students should carefully review the instructions provided at the website above, be prepared to share course materials/assignments, and have specific questions. Tutors will not complete a student's assignment.

Technical Support Resources

The DePaul Help Desk is available to help students, faculty, and staff with technical issues during the academic year. They can be reached by email at helpdesk@depaul.edu, by phone at 312-362-8765, and online at helpdesk.depaul.edu

Academic Integrity and Plagiarism

This course will be subject to the University's Academic Integrity Policy. More information can be found at <https://offices.depaul.edu/academic-affairs/faculty-resources/academic-integrity/Pages/resources.aspx>

All students are expected to abide by the University's Academic Integrity Policy which prohibits cheating and other misconduct in student coursework.

Publicly sharing or posting online any prior or current materials from this course (including quiz questions/answers and completed assignments) is considered to be providing unauthorized assistance prohibited by the Policy. Both students who share/post and students who access or use such materials are considered to be cheating under the Policy and will be subject to sanctions for violations of Academic Integrity.

Responsible Use of University Resources

As a part of this class, students will post materials to a DePaul University-owned Web server. All students must use these University resources in a way that will represent the University community in a responsible way, representative of the University mission and goals.

The University's statement of Acceptable Use Policy/Network Security governs use of University Computer Resources. It describes acceptable and unacceptable uses of University Computer Resources. If you have any concerns that your actions may violate the policy or have a question about acceptable use, send your inquiry to security@depaul.edu.

The Acceptable Use policy can be found at <https://offices.depaul.edu/secretary/policies-procedures/policies/Documents/Acceptable%20Use%20Policy.pdf>

Diversity, Equity, and Inclusion

DePaul/CDM recognizes the rich diversity of our campus community and seeks to offer all members an equitable, inclusive, welcoming, secure, responsive, and affirming environment that fosters mutual respect, empathy and trust.

Preferred Name & Gender Pronouns

Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the quarter so that I may make appropriate changes to my records. Please also note that students may choose to identify within the University community with a preferred first name that differs from their legal name and may also update their gender. The preferred first name will appear in University-related systems and documents except where the use of the legal name is necessitated or required by University business or legal need. For more information and instructions on how to do so, please see the Student Preferred Name and Gender Policy at

<http://policies.depaul.edu/policy/policy.aspx?pid=332>

Academic Policies

All students are required to manage their class schedules each term in accordance with the deadlines for enrolling and withdrawing as indicated in the [University Academic Calendar](#). Information on enrollment, withdrawal, grading and incompletes can be found at: <http://www.cdm.depaul.edu/Current%20Students/Pages/PoliciesandProcedures.aspx>

Incomplete Grades

An incomplete grade is a special, temporary grade that may be assigned by an instructor when unforeseeable circumstances prevent a student from completing course requirements by the end of the term and when otherwise the student had a record of satisfactory progress in the course. All incomplete requests must be approved by the instructor of the course and a CDM Associate Dean. Only exceptional cases will receive such approval. Information about the Incomplete Grades policy can be found at

<http://www.cdm.depaul.edu/Current%20Students/Pages/Grading-Policies.aspx>

Online Course and Instructor Evaluation

Evaluations are a way for students to provide valuable feedback regarding their instructor and the course.

Detailed feedback will enable the instructor to continuously tailor teaching methods and course content to meet the learning goals of the course and the academic needs of the students. They are a requirement of the course and are key to continue to provide you with the highest quality of teaching. The evaluations are anonymous; the instructor and administration do not track who entered what responses. A program is used to check if the student completed the evaluations, but the evaluation is completely separate from the student's identity. Since 100% participation is our goal, students are sent periodic reminders over three weeks. Students do not receive reminders once they complete the evaluation.

Students with Disabilities

Students seeking disability-related accommodations are required to register with DePaul's Center for Students with Disabilities (CSD) enabling them to access accommodations and support services to assist with their success.

There are two office locations:

Loop Campus - Lewis Center #1420 - (312) 362-8002

Lincoln Park Campus - Student Center #370 - (773) 325-1677

Students can also email the office at csd@depaul.edu

Virtual office www.tinyurl.com/CSDVirtualOffices

Students who register with the Center for Students with Disabilities are also invited to contact Dr. Gregory Moorhead, Director of the Center, privately to discuss how he may assist in facilitating the accommodations to be used in a course. This is best done early in the term. The conversation will remain confidential to the extent possible.

Please see <http://go.depaul.edu/csd> for Services and Contact Information.

Changes to this Syllabus

This syllabus is subject to change as necessary during the quarter. If a syllabus change occurs, an announcement will be posted as a News item on D2L and you will be notified via email to your **BlueM@il email address**.

IT 123 Autumn 2022-2023 - Schedule - Topics and Assignments								
Mod- ule	Topic	Project	Artifact Due	Written Submission	Quiz	Reading	Discussion Posting	Due Date/Time (Monday 11:59 PM CT)
1	Start-up			Survey	Start-up	B-B 2e Ch 1	Intro	September 12, 2022
2	Computational Reasoning (CR)	Apply CR to a problem	CR Problem Solving Case Study	Project Journal	Computational Reasoning Basics	Computational Thinking (Wing)	Computational Thinking	September 19, 2022
3	How Computers, the Internet, and the WWW Work				How Computers, the Internet, and the WWW Work	B-B 2e Ch 2	Digital Explosion and Privacy	September 26, 2022
4	Intro to WWW - HTML	Create basic web pages	Web pages HTML	Project Journal		B-B 2e Ch 3	Who Owns Your Privacy?	October 3, 2022
5	Posting to WWW	Debug components and post to WWW	Web pages posted to CDM server	Project Journal	Intro to HTML, Posting to the WWW	B-B 2e Ch 4	Who's In Charge?	October 10, 2022
6	Beyond HTML -CSS	Add CSS to HTML	Web pages w CSS	Project Journal	CSS	B-B 2e Ch 5	Encryption, Cybersecurity	October 17, 2022
7	Beyond HTML - Javascript	Add Javascript to HTML and CSS	Web pages w Javascript	Project Journal	Javascript	B-B 2e Ch 6	Ownership, Intellectual Property	October 24, 2022
8	WWW Summary	Use HTML, CSS and Javascript	Web pages w CSS and Javascript	Project Journal		B-B 2e Ch 7	Censorship, Protection	October 31, 2022
9	Python	Python - Basics	Hello World plus in Python	Project Journal		B-B 2e Ch 8	Regulation	November 7, 2022
10	Uses of Python	Python Beyond Basics	Python project	Project Journal	Python	B-B 2e Ch 9	What's Next ?	November 14, 2022
Finals Week		Final Project - HTML,CSS,JavaScript posted to the WWW + Reflection Essay						November 21, 2022

IT 123 - Autumn 2022-2023 - Discussion and Readings Schedule				
Module	Discussion Topic	Reading B-B 2e = Blown to Bits, Second Edition	Pages to Read	First Post (Thread) Due before 11:59 PM CT on
1	Intro	B-B 2e Ch 1	B-B Read pp 1-19	9/12/2022
2	Computational Thinking	Computational Thinking (Wing)	Read pp 33-35 (Posted on D2L)	9/19/2022
3	Digital Explosion and Privacy	B-B 2e Ch 2	B-B Read 21-48	9/26/2022
4	Who Owns Your Privacy?	B-B 2e Ch 3	B-B Read pp 51-71	10/3/2022
5	Who's In Charge?	B-B 2e Ch 4	B-B Read pp 75-112	10/10/2022
6	Encryption, Cybersecurity	B-B 2e Ch 5	B-B Read pp 117-148	10/17/2022
7	Ownership, Intellectual Property	B-B 2e Ch 6	B-B Read pp 153-187	10/24/2022
8	Censorship, Protection	B-B 2e Ch 7	B-B Read pp 193-222	10/31/2022
9	Regulation	B-B 2e Ch 8	B-B Read pp 227-261	11/7/2022
10	What's Next ?	B-B 2e Ch 9	B-B Read pp 265-288	11/14/2022
	All Responses to Discussion Threads Due Before 11:59 PM CT on			11/21/2022

Evaluation of Discussion Postings

Discussion threads (first postings to a forum/topic) and responses to another student's thread postings will be evaluated and scored as noted below.

Discussion threads (first postings to a forum/topic) must be made before 11:59 PM (CT) on the last day (Monday) of the Module. For example, the discussion thread for Module 1 must be posted before 11:59 PM (CT) of Monday September 12, 2022. Discussion threads are required for each module. No late threads will be accepted.

Responses to threads/first postings may earn extra credit (maximum of 5 points total per forum/topic). A student must post a discussion thread to a forum/topic before they can post a response to another student's thread posting. The discussion thread posted by the student must earn full credit in order for that student to receive extra credit for a response posting. Students may not respond to their own thread.

Students may post any number of discussion responses, but a student can earn only 5 points total for responses on a forum/topic. A student can earn a maximum of 50 extra credit points for discussion responses.

Discussion responses (responses to a thread) may be made at any time during the quarter, but all responses must be posted **before 11:59 PM (CT) Monday November 21, 2022.**

How Discussion Postings will be Evaluated (Rubric)

Points	Quantity	Quality / Content/ Notes
Thread (First Posting to Forum/Topic) - Required		
0/20	No thread posted to forum/topic before due date/time;	
up to 10/20	one thread posted to forum/topic	Basic comment relevant to the discussion topic
up to 15/20		Basic comment relevant to the discussion topic. Answers all questions posed in the forum/topic Does not meet length requirement
up to 20/20		Basic comment relevant to the discussion topic. Answers all questions posed in the forum/topic Meets length requirement
Response to another student's thread posting - Extra Credit – 5 pt. maximum per forum/topic		
0/5	No response to posting prior to 11:59 PM CT November 21, 2022	
up to 3/5	One or more responses for a forum/topic	Basic comment relevant to the discussion topic responding to fellow student's post, not just agreeing or disagreeing, and why
up to 5/5		Basic comment relevant to the discussion topic responding to fellow student's post with additional, supporting information about why you agree or disagree