UCONN
UNIVERSITY OF CONNECTICUT

**Math 1020Q**
Problem Solving

# Syllabus – Spring 2022

Excluding materials for purchase, syllabus information may be subject to change. The most up-to-date syllabus is located within the course in HuskyCT.

## Course and Instructor Information

**Course Title:** Problem Solving

**Credits:** 3

**Format:** Week 1 and 2 online instruction, in person after that.

**Prerequisites:** Recommended preparation: MATH 1010 or the equivalent. Not eligible for course credit by examination. Not open for credit to students who have passed any mathematics course other than MATH 1010, 1011, 1030, 1060 or 1070.

**Instructor:** PJ Apruzzese (he/him/his)

**Email:** pj.apruzzese@uconn.edu

**Office Hours/Availability**: I'll be holding office hours both online via Webex and in person in MONT 105, times TBA. I am also available by appointment.

During office hours we can discuss what went on in class, I can offer hints to challenging homework assignments, or we can just catch up on whatever you'd like to speak about.

## Course Materials

**Required course materials should be obtained before the first day of class**.

**Textbook:**
**PProblem SSSolving**, 3rd edition, by DeFranco, Vinsonhaler, and Naigles
ISBN-10: 1-285-90866-X, ISBN-13: 978-1-285-90866-3

Required textbooks are available for purchase through the UConn Bookstore (or use the Purchase Textbooks tool in HuskyCT). Textbooks can be shipped (fees apply).

**HuskyCT:**
All course materials, as well as the link to our online course room, can be found at http://www.huskyct.uconn.edu

**Software/Technical Requirements (with Accessibility and Privacy Information):**
The software/technical requirements for this course include:
● HuskyCT/Blackboard ( HuskyCT/ Blackboard Accessibility Statement , HuskyCT/Blackboard Privacy Policy )
● Document editor such as Microsoft Word or Google Docs
● Webex
● Webcam and microphone
● Ability to scan handwritten work in as a single PDF (apps like CamScanner, AdobeScan, or GeniusScan are fine)

For information on managing your privacy at the University of Connecticut, visit the University's Privacy page.

**NOTE:** This course has NOT been designed for use with mobile devices.

*Assignments, course readings and media are available within HuskyCT, in the Course Content link.*

## Course Description

An introduction to the techniques used by mathematicians to solve problems. Skills such as Externalization (pictures and charts), Visualization (associated mental images), Simplification, Trial and Error, and Lateral Thinking learned through the study of mathematical problems. Problems will be drawn from combinatorics, probability, optimization, cryptology, graph theory, and fractals. Students will be encouraged to work cooperatively and to think independently.

## Course Expectations

First, you are expected to come to class each week. I will not be doing much lecturing - you will be working on problems individually and in small groups. You are responsible for everything that happens in class. If you miss a class, you are expected to find out what happened, either from me or one of your classmates. Second, you should expect to do much of your learning outside the classroom, generally spending around 4-6 hours a week working on this class. Problem solving, like most subjects, is learned by doing. Most of all, it is expected that you will get excited about what you are learning and take delight in your own, perhaps unexpected, ability to solve intriguing problems.

## Course Objectives

This course will offer you strategies on how to solve challenging problems, in mathematics and any other endeavor. These strategies will be particularly useful when you can't decide where to begin in solving a problem. It is our belief that you will use what you learn in this class for the rest of your life!

## Class Meeting Schedule

| Week | | Material | Assignment due on date |
|---|---|---|---|
| 1 | | Chapters 1, 2 - Problem Solving, PSSSP | |
| 2 | | Chapter 3 - Be Proactive | Automathography, Class write-up |
| 3 | | Chapter 4 - See it | TicTacToe and Marathon |
| 4 | | Chapter 4 - See it, Chapter 5 - Simplify it | On the Bus, Heap Letter |
| 5 | | Chapter 5 - Simplify it, **Exam #1** | Mystic Rose |
| 6 | | Chapter 6 - Stir it up | Bouncing Ball |
| 7 | | Chapter 6 - Stir it up | Four Cities and More Ages |
| 8 | | Chapter 7 - Pause and Reflect | Checkerboard Chase Revisited |
| 9 | | **Spring Break – no school** | |
| 10 | | Chapters 8, 9 – Interpersonal, Communication | Dating Service |
| 11 | | Estimation | Grappling with Groups |
| 12 | | Review and **Exam #2** | |
| 13 | | Revisit PSSSP and work on Final Project | Key Street |
| 14 | | Revisit PSSSP and review for Final Exam | Stretch # 63 |
| 15 | | Present Final Projects | |

## Course Requirements and Grading

### Summary of Course Grading:

| Course Components | Weight |
|---|---|
| Homework | 50% |
| Midterm Exams (2) | 20% (10% each) |
| Final Project | 15% |
| Final Exam | 15% |

For additional information on undergraduate grading policies see here: https://registrar.uconn.edu/grades/

For additional information on graduate grading policies see here (note that effective Fall, 2020, the grade of A+ no longer exists) https://gradcatalog.uconn.edu/grad-school-info/academic-regulations/#Grades

### Grading Scale:

| Grade | Letter Grade | GPA |
|---|---|---|
| 93-100 | A | 4.0 |
| 90-92 | A- | 3.7 |
| 87-89 | B+ | 3.3 |
| 83-86 | B | 3.0 |
| 80-82 | B- | 2.7 |
| 77-79 | C+ | 2.3 |
| 73-76 | C | 2.0 |
| 70-72 | C- | 1.7 |
| 67-69 | D+ | 1.3 |
| 63-66 | D | 1.0 |
| 60-62 | D- | 0.7 |
| <60 | F | 0.0 |

**Assignment Descriptions:**
*As a general rule, assignments will not be accepted after the due date. If you anticipate being unable to complete an assignment by the indicated deadline, please let me know at least 24 hours in advance so that we can discuss whether an extension is appropriate.*
**If you are discovered cheating or using any unapproved resource you will receive a 0% on the assessment, and will receive a letter of academic misconduct which will be filed to the Office of Community Standards. Multiple offenses may result in a grade of F for the course.**

**Homework:**
Homework will be assigned, handed in, or submitted to HuskyCT, and graded each week. Homework is to be done outside of class and we will not devote extensive class time to the discussion of homework problems. Your written work is expected to be neat, accurate and contain written explanations using full sentences and standard English. If you wish to attach images to your submission, please use the aforementioned apps (page 2, Software Requirements) to create 1 (one) pdf file of your written work. All work must be shown; an answer without a detailed explanation is not worth any credit. It is your responsibility to get help if you can't complete an assignment. You can come to my office hours, work with other students (cite your collaborators), send me email, or use any reasonable method to figure out how to complete your assignments. If you use any outside resources (including other people) you need to cite your sources. Please be familiar with UConn's policy on Academic Integrity.

**Classwork:**
Occasionally you may be asked to submit a write-up on a problem we worked on in class. These write-ups will be either individual or in groups, and will be graded for a combination of completeness and accuracy.

**Midterms**:
Midterms will occur twice during the semester. These exams will be proctored in class.

**Group Project:**
You will be assigned projects during the semester to be worked on in groups. One write-up will be submitted for each group. Projects will be graded on accuracy, creativity, and presentation. We will work on the projects during class time, but significant additional time outside of class will be required to complete them. Groups will be asked to present their project solutions to the class in the last week of classes.

**Final Exam:**
Final exam week takes place from Monday, May 2nd through Saturday, May 7th, 2022. Students are required to be available for their exam during the stated time. If you have a conflict with this time, you must contact the Dean of Students Office to discuss the possibility of rescheduling this exam. Please note that vacations, previously purchased tickets or reservations, social events, misreading the exam schedule and over-sleeping are not acceptable excuses for missing a final exam. If you think that your situation warrants permission to reschedule, please contact the Dean of Students Office with any questions. I cannot reschedule your final exam without approval from the Dean of Students office. Thank you in advance for your cooperation.

## How to Succeed in this Course

The way to ace this class is to take the homework very seriously – it is worth 50% of your grade. Just one missing assignment is worth half a letter grade. Don’t wait until the last minute to start the homework either, they take time. Make sure to explain every step you take in your reasoning. Don’t assume I know anything, write your assignments as if you were explaining it to your intelligent 12-year-old niece.

## Student Authentication and Verification

The University of Connecticut is required to verify the identity of students who participate in online and distance learning courses and to establish that students who register in an online or distance learning course are the same students who participate in and complete the course activities and assessments and receive academic credit. Verification and authentication of student identity in this course will include:

1. Secure access to the learning management system using your unique UConn NetID and password.

## Students with Disabilities

The University of Connecticut is committed to protecting the rights of individuals with disabilities and assuring that the learning environment is accessible. Students who require accommodations should contact the Center for Students with Disabilities, Wilbur Cross Building Room 204, (860) 486-2020 or http://csd.uconn.edu/.

Blackboard measures and evaluates accessibility using two sets of standards: the WCAG 2.0 standards issued by the World Wide Web Consortium (W3C) and Section 508 of the Rehabilitation Act issued in the United States federal government." (Retrieved March 24, 2013 from Blackboard's website)

## Academic Honesty

This course expects all students to act in accordance with the Guidelines for Academic Integrity at the University of Connecticut. Because questions of intellectual property are important to the field of this course, we will discuss academic honesty as a topic and not just a policy. If you have questions about academic integrity or intellectual property, you should consult with your instructor. Additionally, consult UConn's guidelines for academic integrity. Note that cheating or plagiarizing on an assignment may result in a zero for that assignment and/or failure in the course.

As a member of the University of Connecticut student community, you are held to certain standards and academic policies. In addition, there are numerous resources available to help you succeed in your academic work. Review these important standards, policies and resources, which include:

- The Student Code
    - Academic Integrity
    - Resources on Avoiding Cheating and Plagiarism
- Copyrighted Materials
- Credit Hours and Workload
- Netiquette and Communication
- Adding or Dropping a Course
- Academic Calendar
- Policy Against Discrimination, Harassment and Inappropriate Romantic Relationships
- Sexual Assault Reporting Policy

## COVID-19

I understand that we are currently facing a global crisis that is unprecedented in any of our lifetimes. Many of us are new to teaching and learning online, and additional flexibility may be required on all of our parts for numerous reasons. In the same way that I will be more understanding of you while you navigate these unfamiliar technological waters, I hope that you will be more understanding of me while I work on mastering this new technology. We're all in this together!

It may become necessary to shift some of the information in this syllabus. I will communicate with you about any changes as we go through the course. By the same token, if you find that you are struggling to keep up for any reason, please proactively communicate with me so that we can find a solution to help you succeed

## Resources for Students Experiencing Distress

The University of Connecticut is committed to supporting students in their mental health, their psychological and social well-being, and their connection to their academic experience and overall wellness. The university believes that academic, personal, and professional development can flourish only when each member of our community is assured equitable access to mental health services. The university aims to make access to mental health attainable while fostering a community reflecting equity and diversity and understands that good mental health may lead to personal and professional growth, greater self-awareness, increased social engagement, enhanced academic success, and campus and community involvement.

Students who feel they may benefit from speaking with a mental health professional can find support and resources through the **Student Health and Wellness-Mental Health** (SHaW-MH) office. Through SHaW-MH, students can make an appointment with a mental health professional and engage in confidential conversations or seek recommendations or referrals for any mental health or psychological concern.

Mental health services are included as part of the university's student health insurance plan and also partially funded through university fees. If you do not have UConn's student health insurance plan, most major insurance plans are also accepted. Students can visit the **Student Health and Wellness-Mental Health located in Storrs on the main campus in the Arjona Building, 4th Floor,** or contact the office at **(860) 486-4705, or https://studenthealth.uconn.edu/** for services or questions**.**

## Accommodations for Illness or Extended Absences

Please stay home if you are feeling ill and please go home if you are in class and start to feel ill. If illness prevents you from attending class, it is your responsibility to notify me as soon as possible. You do not need to disclose the nature of your illness, however, you will need to work with me to determine how you will complete coursework during your absence.

If life circumstances are affecting your ability to focus on courses and your UConn experience, students can email the Dean of Students at dos@uconn.edu to request support. Regional campus students should email the Student Services staff at their home campus to request support and faculty notification.

COVID-19 Specific Information: People with COVID-19 have had a wide range of symptoms reported – ranging from mild symptoms to severe illness. These symptoms may appear 2-14 days after exposure to the virus and can include:

- Fever,
- Cough,
- Shortness of breath or difficulty breathing
- Chills
- Repeated shaking with chills

- Muscle pain
- Headache
- Sore throat
- New loss of taste or smell

Additional information including what to do if you test positive or you are informed through contract tracing that you were in contact with someone who tested positive, and answers to other important questions can be found here: https://studenthealth.uconn.edu/updates-events/coronavirus/

### Mask and Social Distancing Expectations

To ensure a safe learning environment for everyone, masks/face coverings must be worn at all times when inside buildings, including in the classroom, regardless of vaccination status. If a student is not wearing a mask/face covering, they will be asked by the instructor to put one on immediately or leave the classroom. Repeatedly failing to follow this expectation will result in a referral to Community Standards. Activities that involve temporarily removing the mask, such as eating or drinking are not allowed. Please leave the classroom for such activities. If an instructor is not wearing a mask/face covering, students should feel comfortable asking the instructor to put one on immediately. More information about proper usage of masks is available from UConn Environmental Health and Safety at this link.

**Although social distancing will not be required inside classrooms for vaccinated individuals, please be respectful of the wishes of others who prefer to maintain social distancing. For their own protection, unvaccinated individuals are requested to maintain 6 feet social distance from others.**

## Help

Technical and Academic Help provides a guide to technical and academic assistance.

This course uses the learning management platform, HuskyCT. If you have difficulty accessing HuskyCT, you have access to the in person/live person support options available during regular business hours through the Help Center. You also have 24x7 Course Support including access to live chat, phone, and support documents.

## Student Technology Training

Student technology training is now available in a new HuskyCT short course created by students for students. It will prepare you to use the IT systems and services that you will use throughout your time at UConn, whether learning online or on-campus. It is available at https://lms.uconn.edu/ultra/courses/_80016_1/cl/outline

## Evaluation of Course Experience

Students will be given an opportunity to provide feedback on their course experience and instruction using the University's standard procedures, which are administered by the Office of Institutional Research and Effectiveness (OIRE).

The University of Connecticut is dedicated to supporting and enhancing teaching effectiveness and student learning using a variety of methods. The Student Evaluation of Teaching (SET) is just one tool used to help faculty enhance their teaching. The SET is used for both formative (self-improvement) and summative (evaluation) purposes.

Additional informal formative surveys and other feedback instruments may be administered within the course.

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