What is software engineering? No perfect definition but we can decompose into software and engineering.
Software = Code, Documentation, Designs, Test Cases, Plans.
Software is much more than just the code inside a programming language, such as things that help the user as well as things that help the process the program itself.
Limiting the definition of Software to just the code is incredibly restrictive in one’s thinking of the idea of software.
Lots of branches of engineering - Computer Engineering, Electrical Engineering, Etcetera.
Application of Scientific Principles - Chemical Engineering, Difficult because need to apply these principles onto entities, safety, business practice.
Same for Computer Science - Networking Theory, Coding, need to apply these ideas onto real world scenarios, thus the “engineering” aspect.

David Parnas and Brian Randell: Software Engineering is “The multi-person development of multi-version programs.”
Interesting because you are writing programs for multiple people to use as opposed to writing something just for yourself by yourself. Hence, multi-person development.

Software is often multi-version, versions over time: Windows 7/8/10/etcetera. Why would companies make multiple versions at the same time? Student versus Professional?
Allows the company to make more money as different consumers have different needs.
Some people are willing to pay the premium while others are not.
Another instance of different versions - different versions over different platforms, PC vs. Mac.
Different versions also include new features as well as the fixing of bugs and flaws of older versions.
Different versions for different countries, metric versus imperial, language, cultural reasons, etcetera.

Focus of the class: The process of constructing software, the phases of development other than programming, and the principles and qualities of enduring value.

The process of constructing software - Analyze how the software was created.
Example: Shirt, how did the shirt come to be? Where was the cotton grown, why cotton over different fabrics? Who knitted the shirt?

The course does not discuss programming very much, there are other aspects that are analyzed.
We must find out what the software is, software requirements - talk to the customer,
market research.

Design specifications - Once you know what to do (x,y,z), you need to chose language, data structure, etc. Coordinate with other programmers.

While actual programming will not be on the test, programming nomenclature will be included.

Quality Assurance - Test for certain qualities - safety, ease of use, is it hack-able, etcetera.

Principles and qualities of enduring values - Separation of concerns: One engineer understands accounting and talking to the customer while one is a better programmer. Thus, the two engineers have different concerns. Constructing a building - plumber vs. electrician.

Software Engineering has many aspects that are harder to see than others. Elephant example, can only see one part of the elephant, each individual is truthful in what they understand, but cannot understand the totality of the elephant essence. Software Engineering is the elephant, we are blind to software, we can see the code, but the code is only one aspect to the software. Cannot see the execution of the code, nor the innards of the software itself. Doctor with patient: height, skin color, etc. Innards = heart beating, etc.

What parts can people see with software?
User - the user interface
Programmer - source code
Electrical engineer - semiconductors, transistors, power supply
Society - impact, output, trends, danger

We are all software users, thus we often adopt an user perspective of software.

[0:24:00 – 0:30:00] Syllabus time

We will use piazza, you all need to sign up.
No talking in class, Frost is very particular about talking in class, shushes people too much.
If he can hear you, your peers can hear you.
Only use computer for taking notes in class.
Don’t bring in fragrant food.

The calendar will be filled in, two midterms, final exam - Thursday of Finals Week, same room.
There are reading assignments, both within the textbook as well as outside articles.
Overheads are available on the class website.
All lectures will be videotaped, links on website, leads to youtube.