

Introduction to Computer Networks Online

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Vital Information

- Course : 電腦網路導論
- Taught by : 黃寶儀
- Class No. : EE4020
901E31110
- Credit : 3 units

Special Course

- Sponsored by NTU/MOE
- Designed to promote
 - Interaction (not just student-instructor)
 - Independent/team problem solving
 - Tolerance to different perspectives (justify your own solutions/opinions)
- Space limited
 - due to course nature and resource constraint

100% Online

- Lectures and Quizzes on [YouTube](#)
- Quizzes and Q&A on [Slack](#)
- Exams as [Google Forms](#)

99% in English

- All Communication in English, including
 - Lectures
 - Homework
 - Exams
 - In/off-class interaction
- One slight exception
 - You may fall back to Chinese during the live sessions if you are really short of words

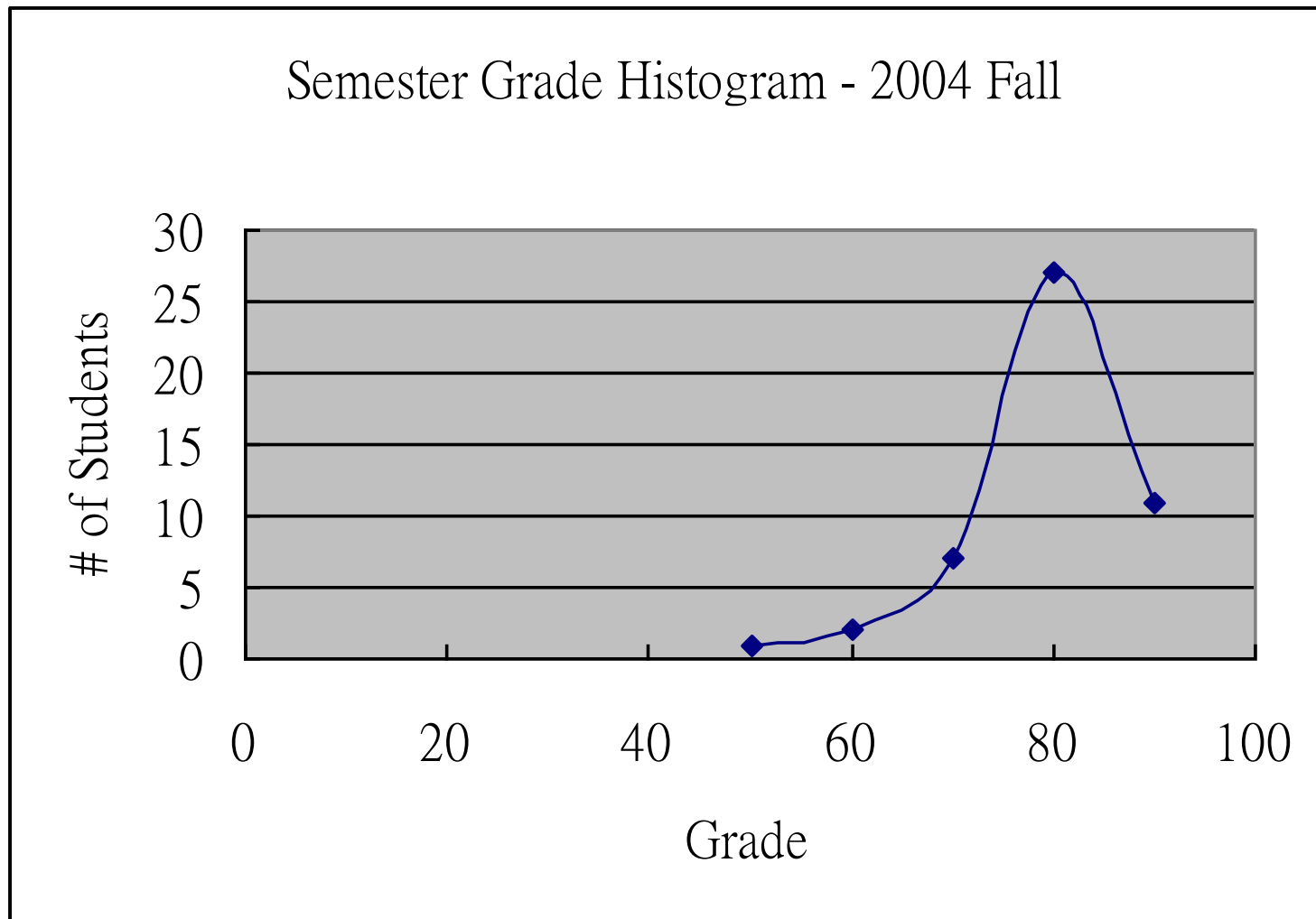
Be Aware

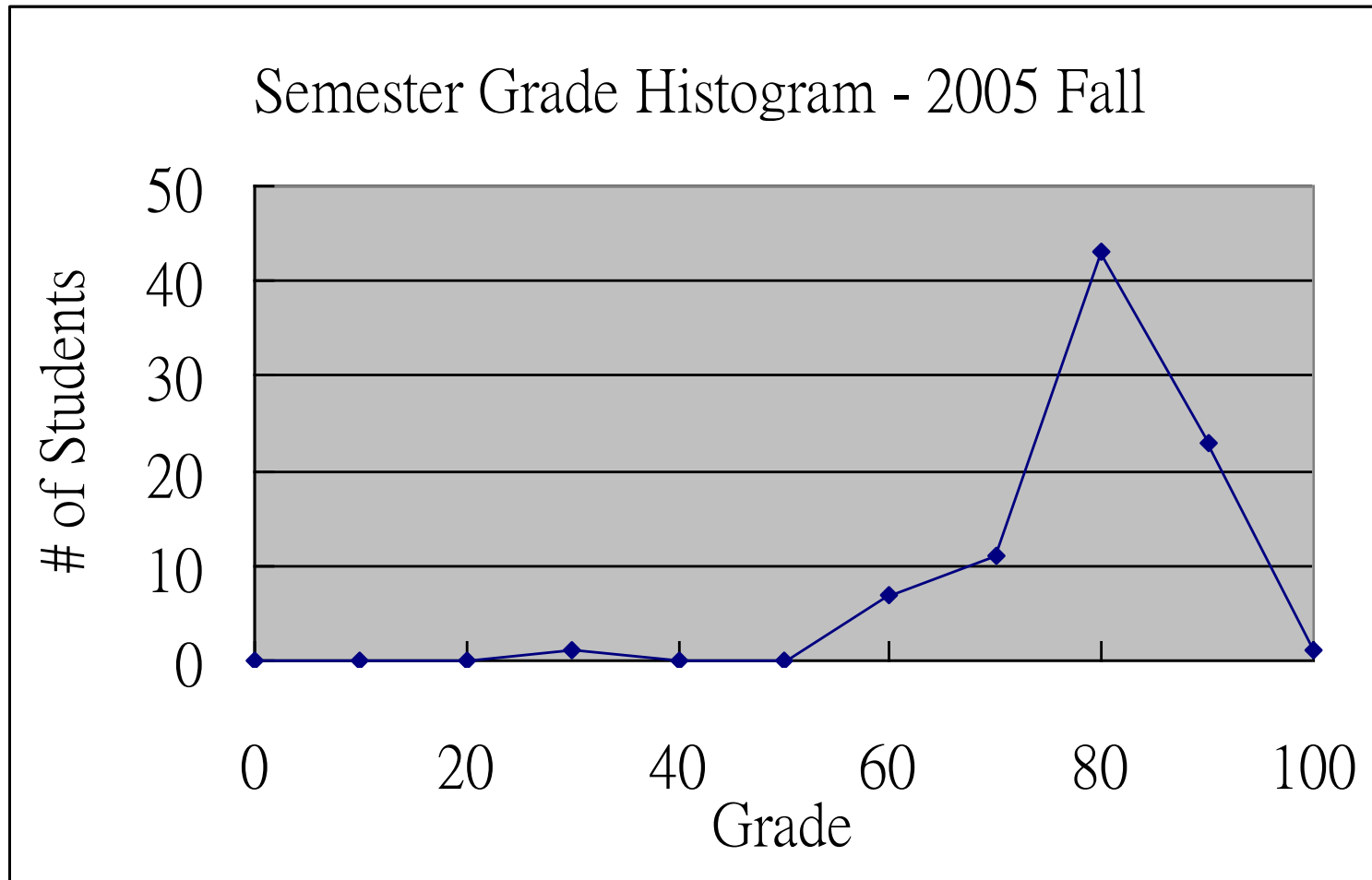
- Credits are granted only when the English is **comprehensible**
 - Keep your words/sentences simple
 - The point is to communicate

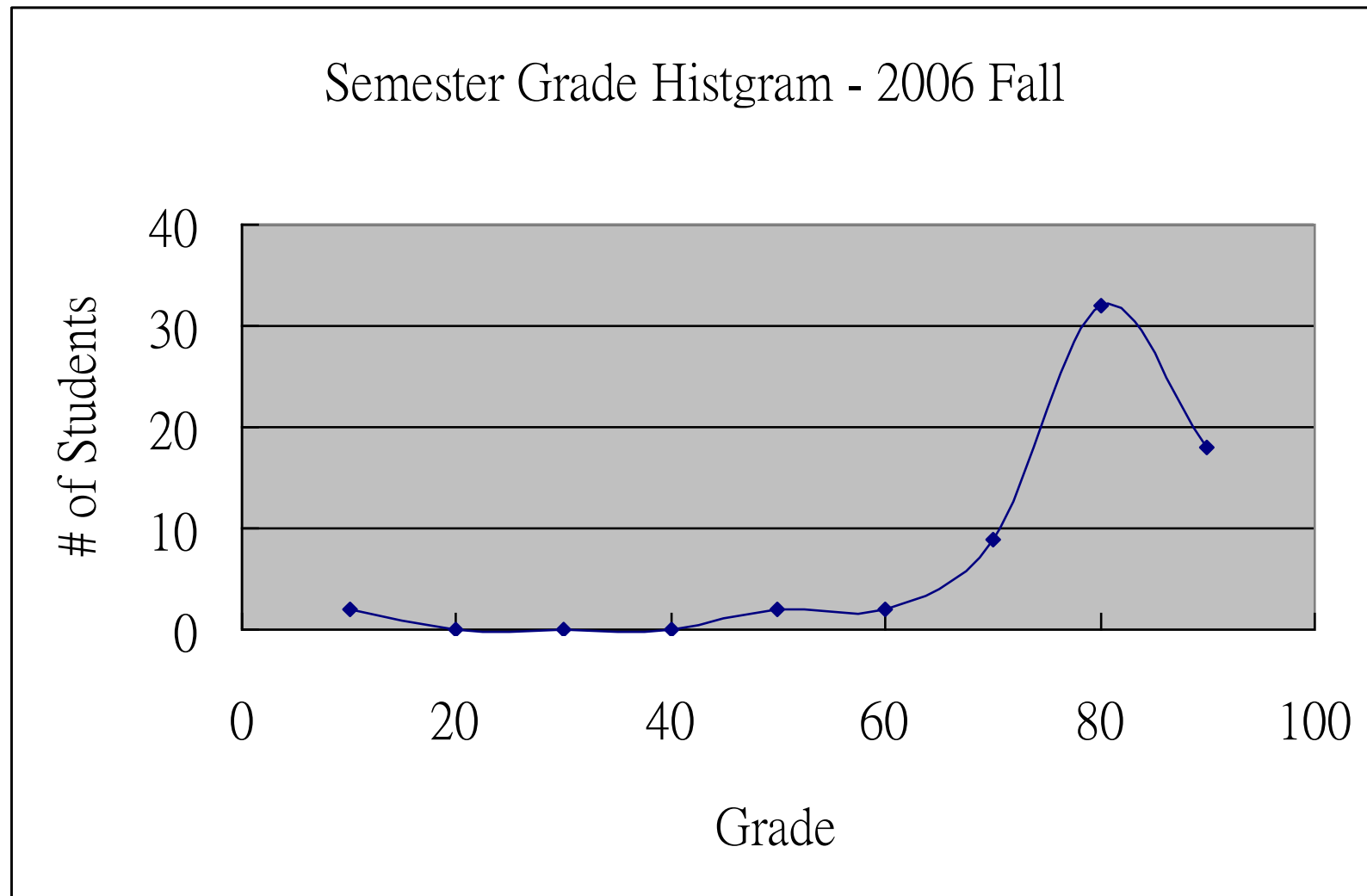
Add Code?

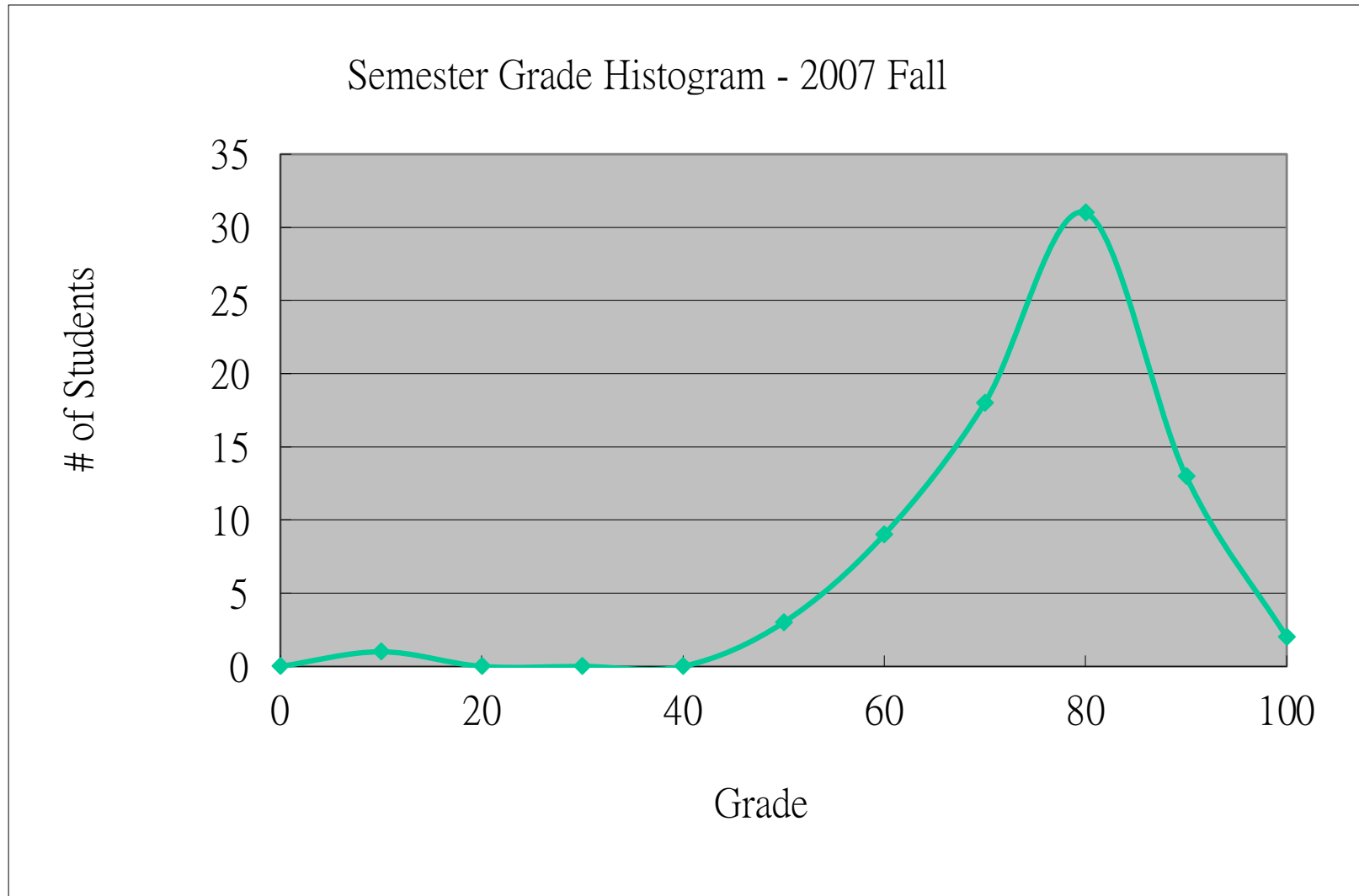
- Due to the online format
 - hopefully low 30s...
- First come, first serve
 - by email
 - State your name, dept, year

Polly is not nice!

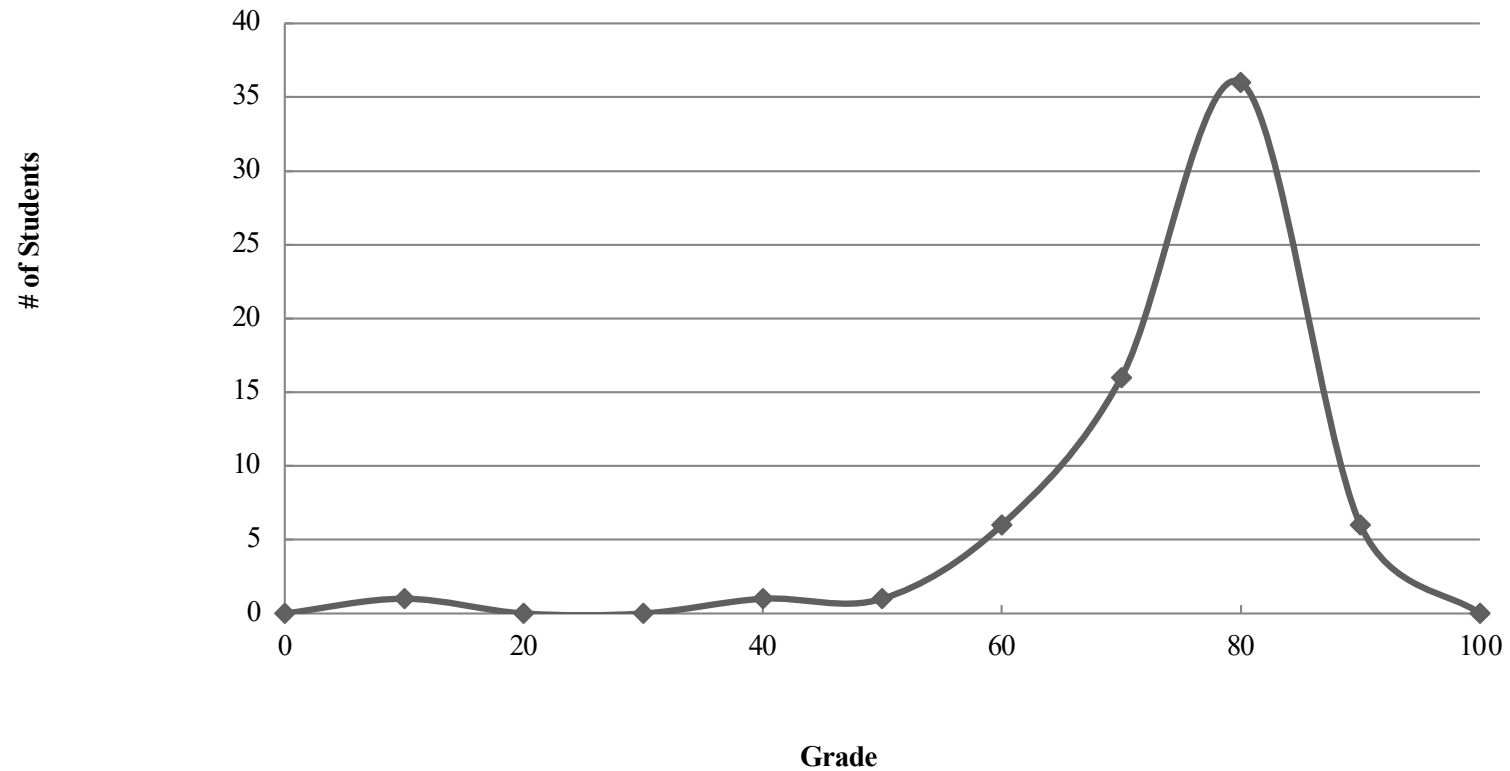




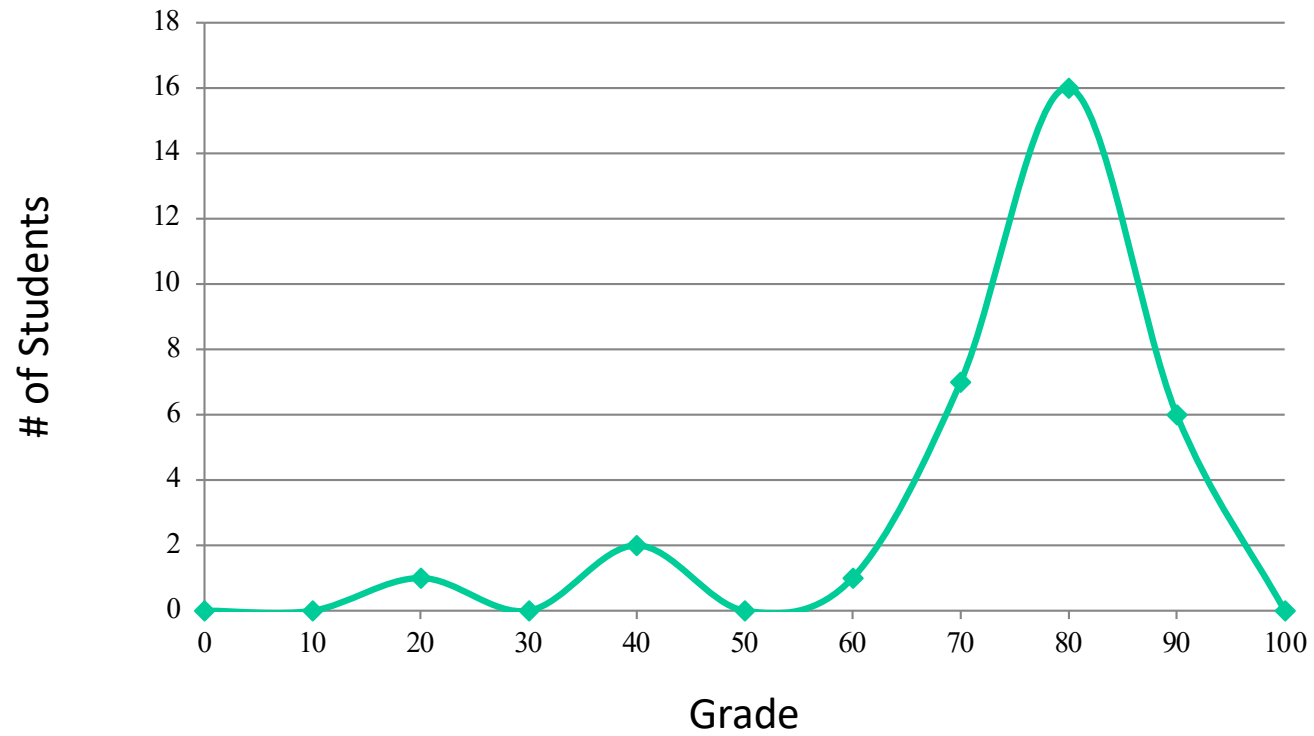




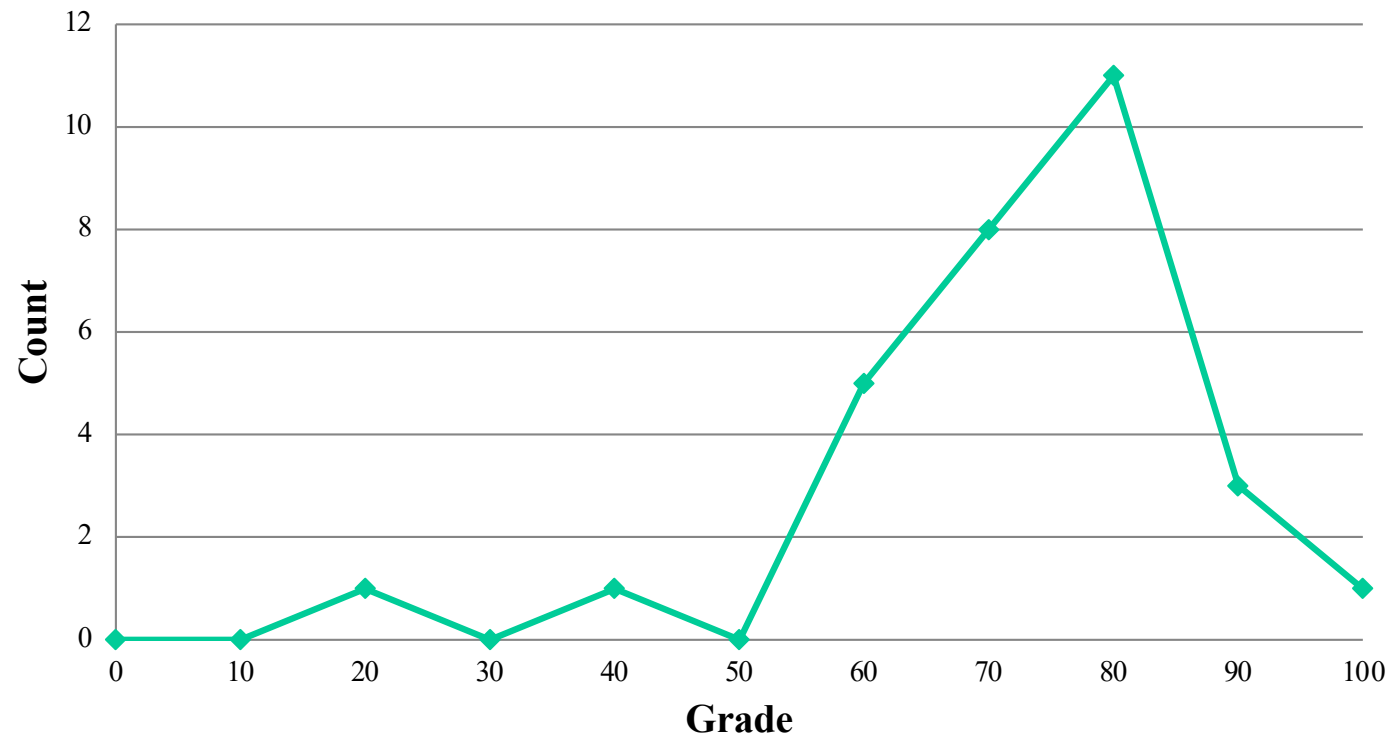
Semester Grade Histogram - 2008 Fall



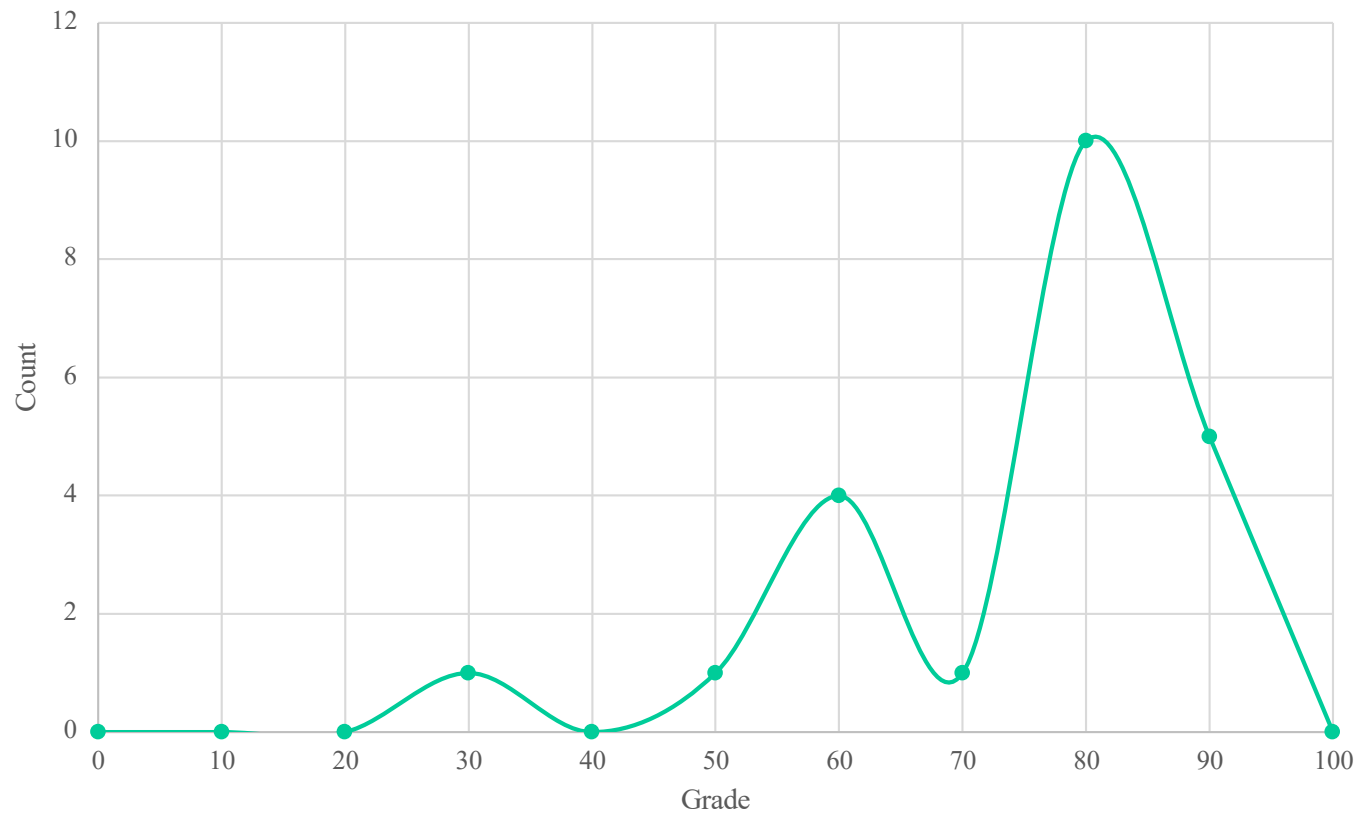
Semester Grade Histogram - 2009 Fall



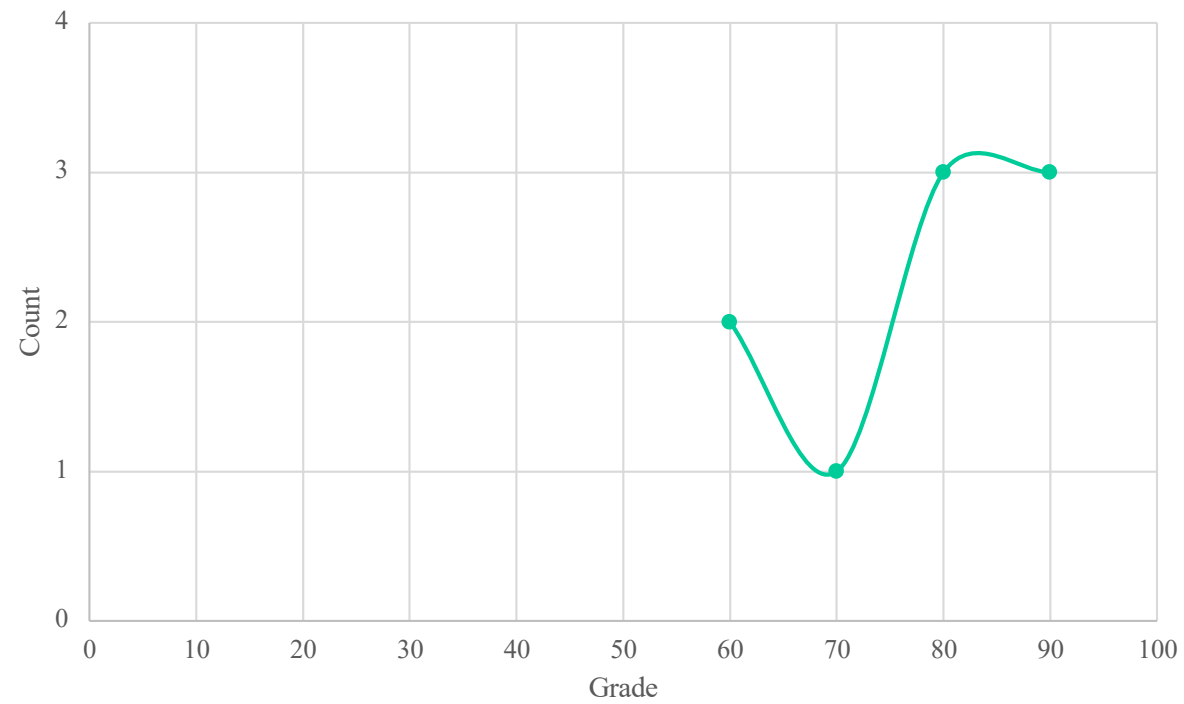
Semester Grade Histogram - 2012 Fall

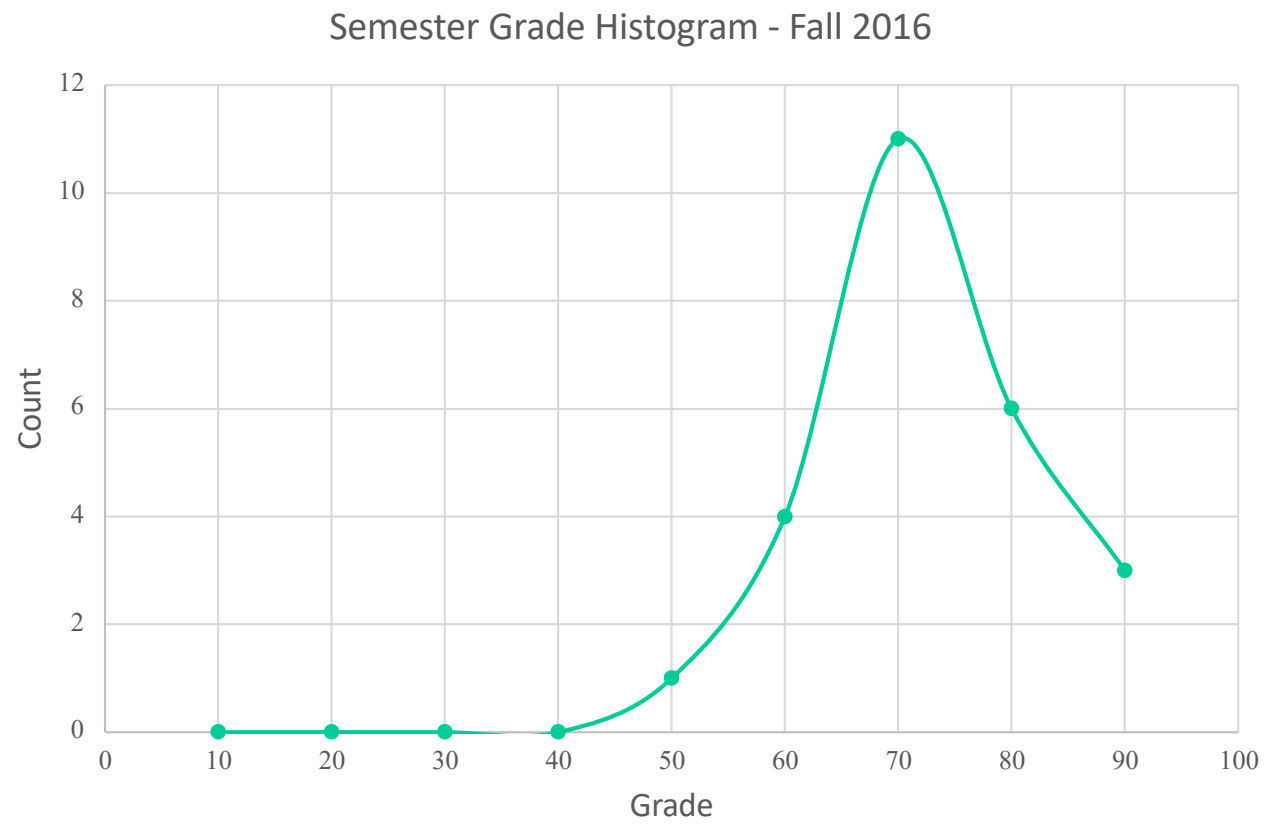


Semester Grade Histogram - 2014 Fall

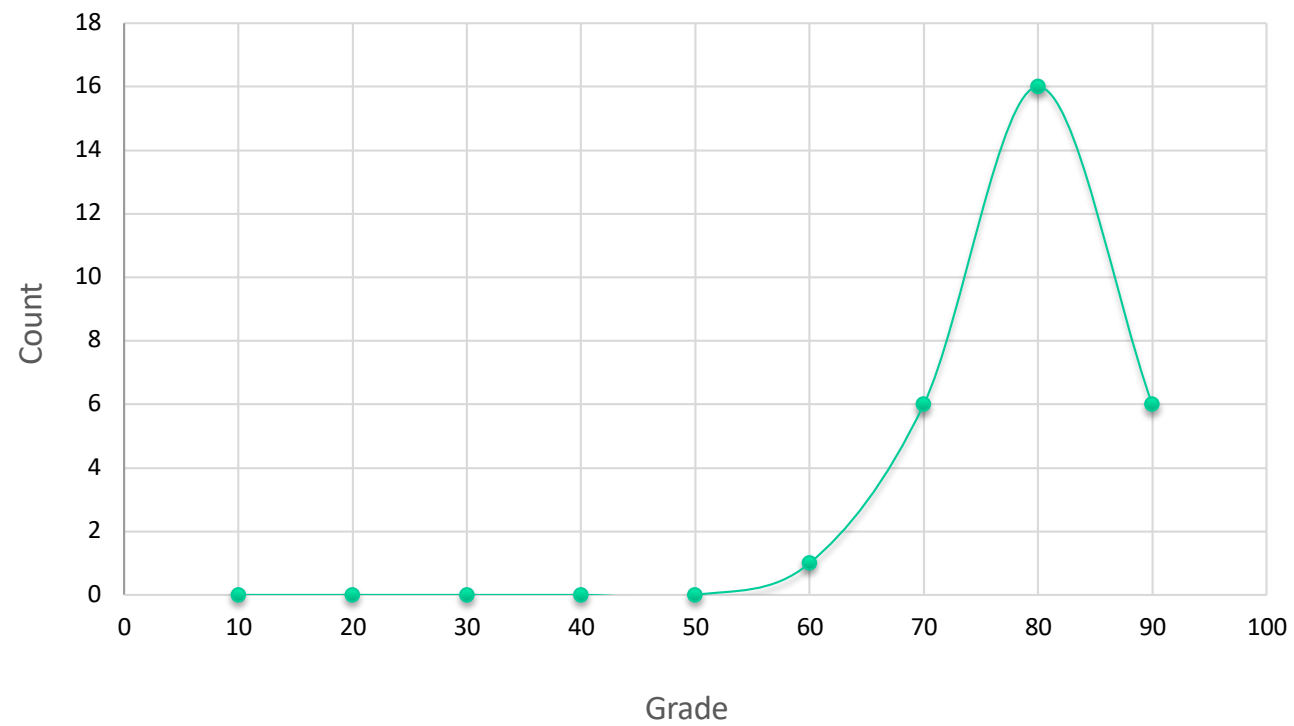


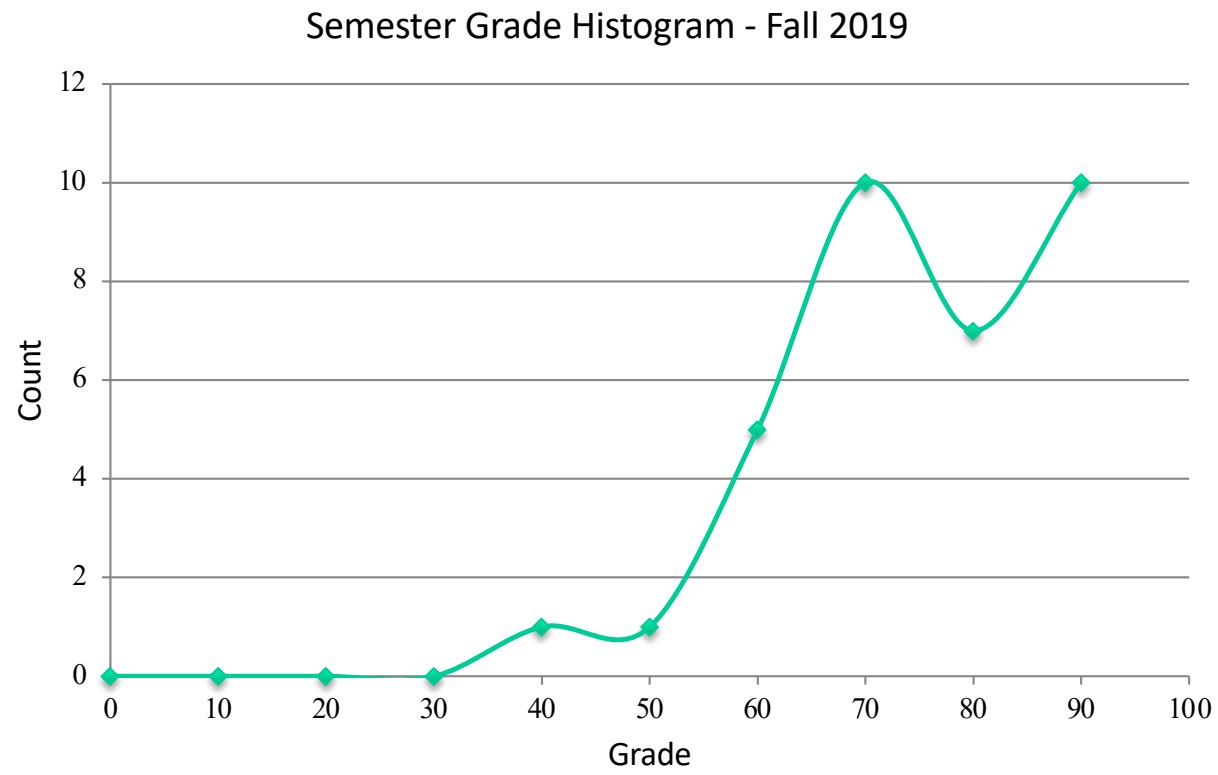
Semester Grade Histogram - 2015 Fall

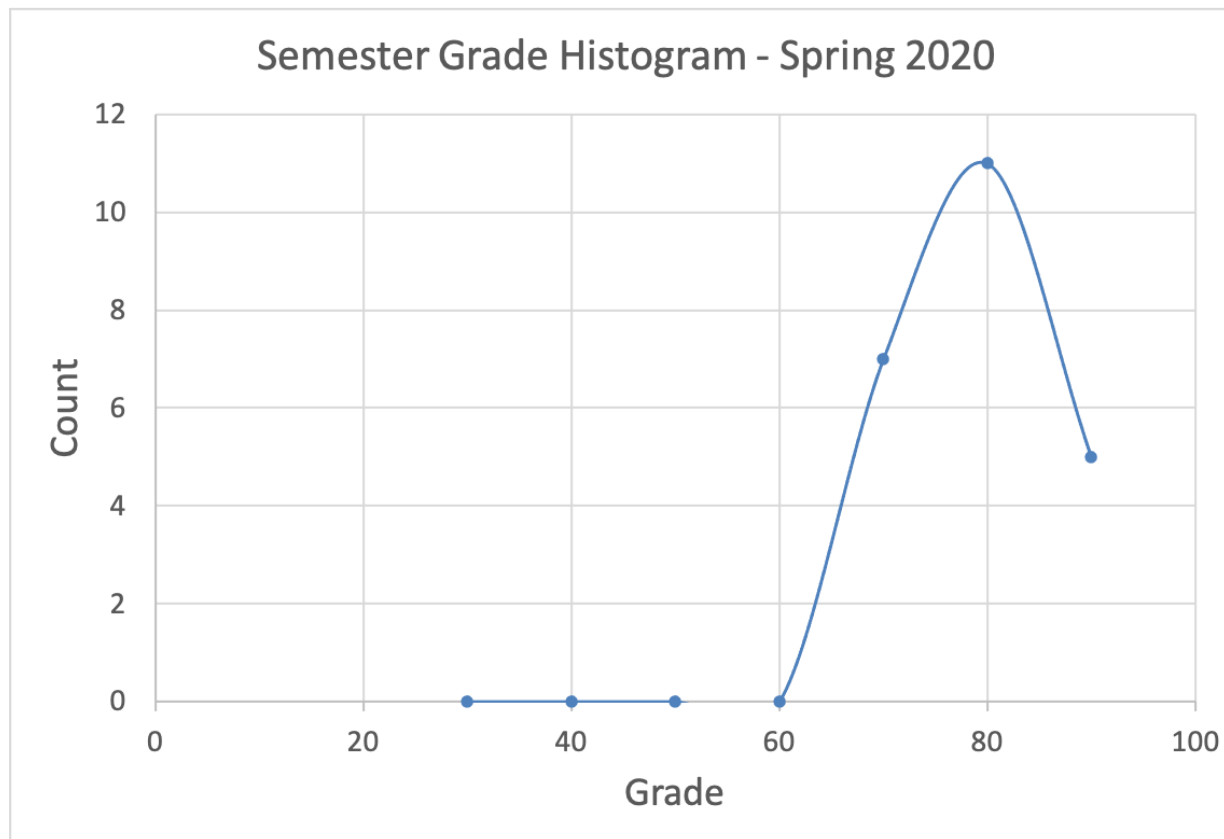


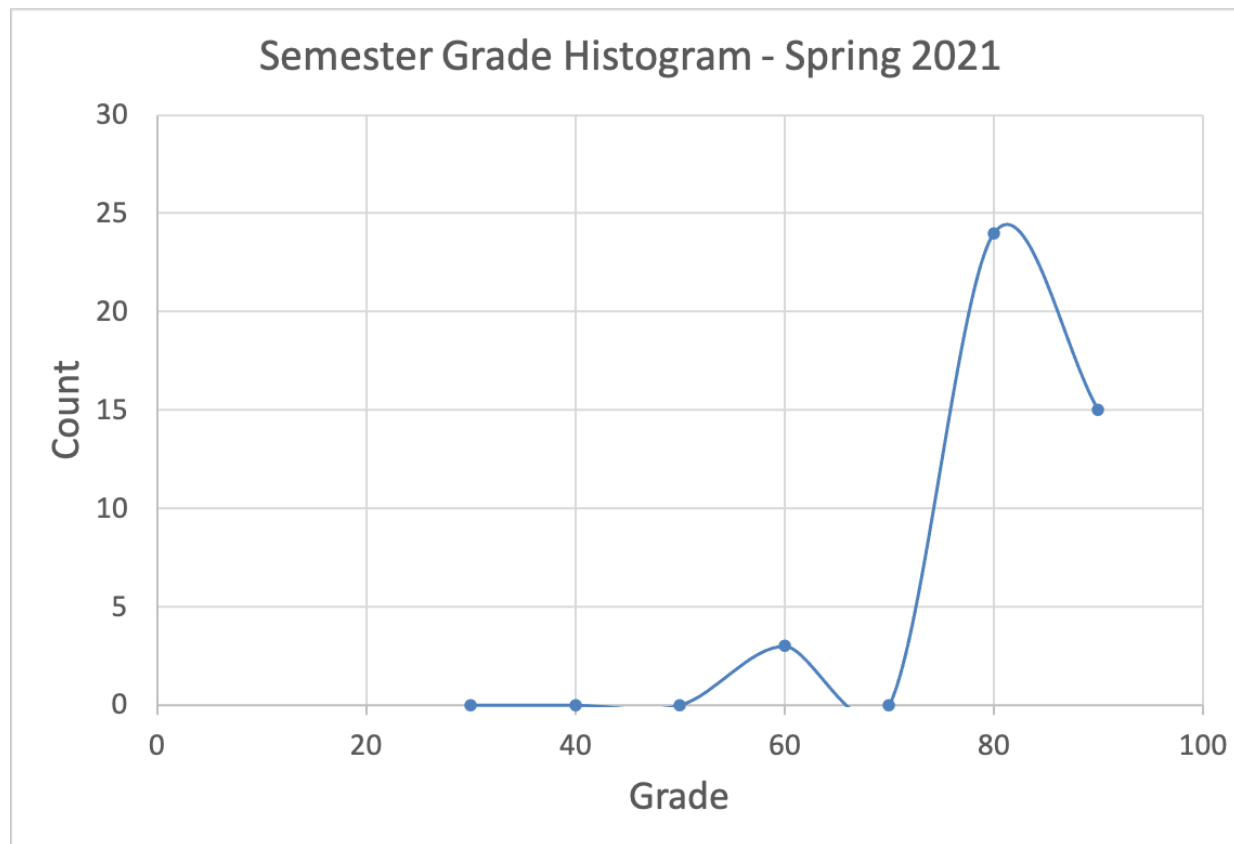


Semester Grade Histogram - Fall 2018









Cautions

- Socket Programming
 - Go (or Golang)
- Quiz set
 - Adapted for the lecturing format
 - Interaction helps
- Exams
 - Online google form
 - Too long to complete

Please bear with us!

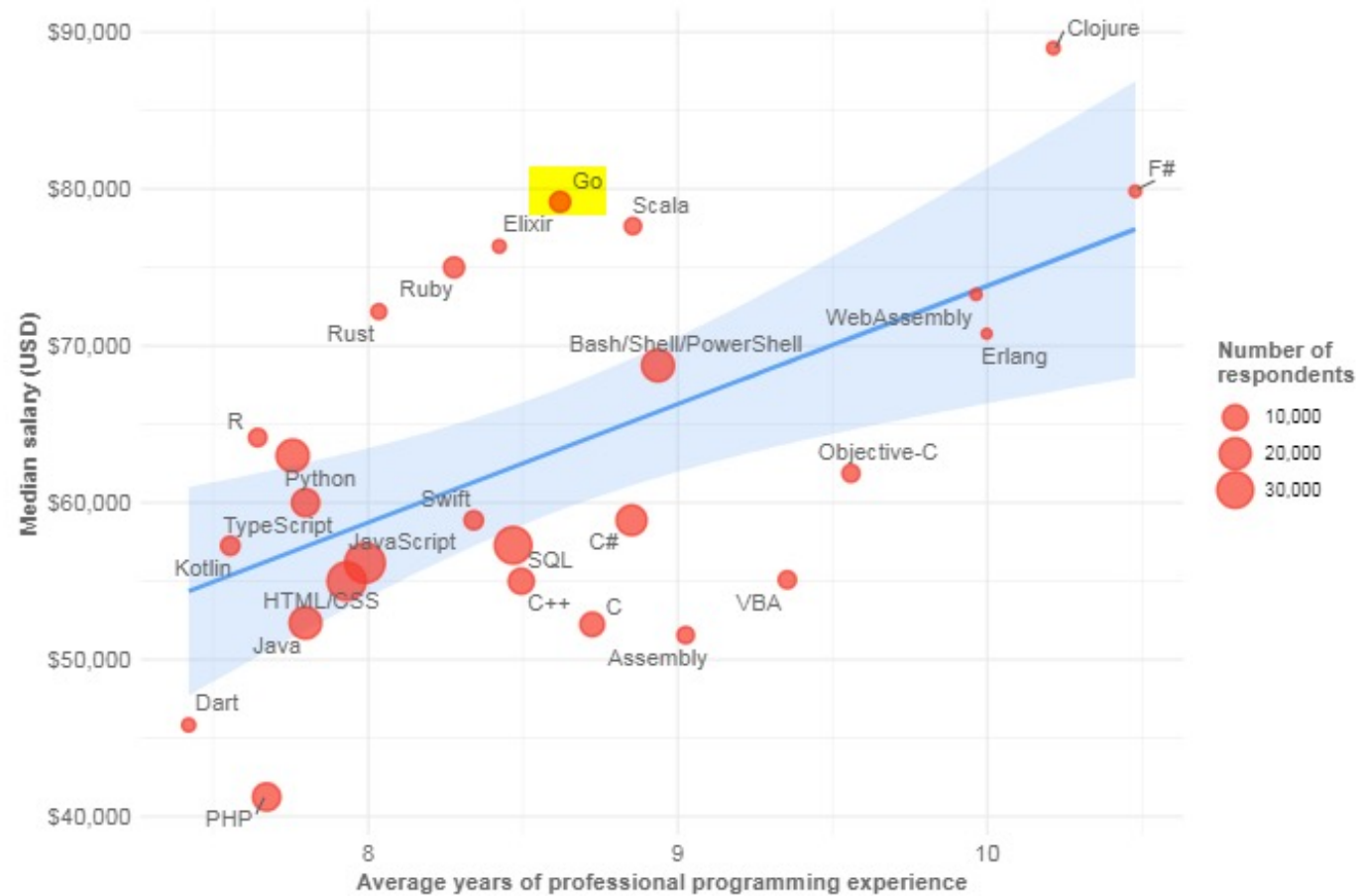
- Online participation
 - Stability is up to our ISPs
 - Not perfectly real time
- Lecture as videos on YouTube
 - Shorter video units
 - Easier to catch up

Why Go?

Back-end (Server-side) table in most popular websites

| Websites | C# | C | C++ | D | Erlang | Go | Hack | Java | JavaScript | Perl | PHP | Python | Ruby | Scala | Xhp |
|---------------|-----|-----|-----|-----|--------|-----|------|------|------------|------|-----|--------|------|-------|-----|
| Google.com | No | Yes | Yes | No | No | Yes | No | Yes | No | No | Yes | Yes | No | No | No |
| YouTube.com | No | Yes | Yes | No | No | Yes | No | Yes | No | No | No | Yes | No | No | No |
| Facebook.com | No | No | Yes | Yes | Yes | Yes | Yes | Yes | No | No | Yes | Yes | No | No | Yes |
| Yahoo | No | Yes | Yes | No | No | Yes | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No |
| Amazon.com | No | No | Yes | No | No | No | No | Yes | No | Yes | No | No | No | No | No |
| Wikipedia.org | No | No | No | No | No | No | No | No | No | No | Yes | No | No | No | No |
| Twitter.com | No | No | Yes | No | No | No | No | Yes | No | No | No | No | Yes | Yes | No |
| Bing | Yes | No | Yes | No | No | No | No | No | No | No | No | No | No | No | No |
| eBay.com | No | No | No | No | No | No | No | Yes | Yes | No | No | No | No | Yes | No |
| MSN.com | Yes | No | No | No | No | No | No | No | No | No | No | No | No | No | No |
| Linkedin.com | No | No | No | No | No | No | No | Yes | Yes | No | No | No | No | Yes | No |
| Pinterest | No | No | No | No | Yes | No | No | No | No | No | No | Yes | No | No | No |
| WordPress.com | No | No | No | No | No | No | No | No | No | No | Yes | No | No | No | No |

Salary and Experience by Language



Open Source!

(polly's bias)



WWW



YouTube



Slack

The Class Admin

Roadmap

- **The essentials**
- Administrative Information
- Content
 - Course objective and scope
 - Schedule and topics
- Your responsibility & Grading policy
 - Homework
 - Quiz + Class participation
 - Exams
- Class material

The Essentials



- Course page
 - <http://homepage.ntu.edu.tw/~pollyhuang/teach/intro-cn-fall-21/>
- Polly Huang
 - <http://homepage.ntu.edu.tw/~pollyhuang>
 - Click the 'Teaching' link
 - Then, click the 'Fall 2021' under the 'Introduction to Computer Networks' category

Roadmap

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- **Administrative Information**
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Lecture Info

- Location
 - YouTube
- Time
 - Wednesday, 13:20-14:10
 - Thursday, 10:20-12:10

The Instructor

- Polly Huang
 - Office: BL, Room 613
 - Phone: 3366-3599
 - Email: pollyhuang@ntu.edu.tw
 - Homepage:
<http://homepage.ntu.edu.tw/~pollyhuang>

Office Hour

- Thursday 12:20-13:10
 - Or by appointment
- Via Slack, Meet, or in person (mask on)

The TA

- Polly as well XD

Roadmap

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Nature

- A first course on the Internet
- Designed for EECS students

Prerequisite

- Must
 - Introduction to Computer Programming
 - Introduction to Computers (Science)
- Preferred
 - Data Structure and Computer Programming

Objectives

- Knowing the existence and the components of the Internet (**what**)
- Examining the mechanisms running in various components (**how**)
- Understanding the nature of the problems these mechanisms are trying to solve (**why**)

Scope

- The data network, a.k.a. the Internet
- By the layers
 - Application Layer, Transport Layer, Network Layer, ~~Link Layer~~
- By the common functions across layers
 - ~~Mobile Wireless Networking, Multimedia Networking~~

Syllabus+Schedule: 1st 1/3

- W1 09/22- Class Admin, Overview
- W2 09/29- Overview ([PA#1 due 10/02](#))
- W3 10/06- Application ([PA#2 due 10/09](#))
- W4 10/13- Application
- W5 10/20- Application ([PA#3 due 10/23](#))
- W6 10/27- **Exam #1 (10/28)**

Syllabus+Schedule: 2nd 1/3

- W7 11/03- Transport ([PA#4 due 11/06](#))
- W8 11/10- Transport ([PA#5 due 11/13](#))
- W9 11/17- Transport ([PA#6 due 11/20](#))
- W10 11/24- Transport ([PA#7 due 11/27](#))
- W11 12/01- **Exam #2 (12/02)**

Syllabus+Schedule: 3rd 1/3

- W12 12/08- Network
- W13 12/15- Network (PA#8 due 12/18)
- W14 12/22- Network (PA#9 due 12/25)
- W15 12/29- Network
- W16 01/05- **Exam #3 (01/06)**

Roadmap

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 - Syllabus
- **Your responsibility & Grading policy**
 - Homework
 - Quiz & Class participation
 - Exams
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Grading

- Homework
 - Programming assignments (35%)
 - PA1 (3%), PA2-PA9 (4%)
- Interaction
 - Pop-Up Quiz (30%)
 - Participation (5%)
- Exams
 - 3 exams (30%)
 - 10/28, 12/02, 01/06

Team vs. Individual

- Teamwork
 - Programming assignments (35%)
 - Pop-Up Quiz (30%)
- Individual
 - Participation (5%)
 - Exams (30%)

Team Up – Loners Allowed

- 1-3 students per team
 - No more
- Same members for
 - Programming Assignment
 - Pop-Up Quiz
- Break-up allowed
 - But be cautious of your decision

Homework Assignments

- 9 programming assignments
 - Unix and Go socket programming
- Submission all in electronic format

Programming Assignments

- Stage 1 – TCP socket
 - PA1: Unix commands
 - PA2: accessing file
 - PA3: file upload client
 - PA4: file upload server (1 upload)
 - PA5: looping server (multiple uploads)
 - PA6: concurrent server (parallel uploads)

Programming Assignments

- Stage 2 – Web server
 - PA7: web request interpreter
 - PA8: web response sender
 - PA9: secure web server
 - needs more self-help and creativity

In-Class Quizzes

- Random quiz
 - Problem related to the topics of the week
 - Given time to work in class
 - Posted on Slack, 1 channel per quiz
- To fulfill this requirement
 - Solve it in class (just speak or type)
 - Post your solutions on Slack by Saturday 18:00
 - First or unique sharing get extra points (5%)
 - Graded on completion rate (25%)

Late assignment penalty

- ~1hrs: -10%
- ~6hrs: -20%
- ~12hrs: -40%
- ~24hrs: -80%
- Otherwise: -100%

Class Participation

- Interaction counts
 - Remember to identify yourself
- Interaction includes
 - Interacting in lecture, online, email, etc
 - Interacting with polly/other students
- Graded on curve (scale to min/max of the class)

Exams

- **3 exams (30%)**
 - Google Form
 - Google Meet
- In Q&A form
- Old exams available from the class page
- **No early/makeup exams**

Integrity

- Shall there be any cheating behavior involved
 - You receive 0 for the grade
 - The case reported **to the department and the university**

Gentle Reminder:

Polly is not nice!

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Class Material

- Textbook

Computer Networking: A Top-Down Approach, **7/e**

James F. Kurose & Keith W. Ross

(8/e just out but few diffs)

- Go reference book

An Introduction to Programming in Go

Caleb Doxsey

Additional Material

- Lecture slides in pdf format
 - Lecture videos on YouTube
 - Everything else on Slack
-
- URLs available from the course page

Which is again here:



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Questions?

Or join the Slack group and post!

Quiz Time!