

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

COVID-19 Impact

- Physical interaction is optional
 - Lectures and Quizzes
 - physical in **EEII-101**
 - virtual over **YouTube**
 - At the same time
 - 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 exception
 - You may fall back to Chinese during the live sessions if you are really short of words

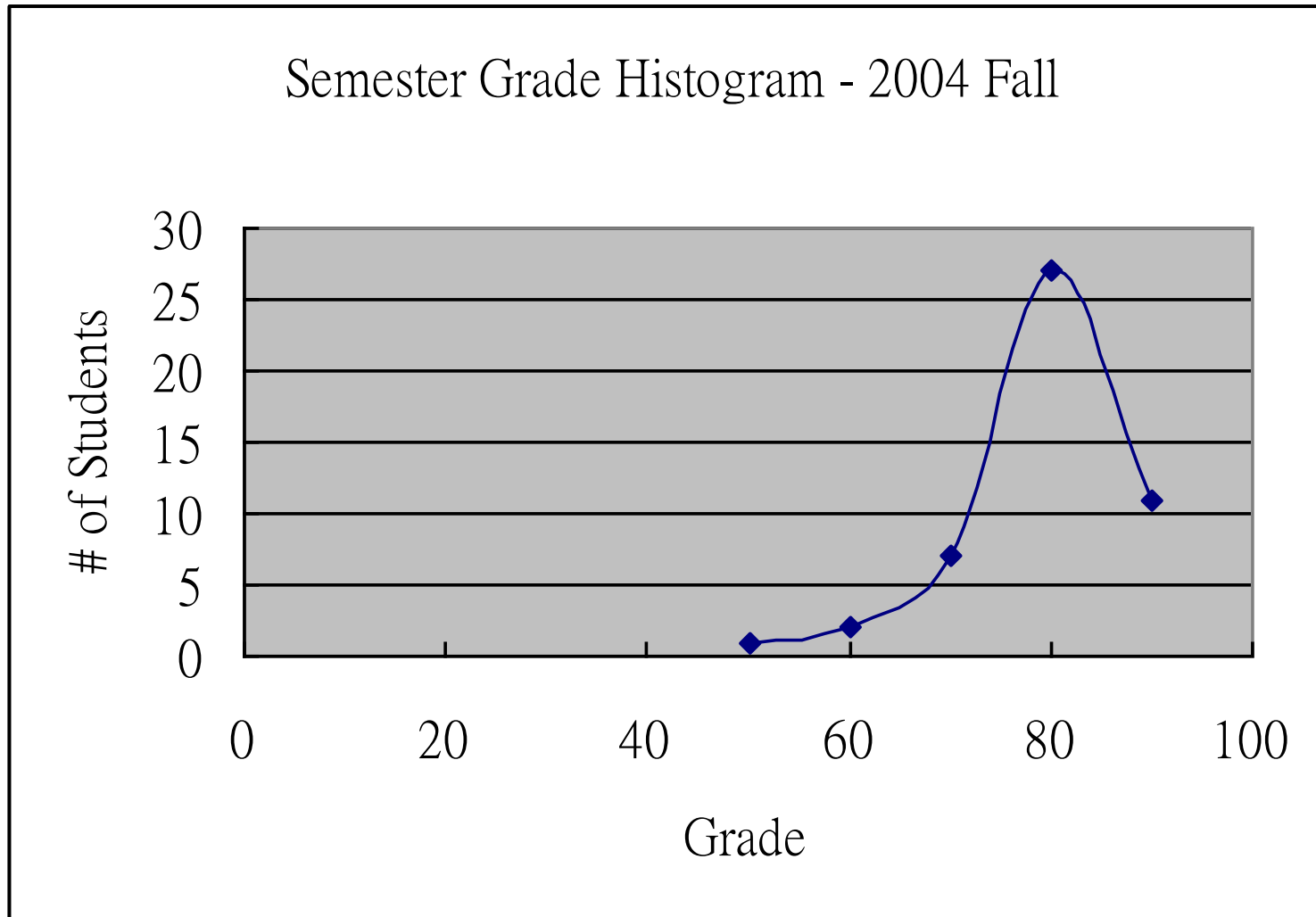
Be Aware

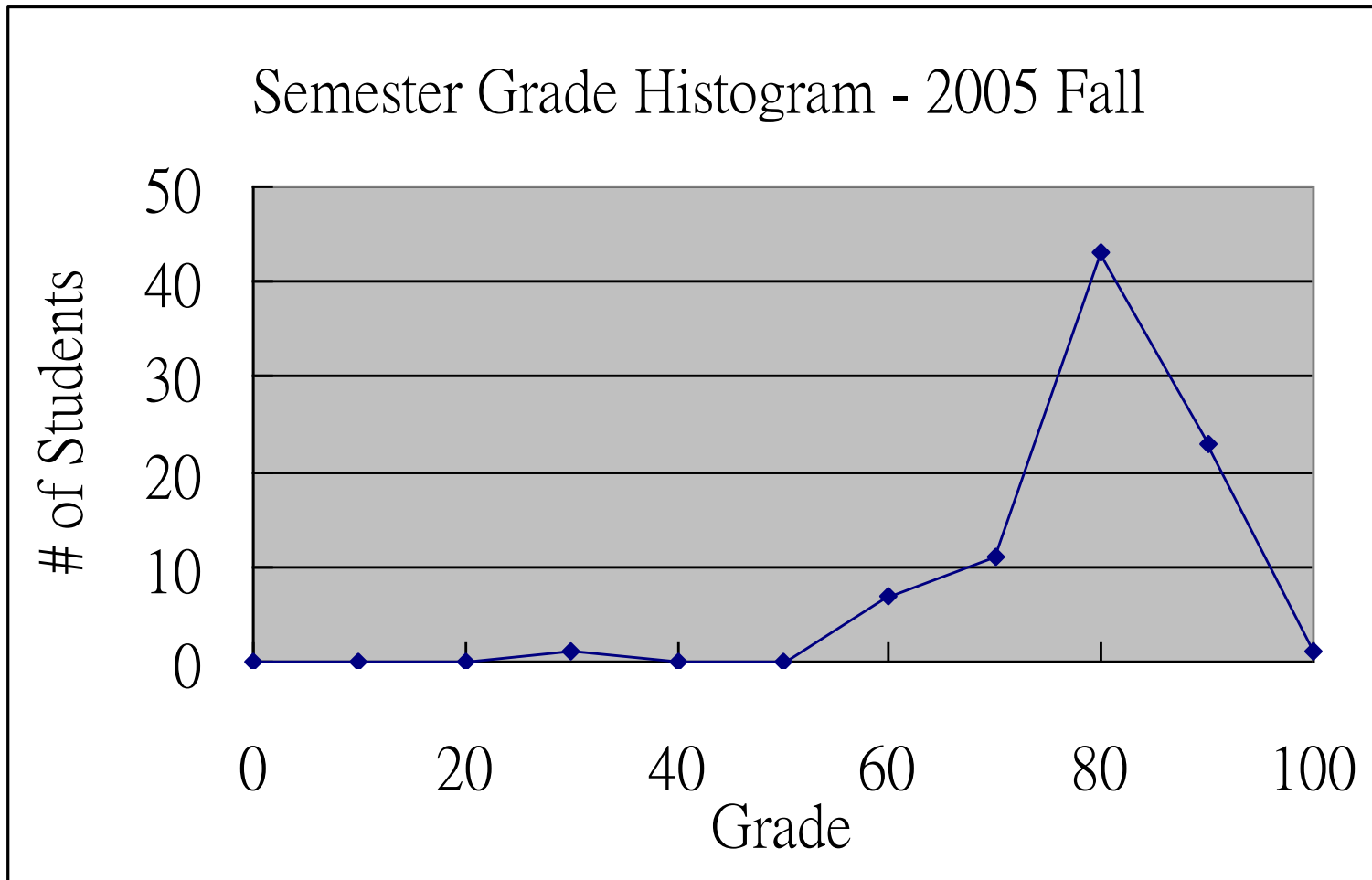
- Credits are granted only when the English is **comprehensible**
 - Keep your words/sentences simple
 - The point is to communicate

Add Code?

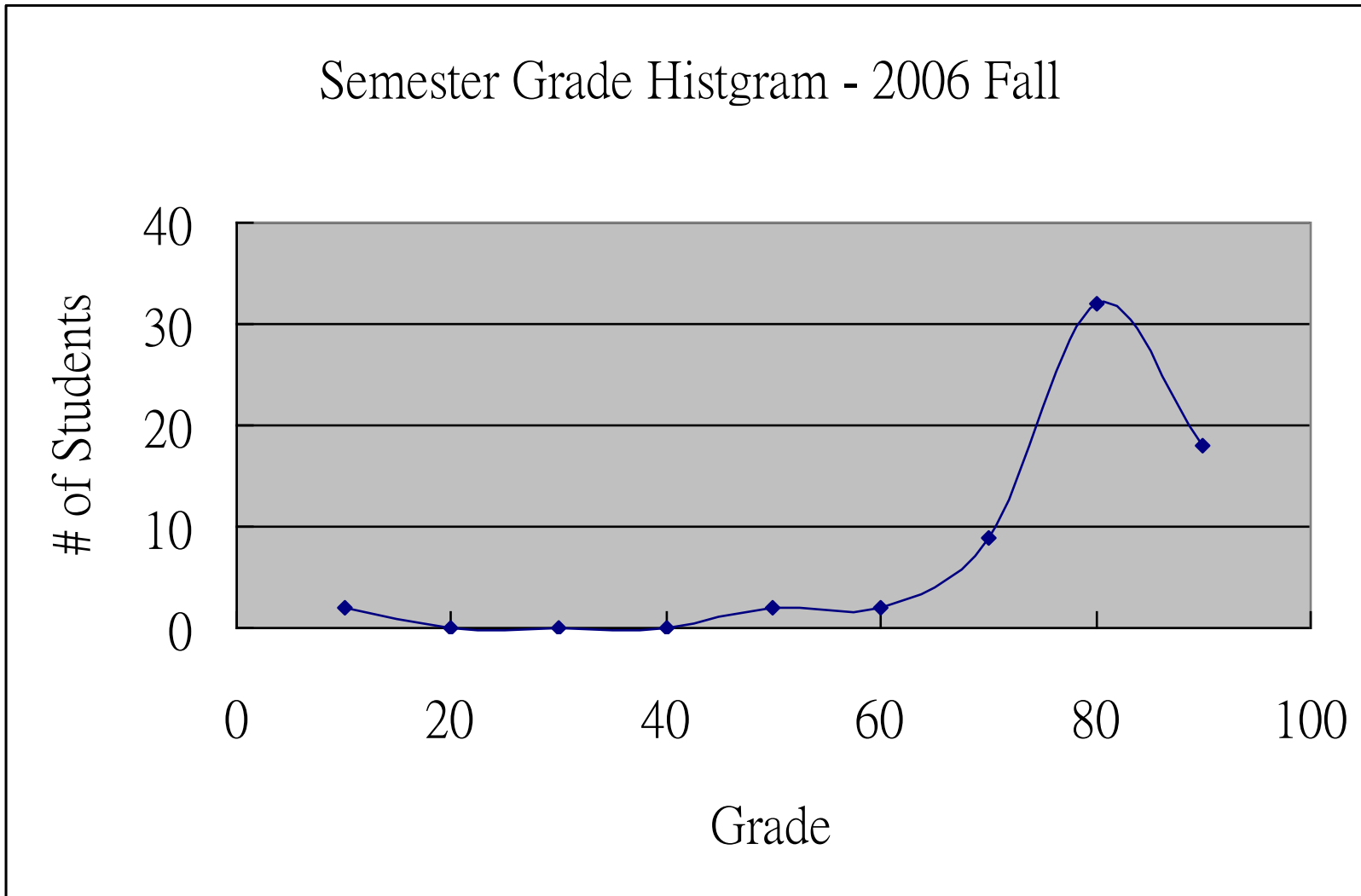
- Due to the hybrid model (COVID-19)
 - OK to tune in online
 - Will allow 15-20 more students
- First come, first serve
 - by email, also to lower risk
 - State your name, dept, year

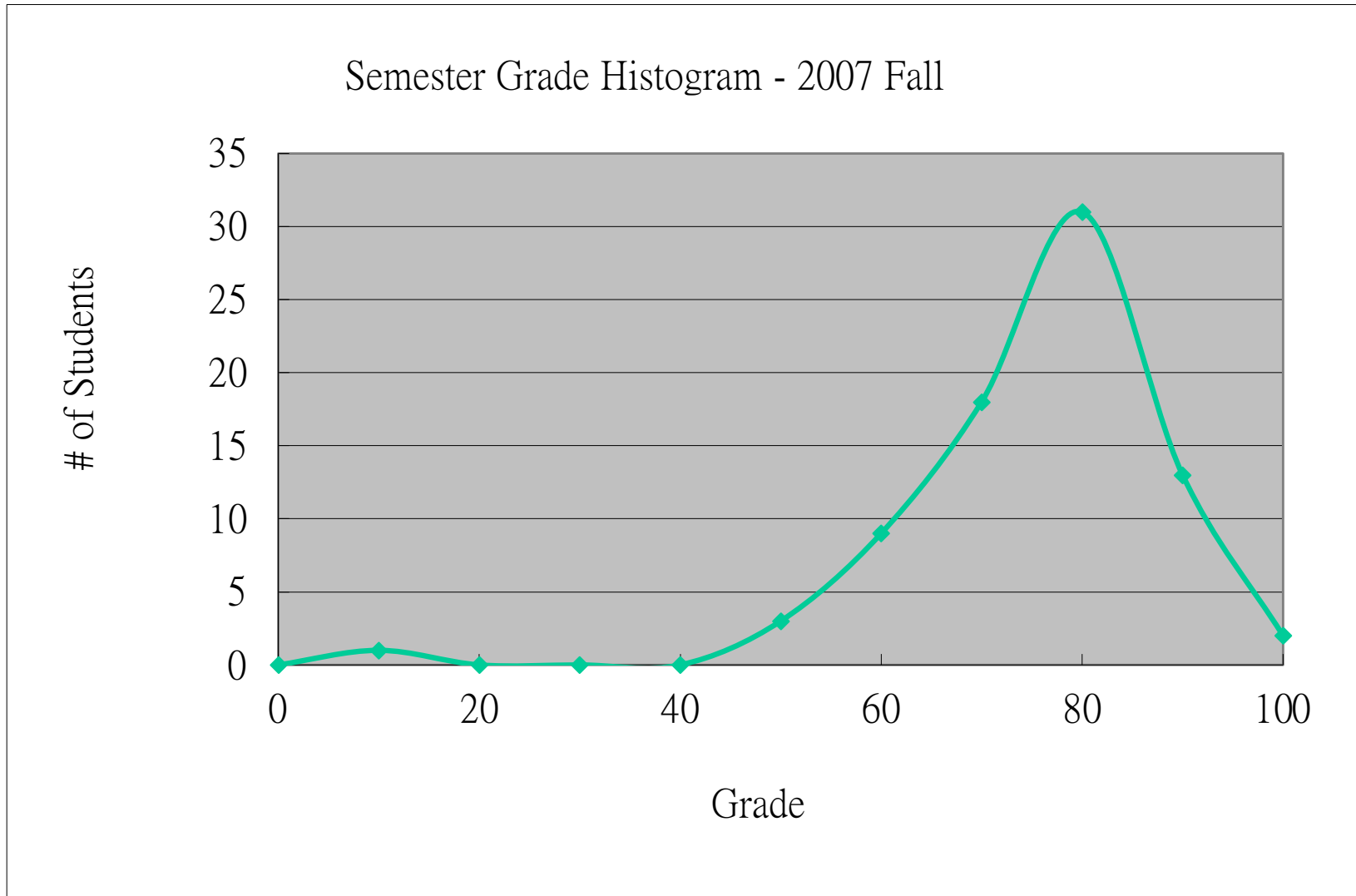
Polly is not nice!



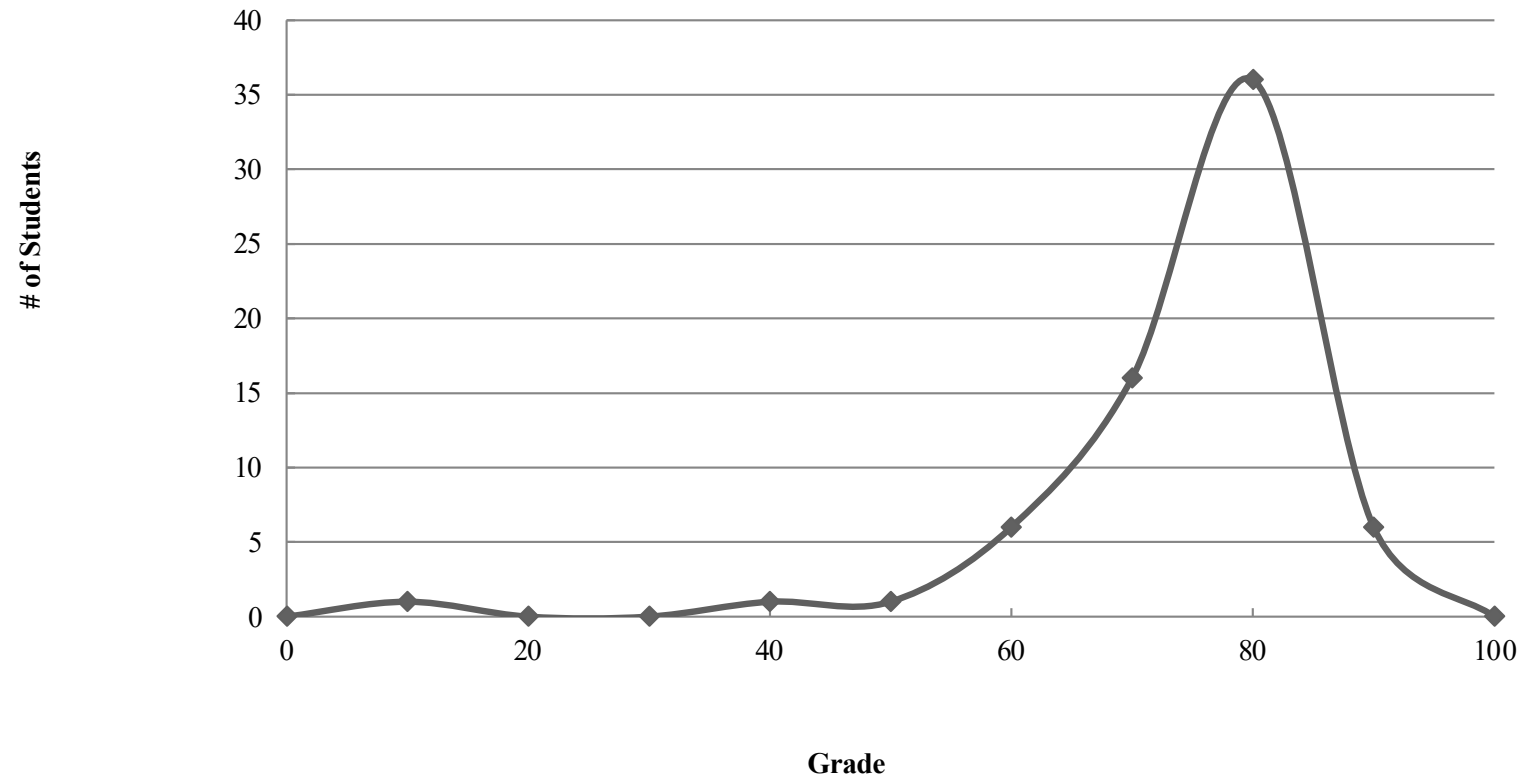


Semester Grade Histogram - 2006 Fall

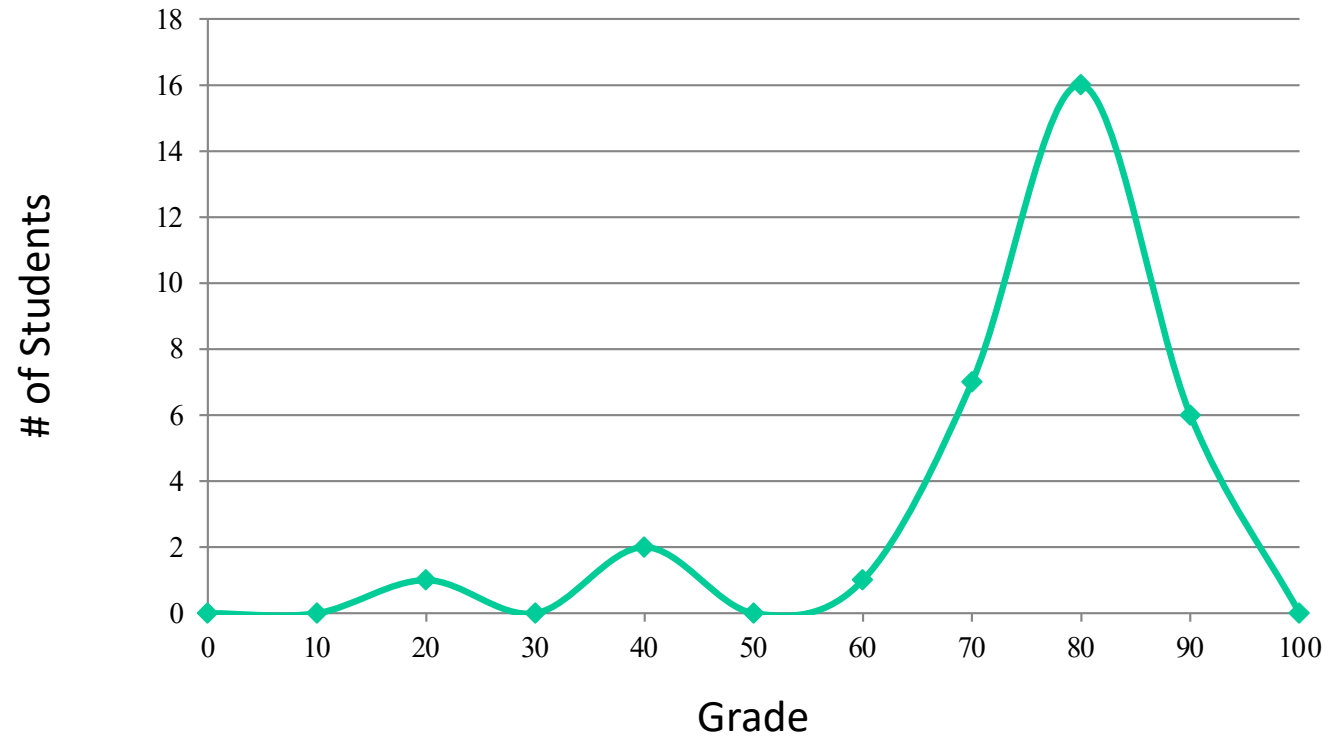




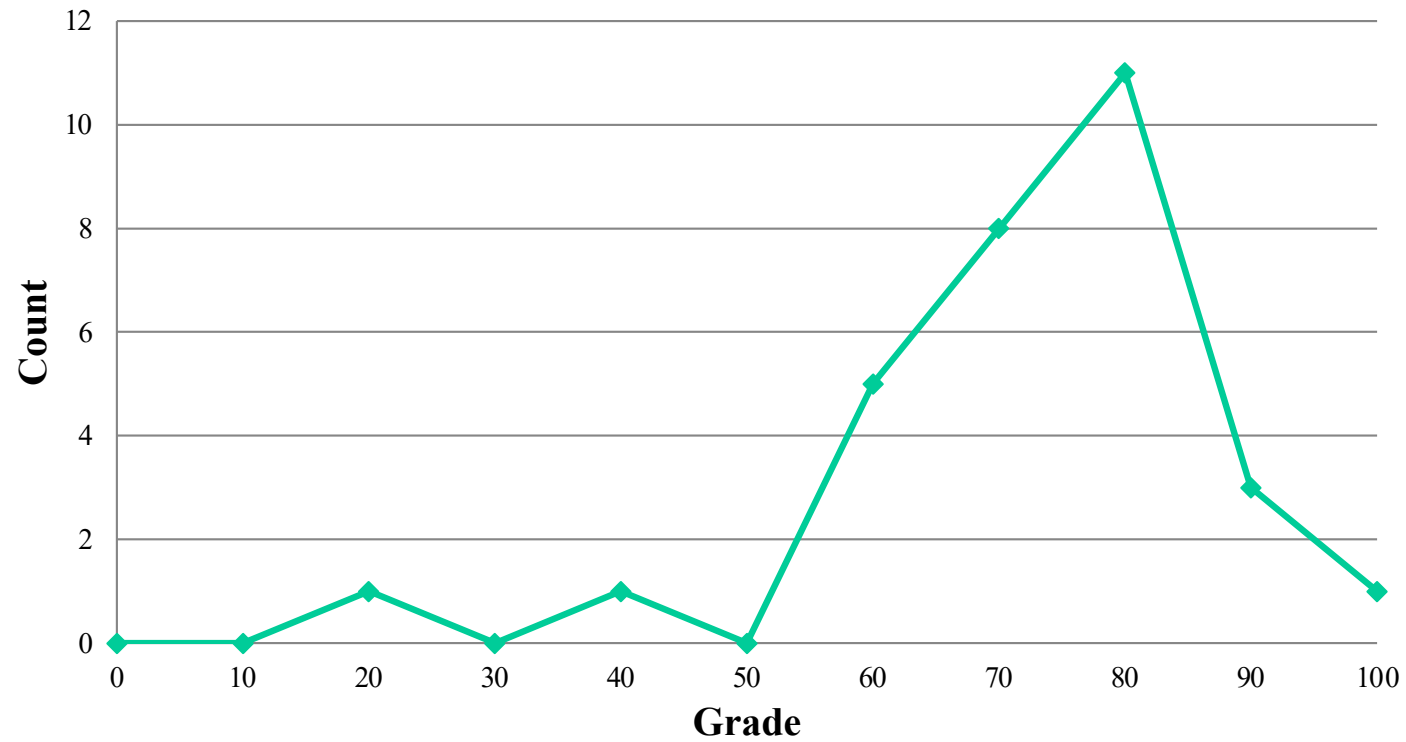
Semester Grade Histogram - 2008 Fall



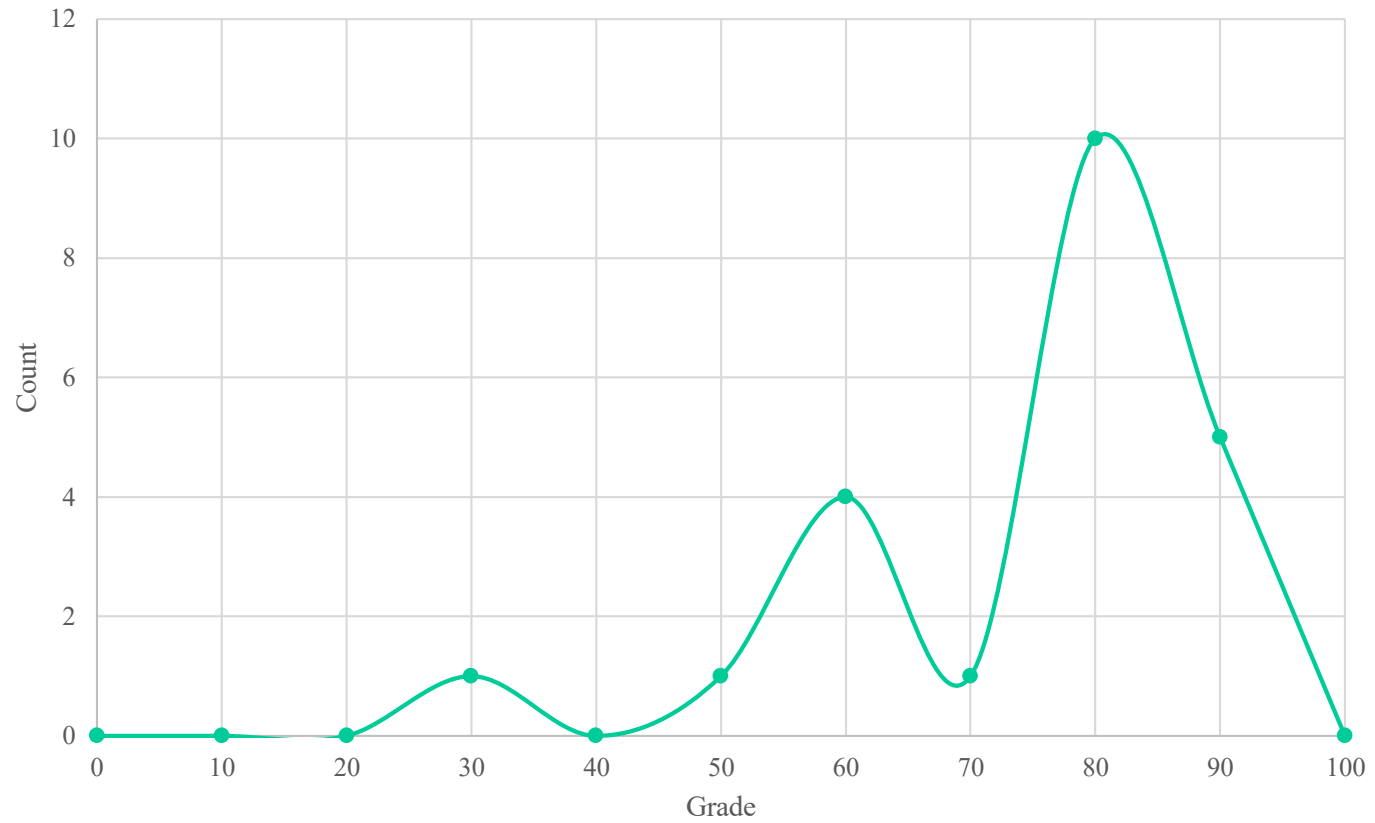
Semester Grade Histogram - 2009 Fall



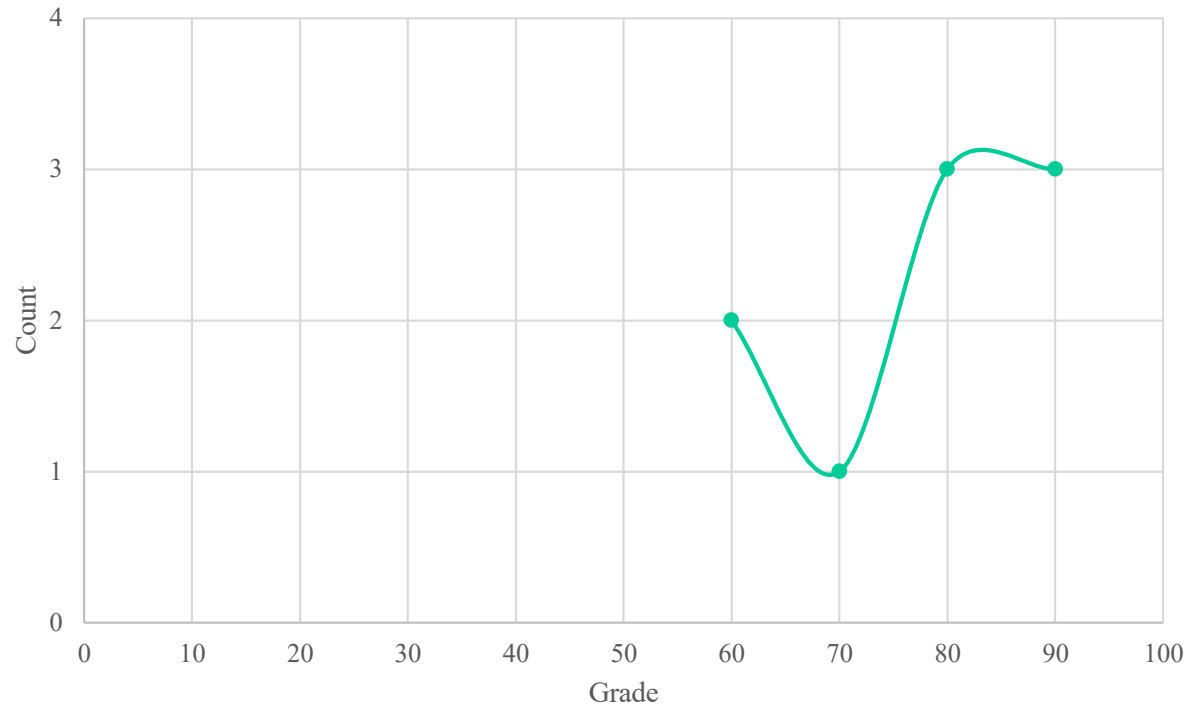
Semester Grade Histogram - 2012 Fall



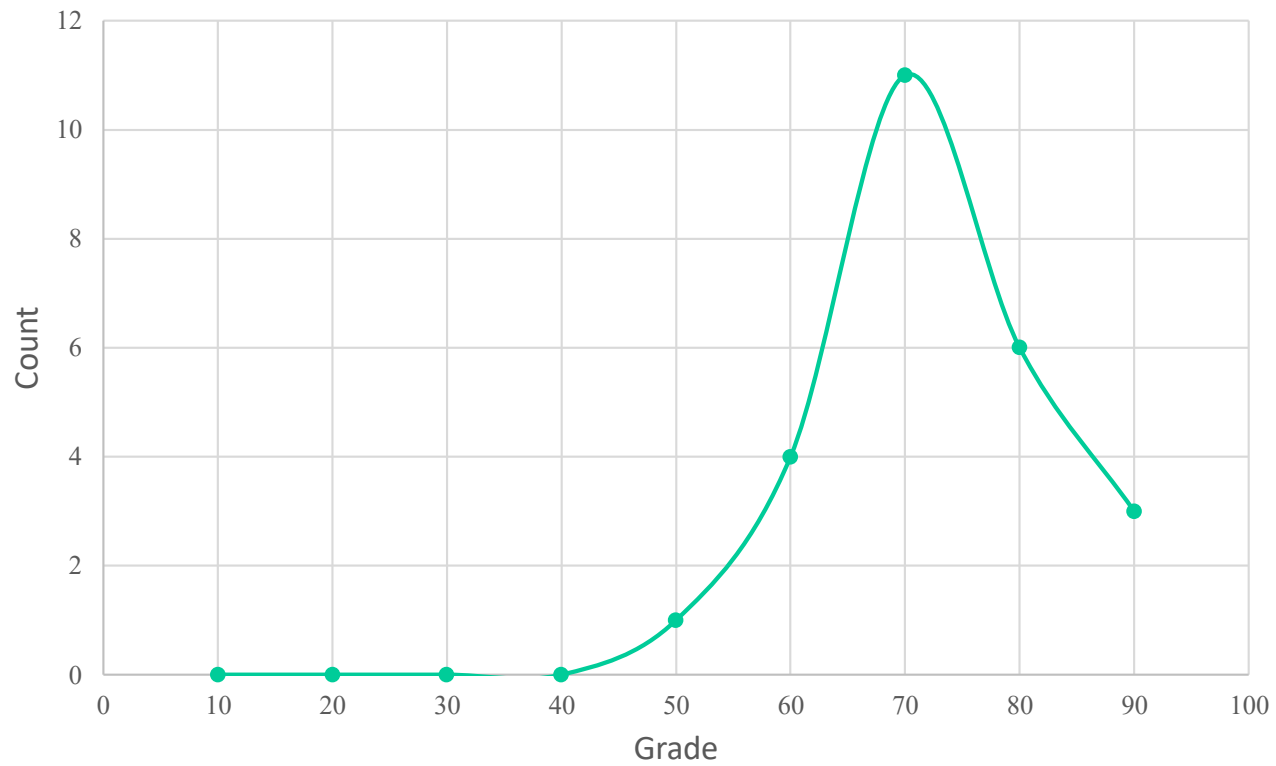
Semester Grade Histogram - 2014 Fall



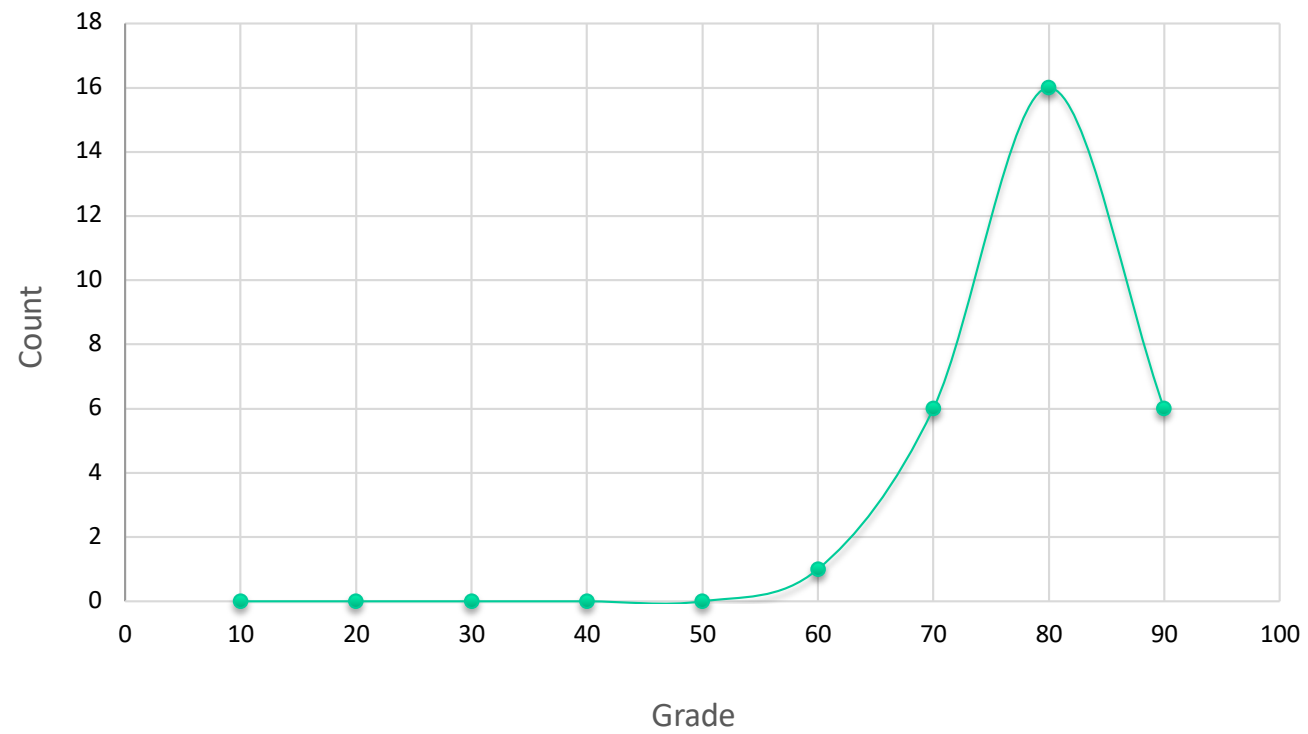
Semester Grade Histogram - 2015 Fall



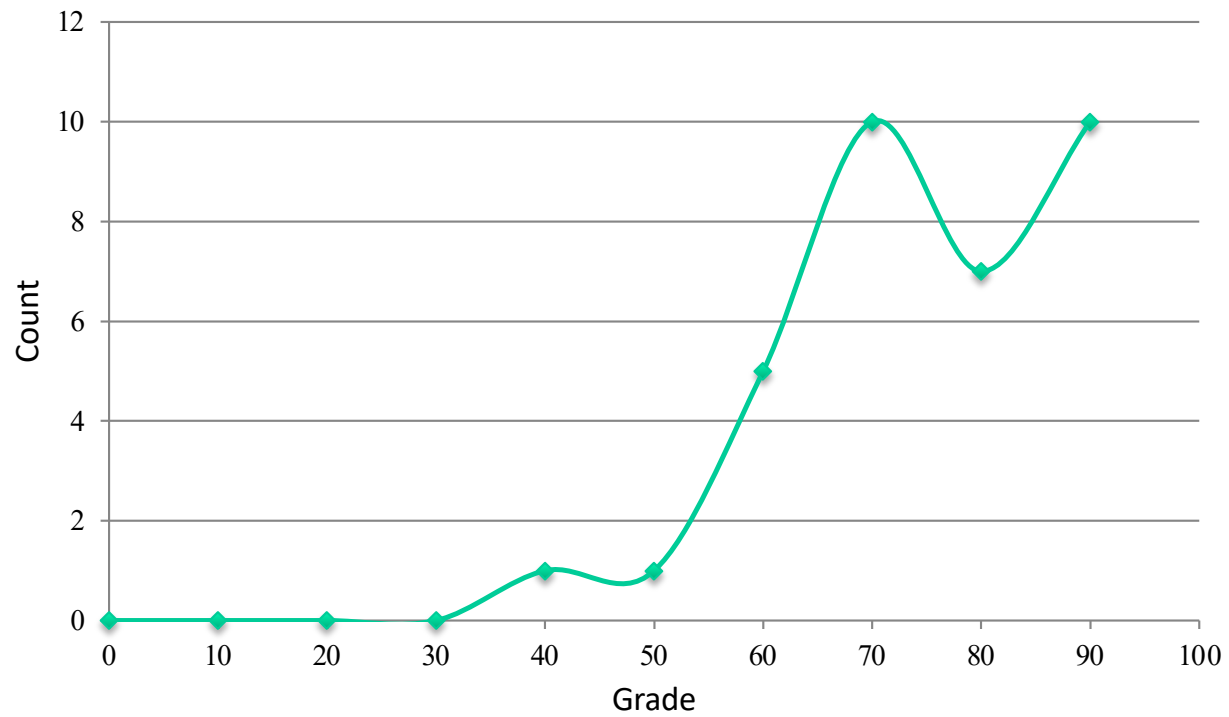
Semester Grade Histogram - Fall 2016

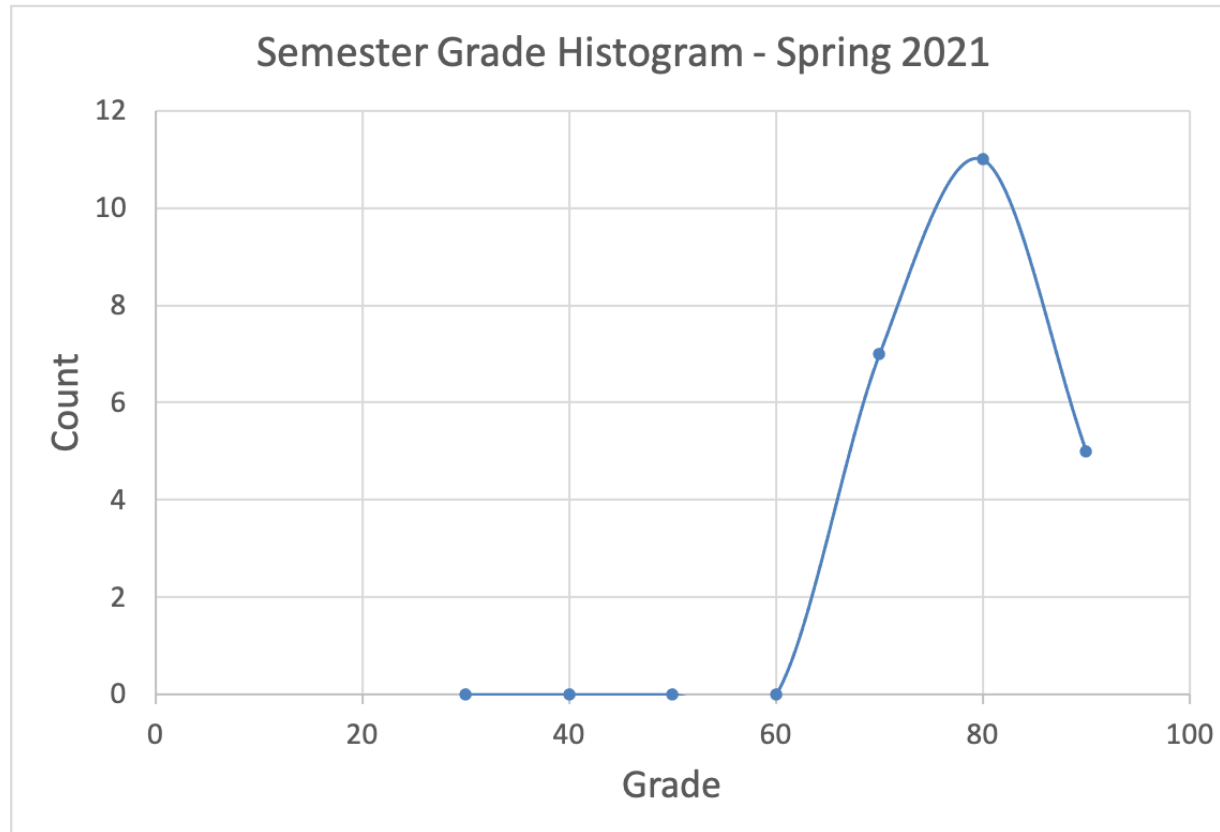


Semester Grade Histogram - Fall 2018



Semester Grade Histogram - Fall 2019





Cautions on Major Changes

- Socket Programming
 - Go (or Golang)
- Quiz set
 - Adapted for the lecturing format
 - A little less interactive
- Exams
 - Online google form
 - Long and open/essay questions

Please bear with us!

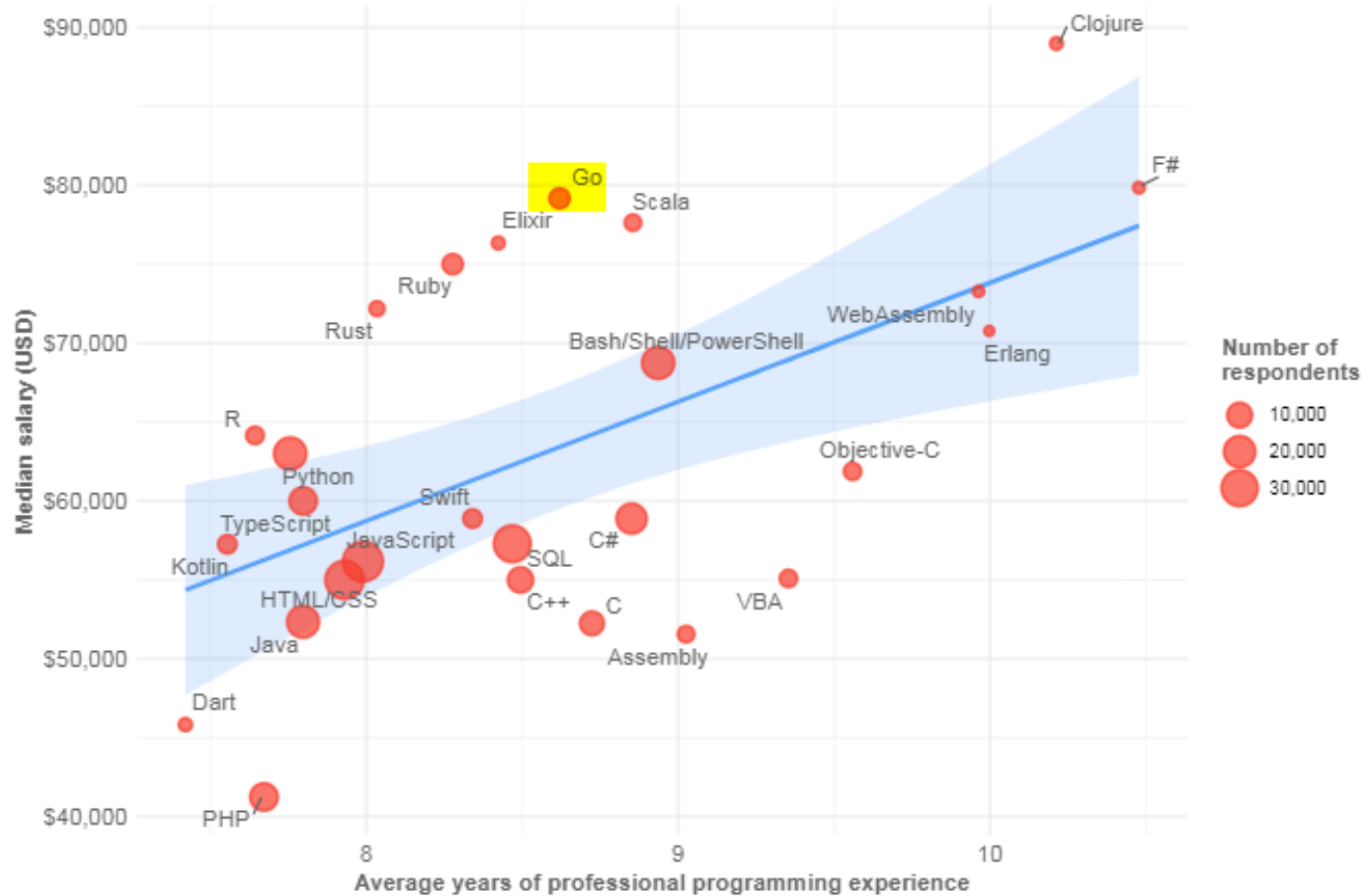
- Remote audiences
 - Stability is up to our ISPs
 - Not perfectly real time
- Lecture as videos on YouTube
 - Shorter video units
 - Easier to catch up

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

The Essentials



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

Roadmap

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Lecture Info

- Location
 - EEII-101
 - YouTube
- Time
 - Tuesday, 13:20-14:10, 14:20-15:10
 - Thursday, 13:20-14:10
 - Please note that during the breaks the priority goes to the calls of nature. But feel free to type up questions if there are any.

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 14:20-15:10
 - Or by appointment
- Via Slack, Google Meet, or in person

The TA

- Caleb Wang
 - Office: BL, Room 621
 - Email: r08942157@ntu.edu.tw

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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 Quarter

- W1 02/23- Class Admin
- W1 02/25- Overview
- W2 03/02- Overview
- W2 03/04- Overview (PA#1 due 03/06)
- W3 03/09- Overview
- W3 03/11- Application Layer (PA#2 due 03/13)
- W4 03/16- Application Layer
- W4 03/18- **Exam #1**

Syllabus+Schedule: 2nd Quarter

- W5 03/23- Application Layer
- W5 03/25- Exam #1 Review ([PA#3 due 03/27](#))
- W6 03/30- Application Layer
- W6 04/01- Spring Break
- W7 04/06- Spring Break
- W7 04/08- Application Layer ([PA#4 due 04/10](#))
- W8 04/13- Transport layer
- W8 04/15- **Exam #2**

Syllabus+Schedule: 3rd Quarter

- W9 04/20- Transport Layer
- W9 04/22- Exam #2 Review ([PA#5 due 04/24](#))
- W10 04/27- Transport Layer
- W10 04/29- Transport Layer ([PA#6 due 05/01](#))
- W11 05/04- Transport Layer
- W11 05/06- Transport Layer ([PA#7 due 05/08](#))
- W12 05/11- Network Layer, Data Plane
- W12 05/13- **Exam #3**

Syllabus+Schedule: 4th Quarter

- W13 05/18- Network Layer, Data Plane
- W13 05/20- Exam #3 Review ([PA#8 due 05/22](#))
- W14 05/25- Network Layer, Data Plane
- W14 05/27- Network Layer, Control Plane ([PA#9 due 05/29](#))
- W15 06/01- Network Layer, Control Plane
- W15 06/03- Network Layer, Control Plane
- W16 06/08- Network Layer, Control Plane
- W16 06/10- **Exam #4**

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Grading

- Homework
 - Programming assignments (35%)
 - PA1 (3%), PA2-PA9 (4%)
- Interaction
 - Pop-Up Quiz (20%)
 - Participation (5%)
- Exams
 - 4 exams (40%)
 - 3/16, 4/13, 5/13, 6/10

Team vs. Individual

- Teamwork
 - Programming assignments (35%)
 - Pop-Up Quiz (20%)
- Individual
 - Participation (5%)
 - Exams (40%)

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 week
- 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 participation points
 - Graded on completion rate

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 class, online, email, etc
 - Interacting with TA/polly
 - ‘likes’, ‘greetings’ count but less
- Graded on curve (scale to min/max of the class)

Exams

- **4 exams (40%)**
 - 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!