

CSci 2312 Discrete Structures II - 3 credits - Vora

Fall 2016 schedule:

Lectures: Tuesday and Thursday, 4:45-6:00 pm, SEH 1300-1400

Discussion Section: Monday, 12:45-2:00 pm or Wednesday, 9:00-10:15 am, **beginning 12 September.**

Instructor: Poorvi Vora, SEH 4610.

Instructor Office Hours: Tuesday and Thursday: 12:00-1:00 pm

GTAs: Cheng Tang and Maya Shende

TA Office Hours: TBD

If the TA or the instructor is unable to hold office hours, this will be announced on Piazza or in class.

Course Website: On Piazza.

Purpose of course: To provide an introduction to some discrete structures and mathematics used in computer science, such as: algorithmic number theory and graph theory. To build on the mathematical reasoning skills related to computer science concepts, as begun in CS 1312 (Discrete Structures I). CSci 2312 satisfies a mathematics requirement in the undergraduate CS curriculum at GW.

Course content: Algorithmic number theory, graph theory, advanced recurrences, sums and approximations.

Prerequisites: Introductory discrete math and single-variable calculus.

Text: Susanna Epp, "Discrete Mathematics with Applications", 4th Edition, 2011

Grading: HWs (20%), quizzes and participation in lectures and online on Piazza (20%), three tests (10% each), final (25%), discussion session (5%). HWs are due by 6 pm on the due date. Late HWs are not allowed. **You will not be allowed the use of laptops, PDAs or calculators and similar devices during quizzes, tests and finals.**

Policy on collaboration: All examinations, papers, and other graded work products and assignments are to be completed in conformance with The George Washington University Code of Academic Integrity. While you may study in groups, you may not discuss HWs among yourselves.

Each student is expected to work out the HW problems and write his or her own HW out independently. You may not look for HW answers anywhere other than in the text and in the notes and handouts provided in class or links provided on the course website.

While you are encouraged to discuss the class material on Piazza, **you may not discuss HW problems nor give out hints to the HW problems on Piazza.**

You may not collaborate with others on the final, the tests or the quizzes.

Any violations will be treated as violations of the Code of Academic Integrity.

Accommodation: Any student who may need an accommodation based on the potential impact of a disability should contact the Disability Support Services office at 202-994-8250 in Rome Hall, Suite 102, dssgwu.edu to establish eligibility and to coordinate reasonable accommodations. For additional information please refer to: <http://disabilitysupport.gwu.edu/>

Syllabus: This is a tentative syllabus. **You will have assigned reading before many classes. There will be a short quiz at the beginning of each discussion session. There will be a quiz at the end of each Thursday class. There will be a HW due most Tuesdays.** Quizzes and HWs may cover any material that was taught in class, and can include questions on recent reading material. The final exam will be scheduled by the university.

Weeks 1-5: *Module I: Number Theory* (5 weeks) Chapters 4 and 5

Divisibility. Congruence modulo n . Multiplicative inverses. GCD. Euclidean algorithm for GCD.

Weeks 6-9: *Module II: Graph Theory and Communication Networks* (4 weeks) Chapters 7 and 8

Graph coloring, planar graphs.

Weeks 10-12: *Module III: Sums, Approximations and Asymptotics* (3 weeks) Chapters 10.4 and 11

Approximating sums (Taylor's theorem) asymptotic notation.

Weeks 13-14: *Module IV: Algebraic Structures* (2 weeks) from instructor notes

Groups, rings, fields, homomorphisms, isomorphisms.

27 September: Test 1; 20 October: Test 2; 17 November: Test 3

If you wish to avail of a religious accommodation on a test date, please let the instructor know in the first week of class.