BILL, RECORD LECTURE!!!!

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Today:
Admin,
Ramsey Theory and Its "Applications"

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Necessary Administrative

Everything in these slides is also on the written syllabus on the course website.

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Course Webpage:
https://www.cs.umd.edu/users/gasarch/COURSES/752/S25/index.html

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1. Taught by William Gasarch. Tu-Th 3:30-4:45 in CSI 3117.
2. TAed by Adam Melrod and Isaac Mammel.

Necessary administrative stuff

- Course Website: Will post slides, notes, and HW there.
- Elms: will post recording.
- Gradescope: you will **submit HW** there.
- Gradescope: we will **grade HW** there.
- Regrade requests due within a week of the HW being graded.
- Piazza is great for asking questions.

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IF you are auditing this class for whatever reason- perhaps you are having a hard time getting permission to take it, or perhaps you like the material but don't want to take it, let me know and I will put you on the class email list and invite you to join the Piazza.

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- Appointments (possibly on zoom, possibly at night)

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- There may be some short programming project. (This is **not** a course like **CMSC 412** where the project IS the course.)

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- There will be one take home midterm, one take home final.

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I am not sure why you are telling me about **time stamps**, but, as the kids say, whatever.

Textbook

Required or Recommended Text None.

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Ramsey Theory and its "Applications"

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Ramsey's Thm for 2-col Graphs $\forall k \; \exists n = R(k)$ such that the following happens: For all $\mathrm{COL}: \binom{[n]}{2} \to [2]$ there exists $A \subseteq [n]$, $|A| = k$, such that $\mathrm{COL}: \binom{A}{2}$ is constant.

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Van der Waerden's Thm for 2-coloring of $\mathbb{N}$ For all k there exists $W = W(k)$ such that the following happens: For all $\mathrm{COL}\colon [W] \to [2]$ there exists a mono k-AP.

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   to math competitions (I'm on the UMCP HS Math Competition Committee.)

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