MATH 20: PROBABILITY

Course Overview

Xingru Chen
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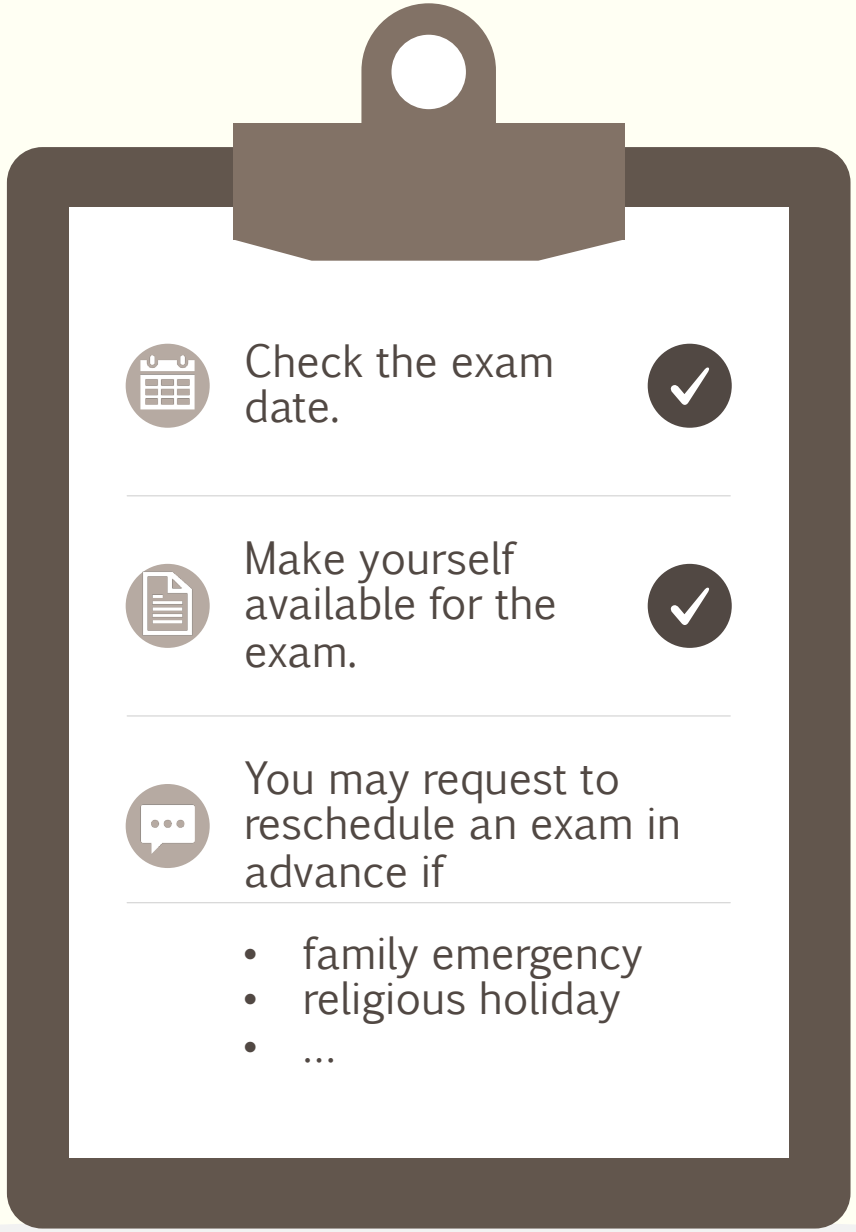
Course Description

- Instructor
  - Xingru Chen
  - Email: xingru.chen.gr@dartmouth.edu
  - Lab webpage: https://fudab.github.io/
- TA
  - Maria Roodnitsky
  - Email: maria.roodnitsky.22@dartmouth.edu
- Canvas
  - https://canvas.dartmouth.edu/courses/40894

- Course time
  - live sessions
  - MWF 11:30 am - 12:35 pm
- X-hour
  - live sessions
  - Tu 12:15 pm - 1:05 pm
- Office hour
  - by appointment

Important Dates

01	July 20	Midterm 1
02	August 10	Midterm 2
03	August 29	Final
04	...	...



Course Components

Class & X-hour

Zoom

frequency: three times a week
frequency: at most once a week (use if needed)
recordings: assessible

Live Session | 65 or 50 minutes

Office Hour

Zoom

frequency: depending on individual needs
duration per appointment: 15/30 minutes

By Appointment | 15/30 minutes

Tutorial

Zoom

frequency: once a week

Live Session | 2 hours

Quiz

Canvas

frequency: twice a week
post: Monday & Wednesday
due: 24 hours later
workload: 10 minutes

24 hours | 10 minutes

Homework

Canvas

frequency: once a week
post: Friday
due: a week later
workload: 3 hours

1 week | 3 hours

Exam

Canvas

frequency: three times
post: July 20, August 10, August 29
due: 24 hours later
workload: 3 hours

24 hours | 3 hours

Weekly Blueprint

Monday

Zoom, Canvas

class 11:30 am – 12:35 pm
homework return & quiz post 11:00 pm

Class | Homework | Quiz

Tuesday

Zoom, Canvas

office hour 9:00 am – 11:00 am
X-hour 12:15 pm – 1:05 pm
quiz due 11:00 pm

X-hour | Quiz | Office Hour

Wednesday

Zoom

class 11:30 am – 12:35 pm
office hour 2:00 pm – 4:00 pm
quiz post 11:00 pm

Class | Office Hour

Thursday

Canvas

office hour 11:00 am – 1:00 pm
tutorial 7:00 pm – 9:00 pm
quiz due 11:00 pm

Quiz | Office Hour | Tutorial

Friday

Zoom

class 11:30 am – 12:35 pm
homework post 11:00 pm

Class | Homework

Next Friday

Zoom, Canvas

homework due 11:00 am
class 11:30 am – 12:35 pm
homework post 11:00 pm

Class | Homework

Tools

Canvas

General

- syllabus
- other information

Class & X-hour

- slides
- recordings

Quiz

- taking
- solutions

Homework & Exam

- downloading
- submitting
- returning
- solutions

Zoom

Class & X-hour

- room number **749 767 7524**
- password **sm20m20**

Office Hour

- room number **749 767 7524**
- password **sm20m20**

Email

Instructor

- xingru.chen.gr@dartmouth.edu

TA

- maria.roodnitsky.22@dartmouth.edu

Zoom

Tutorial

- room number **252 500 5829**
- password **no password**

Calendar Booking

Office Hour

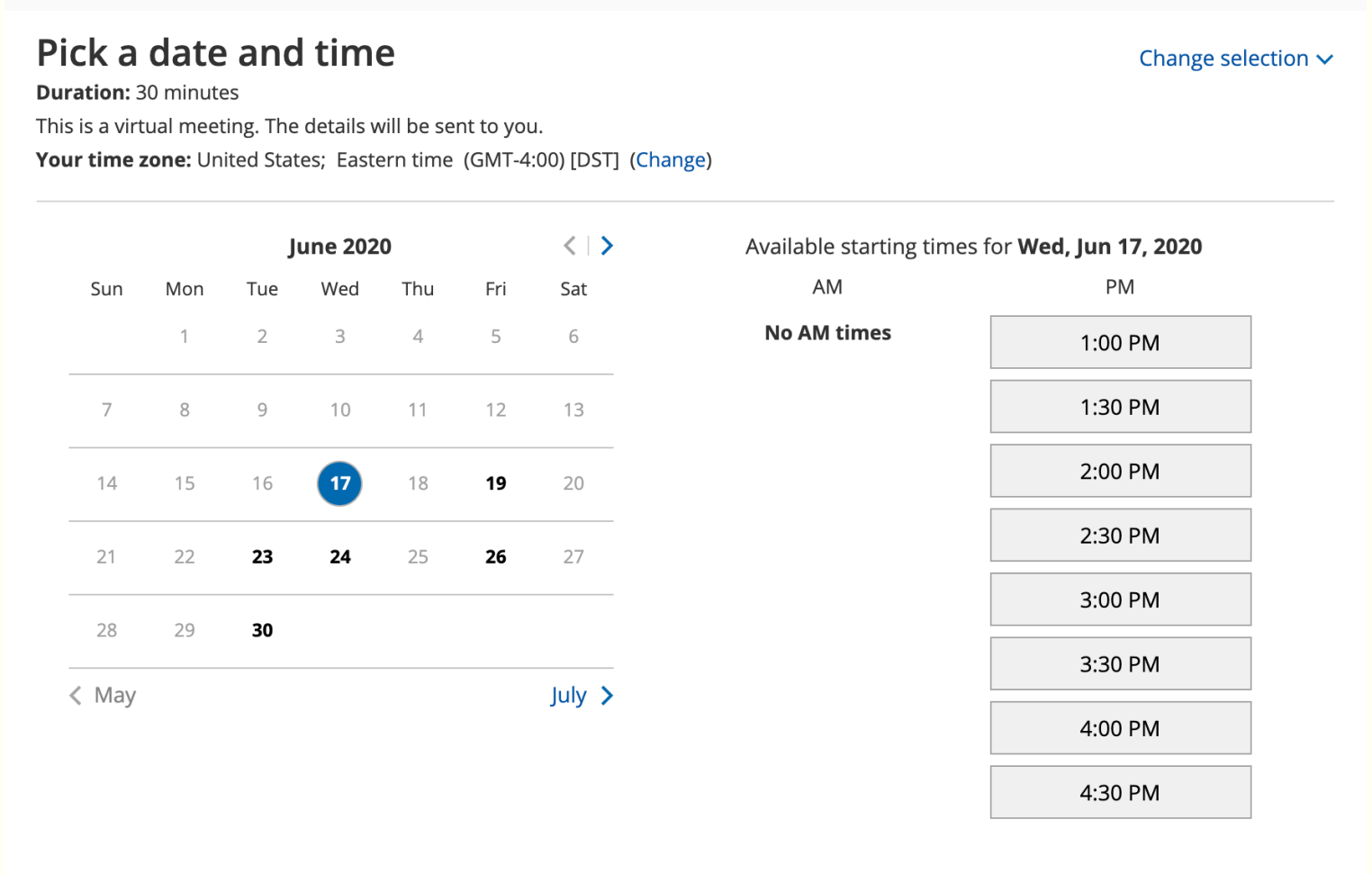
- https://go.oncehub.com/XingruChen

Tools

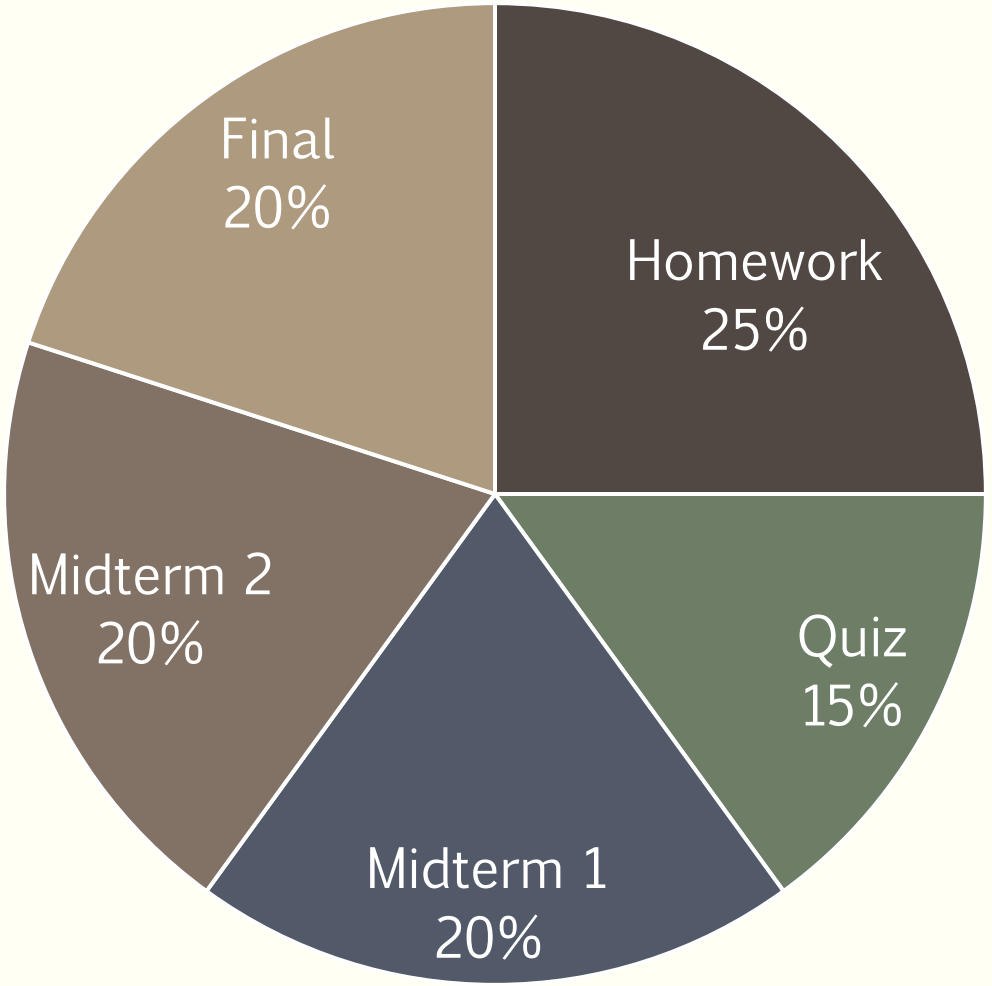
Calendar

Office Hour

- https://go.oncehub.com/XingruChen



Grading Formula



Textbooks

Primary (free available on the internet)

Introduction to Probability (2nd Rev Ed), Charles M. Grinstead & J. Laurie Snell, American Mathematical Society (1997).

01

02

Secondary (Wiley classics)

The Elements of Stochastic Processes – with applications to the natural sciences, Norman T. J. Bailey, John Wiley & Sons (1964).

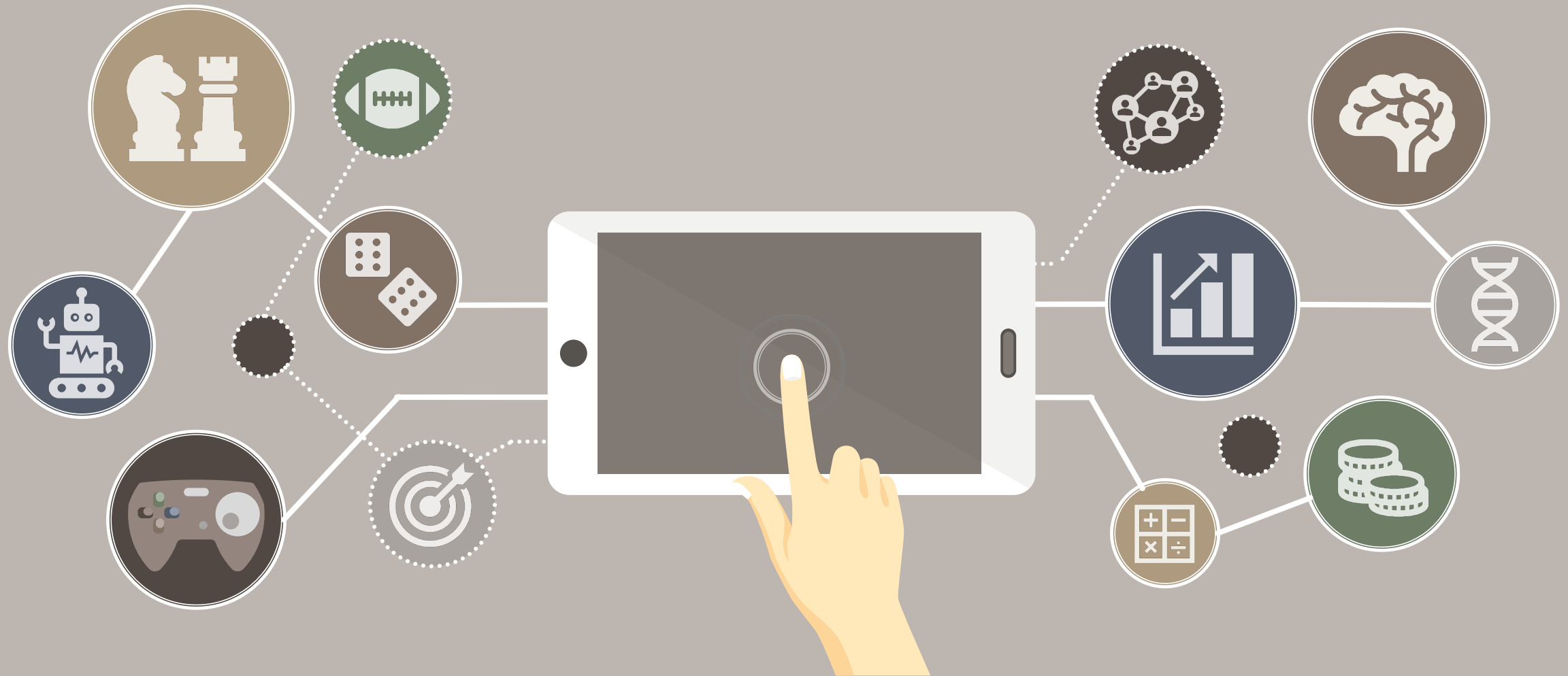
Graduate Level

A First Course in Stochastic Processes (2nd Ed), Samuel Karlin & Howard M. Taylor, Academic Press (1975).

03

Syllabus

We aim to cover the book by **Grinstead and Snell** with emphasis on a number of important **applications** that would be helpful to your future career.



Concept

random variables (discrete and continuous)
independence and conditioning
...

01

02

Calculation

(conditional) probability
expectation, variance, standard deviation, …

Theorem

Bayes Formula
Law of large numbers
Central Limit Theorem

03

04

Application

random walks, Markov chain, …