# NE529
# RISK ASSESSMENT
## Introduction to the course
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## What is this course about?

(1) What is risk assessment?

(2) What kind of work is done?

(3) Where is risk assessment applied?

Understanding the risk paradigm

The course is research driven and focused on developing *transferable skills*

*Research is a higher level of learning*

# Social media and online content

**Twitter**
@TheDoctorRAB

**GitHub**
TheDoctorRAB

## What to get out of the course

Understanding risk assessment tools

Developing skills to implement them – scientific computing, critical thinking, writing

Interpreting risk perception

Critiquing constraints of risk assessment

Gaining engineering judgement

You're adults. You get what you put in

## Workload

Three credit course

How much time will you put in (average) each week?

Assignments usually require outside research

Collaboration is encouraged because that is what happens in the real world

Everyone hands in their own assignments though

Email homework as pdf to *gmail address* with NE529 in the subject title

## Textbook suggestions

(1) Risk assessment: Tools, techniques, and their applications, 2nd ed. Lee T. Ostrom, Cheryl A. Wilhelmsen, 978-1119483465 (2019).

(2) Risk Assessment in the Federal Government: Managing the Process. National Research Council, 0-309-59880-X (1983).

(3) Guidelines for Hazard Evaluation Procedures, 3rd Edition. Center for Chemical Process Safety, 978-0-471-97815-2 (2008).

Loosely based on the first book

No specific reading assignments but it's expected you're reasonably prepared for each class period

# Pedagogical approach

Context based learning

That means 'student-driven'

Talking at you isn't the best use of our time

Homework presentations for each class

Regular participation is expected

# Class management

Piazza will contain all the course materials

We also use this for discussion outside of class

Still trying to convert to Canvas

Don't email class questions

Someone else might have the same question

Someone else might have a better answer than me

## Prerequisites

Assumed you've had most engineering courses (linear algebra, statics, etc.)

I am not teaching these subjects

Learn a real graphing program – **NO EXCEL GRAPHS**

VLab has some software

Or use my python routine on my github

Some math is needed

Being able to describe phenomena with math is important skill in research

Largely qualitative, but there is a lot of good analysis that can be derived from these tools

## Learning modules

(1) Probability and statistics

(2) Preliminary Hazards Analysis (PHA)

(3) Failure Modes & Effects Analysis (FMEA)

(4) Fault & event trees

(5) Risk management

(6) Human Reliability Analysis (HRA)

(7) Probabilistic Risk Assessment (PRA)

(8) Maybe cybersecurity

Guest lecturers – taking suggestions – post ideas on piazza

**Techne**
Human skill based on a set of principles derived from practices and capable of being taught

**Epistme**
Knowledge, which consists of knowing why or knowing that

**Praxis**
The end of which is realized in the very doing of the activity

**Phronesis**
Practical wisdom