Introduction to Computer Networks

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Vital Information

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

Add Code?

- Follow the course for 2 weeks
- Shop around. Think again.

- Thursday of the 2nd week
  - see better how the class size goes
  - distribute add code selectively provided space

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

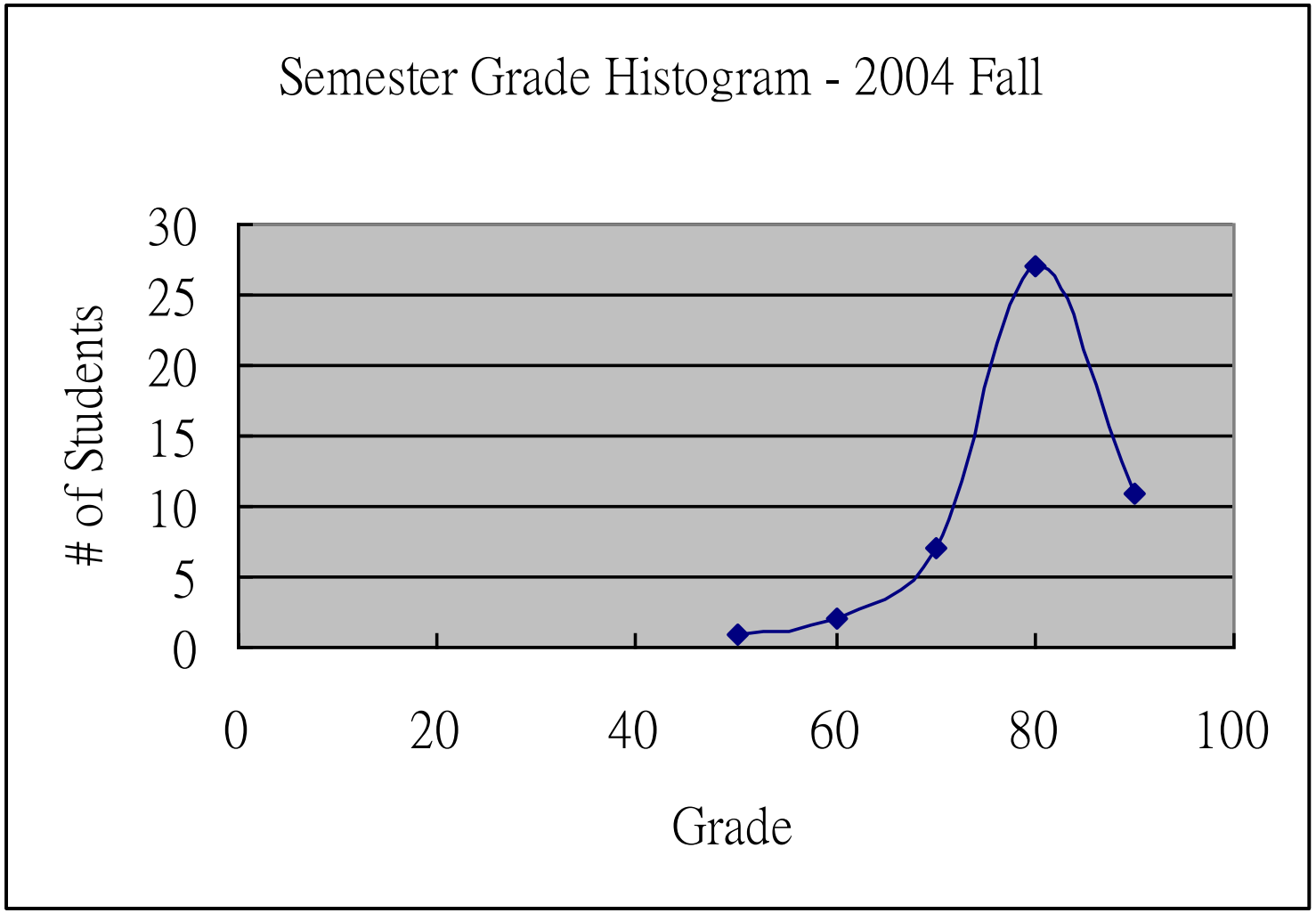
99% in English

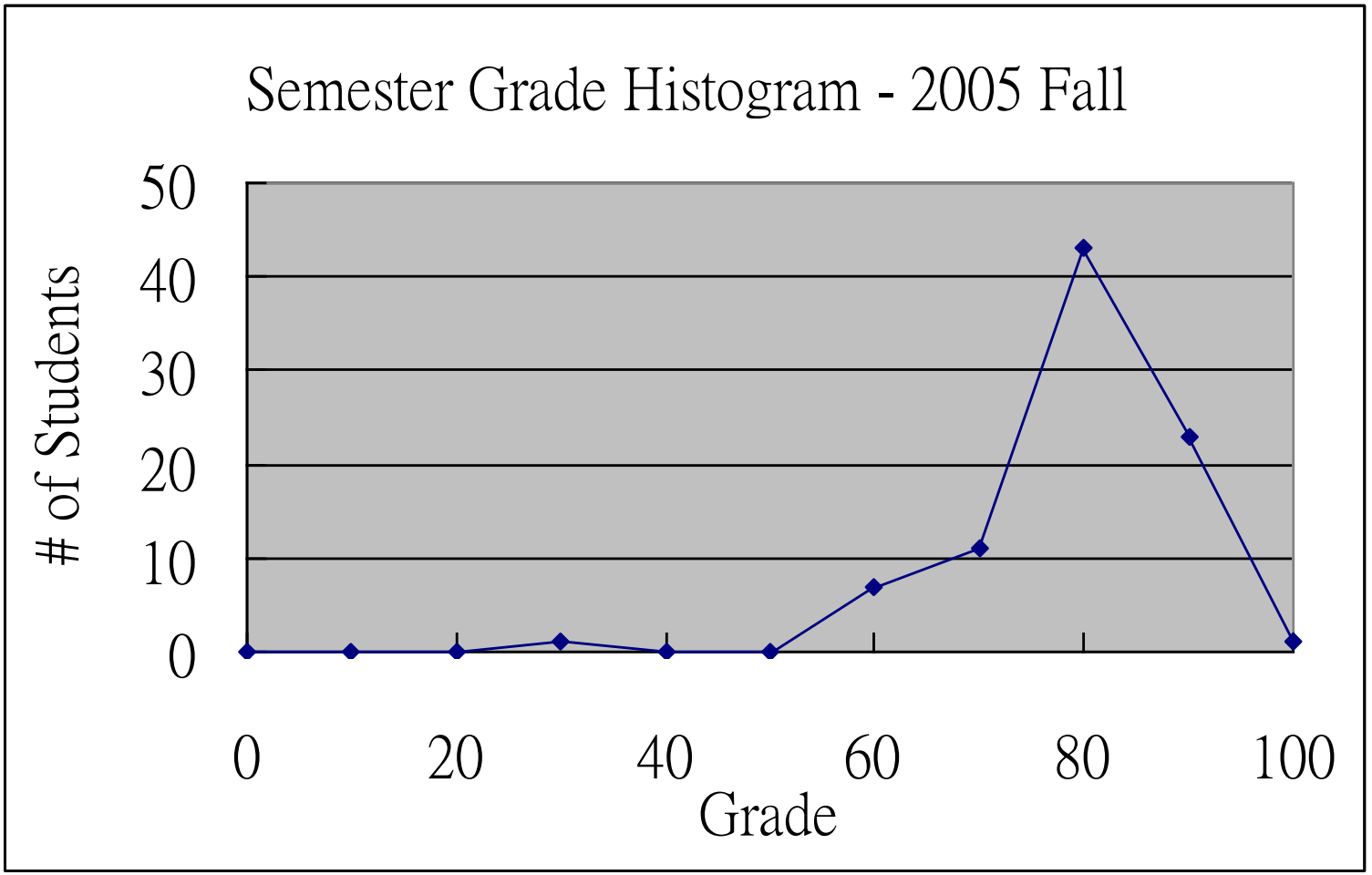
- All communication in English, including
  - Lectures
  - Homework
  - Exams
  - In/off-class interaction
- One exception
  - You may fall back in Mandarin in class if you are really short of words

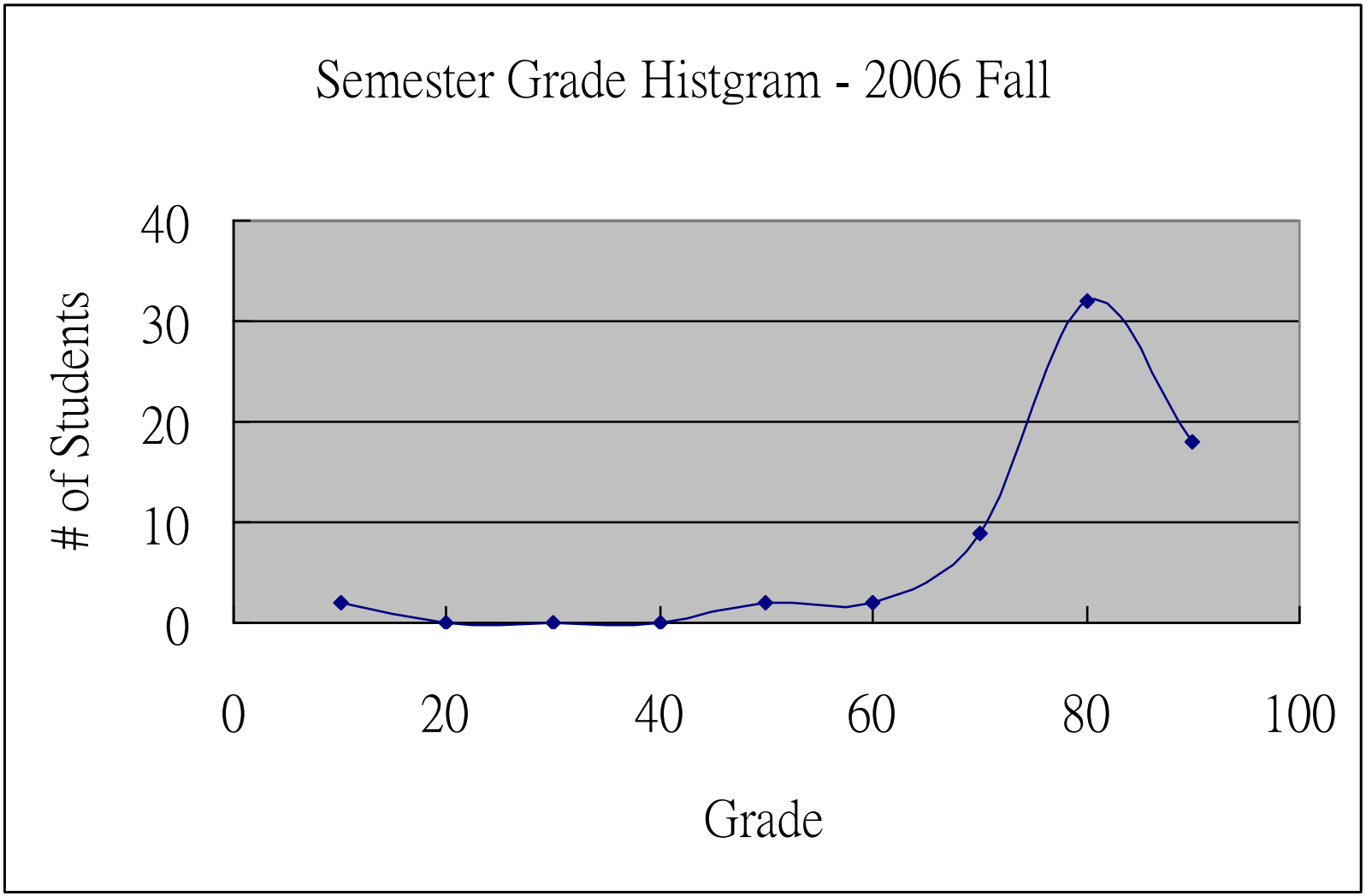
Be Aware

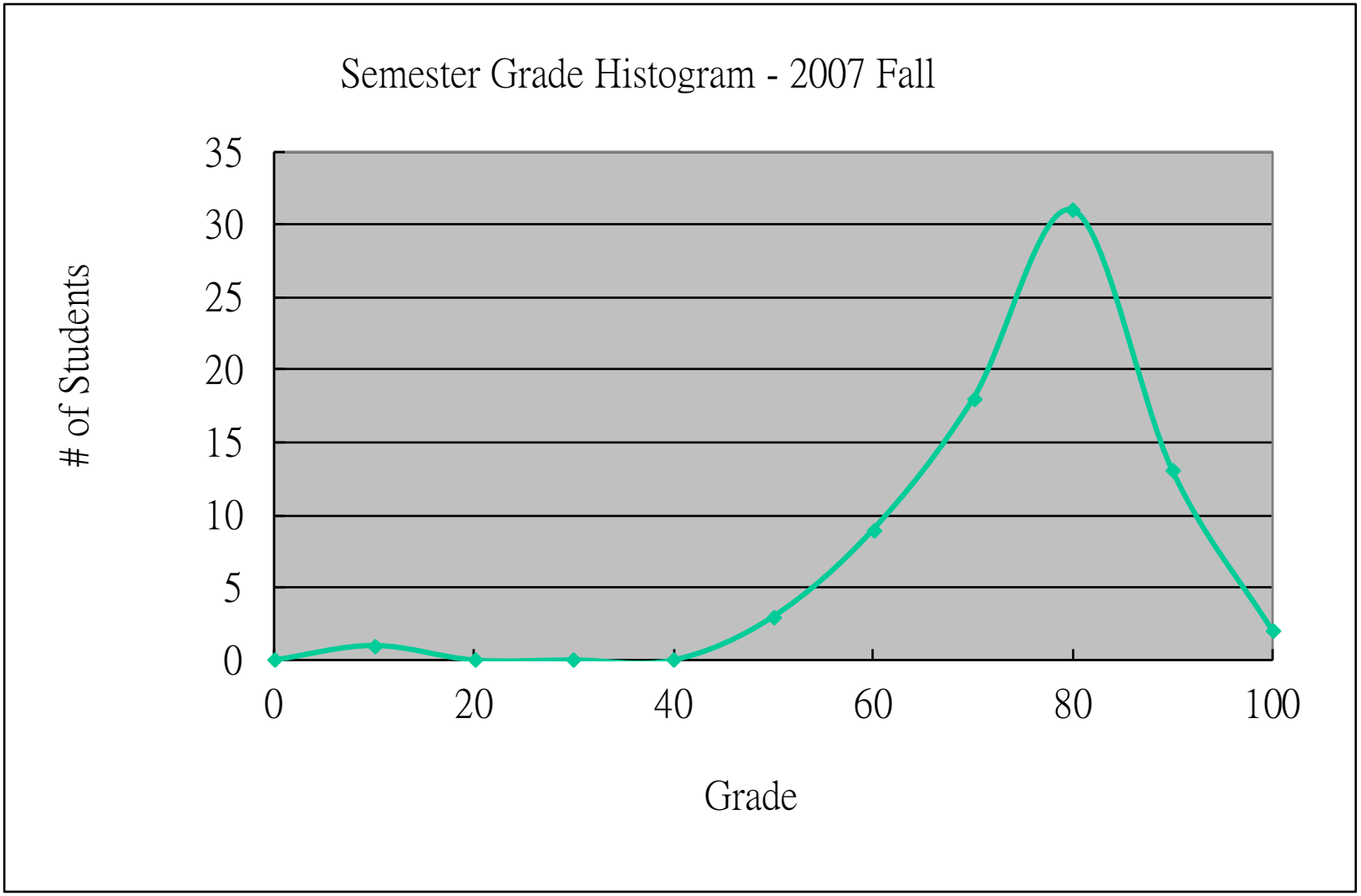
- Credits are granted only when the English is **comprehensible**
  - Keep your words/sentences simple
  - The point is to communicate

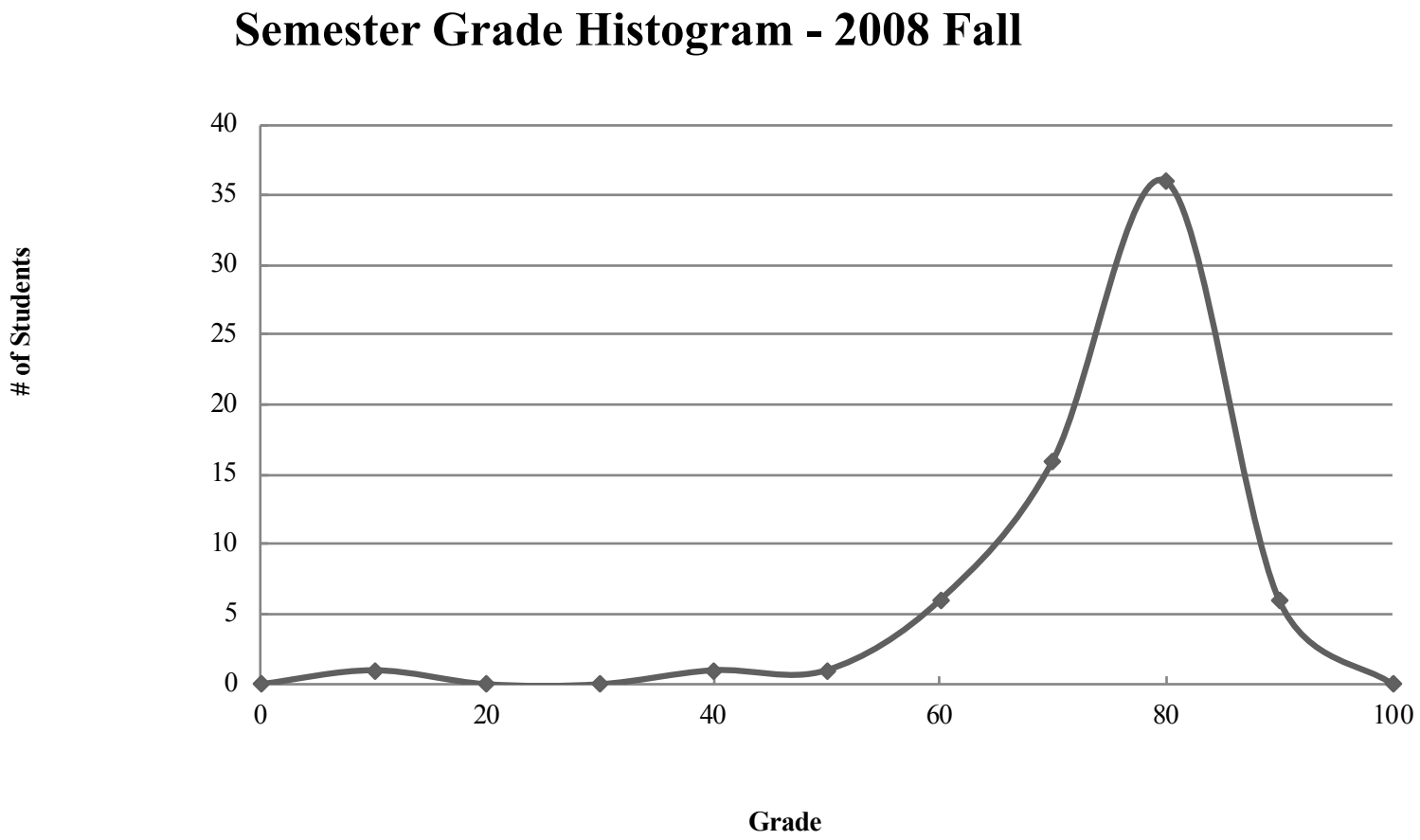
Polly is not nice!

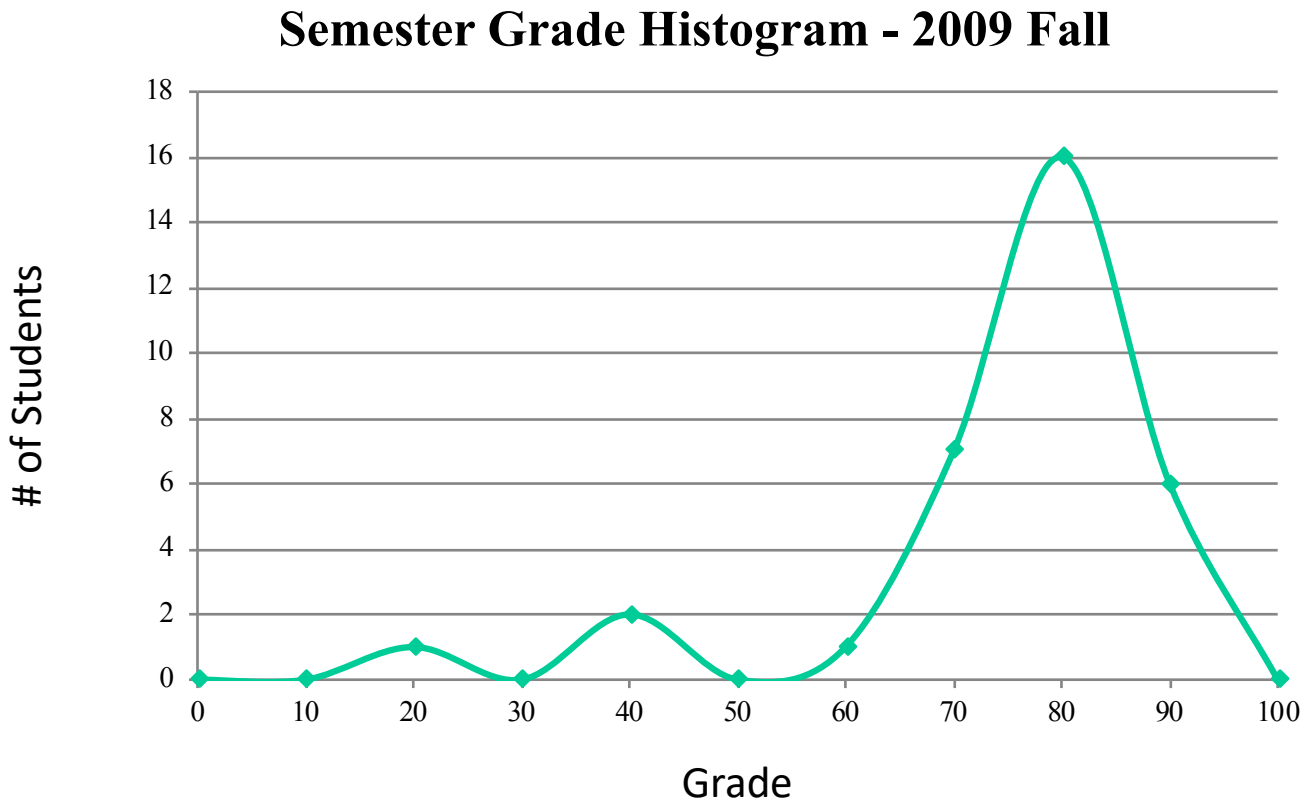

Semester Grade Histogram - 2004 Fall
# of Students
30
25
20
15
10
5
0
0
20
40
60
80
100
Grade

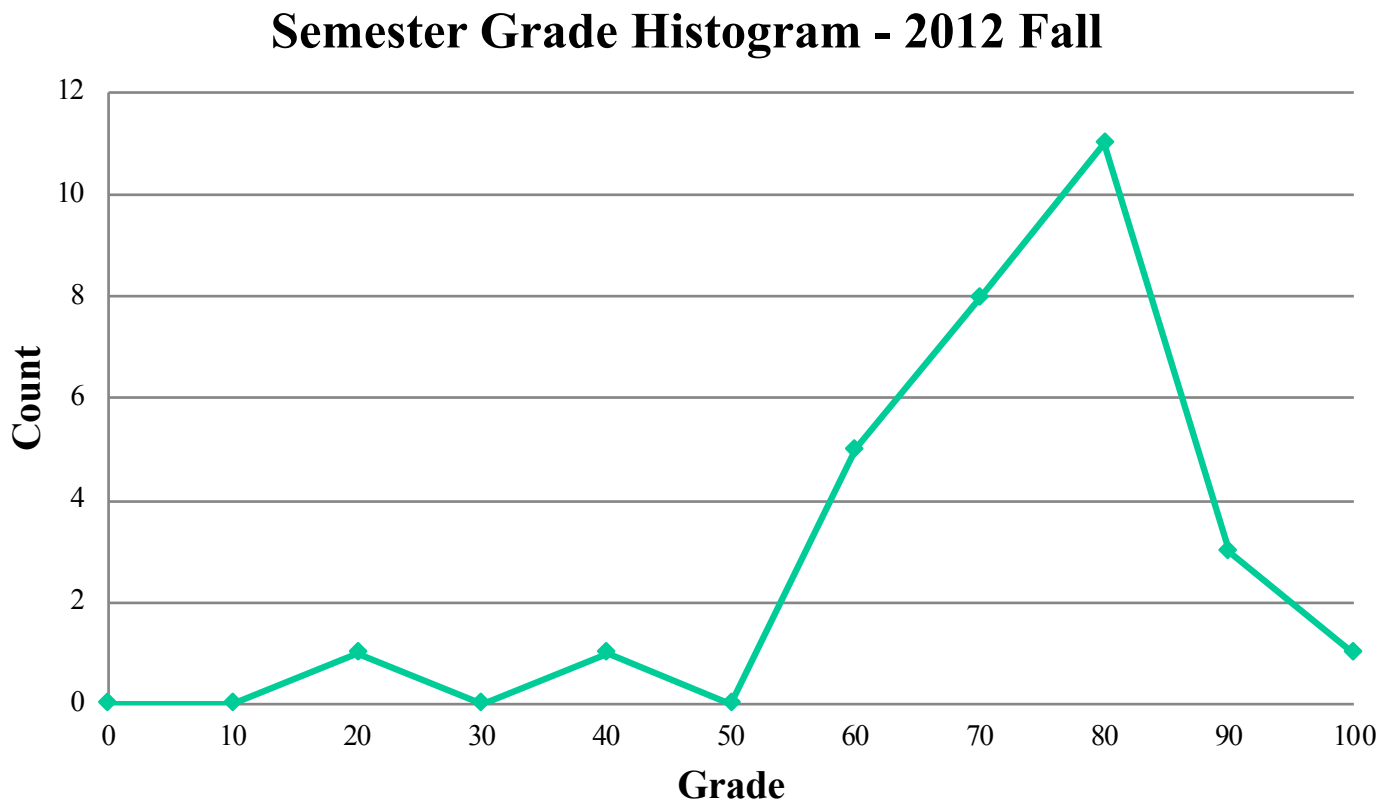

Semester Grade Histogram - 2005 Fall
# of Students
50
40
30
20
10
0
0
20
40
60
80
100
Grade

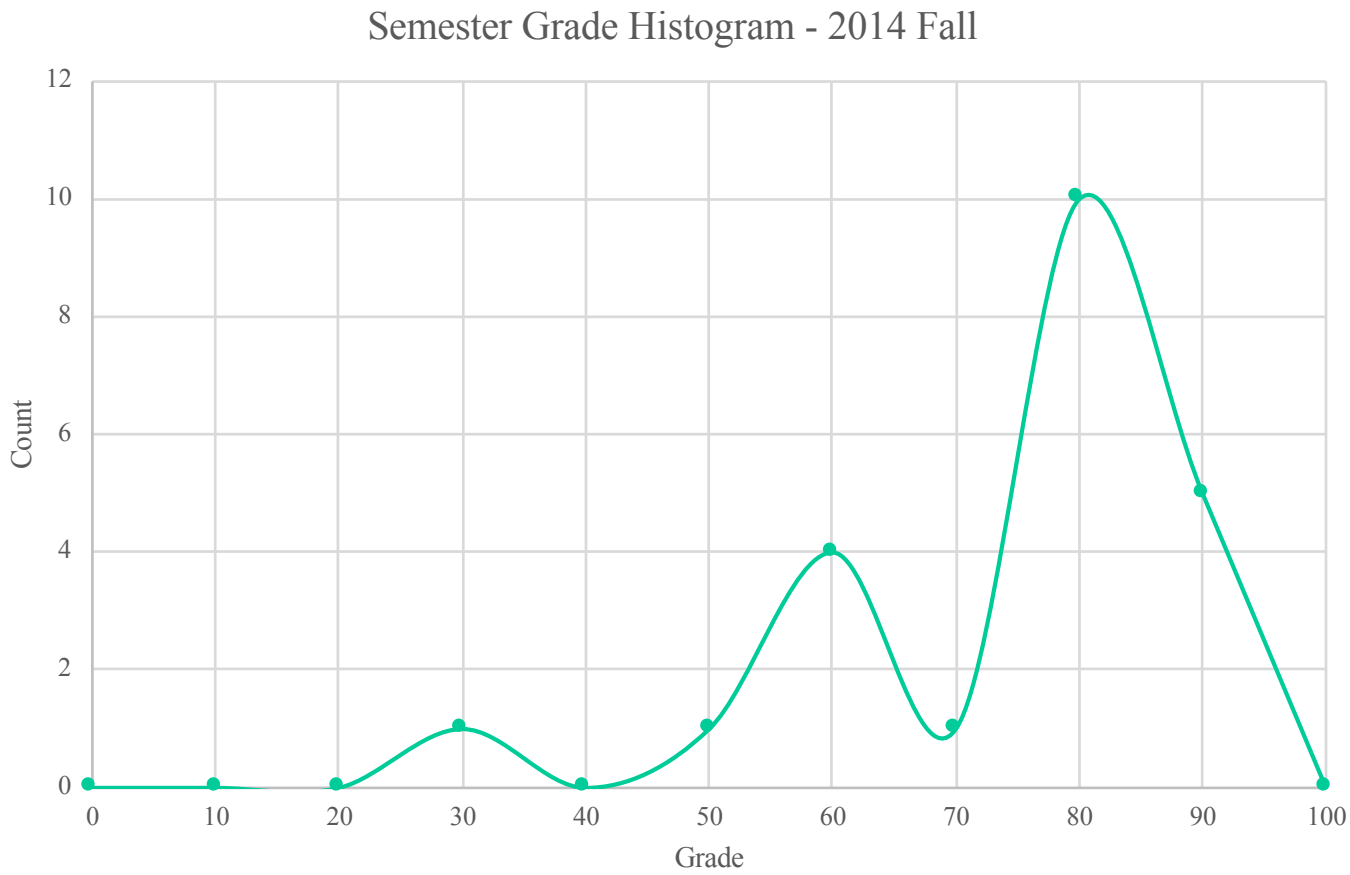

Semester Grade Histgram - 2006 Fall
# of Students
40
30
20
10
0
0
20
40
60
80
100
Grade

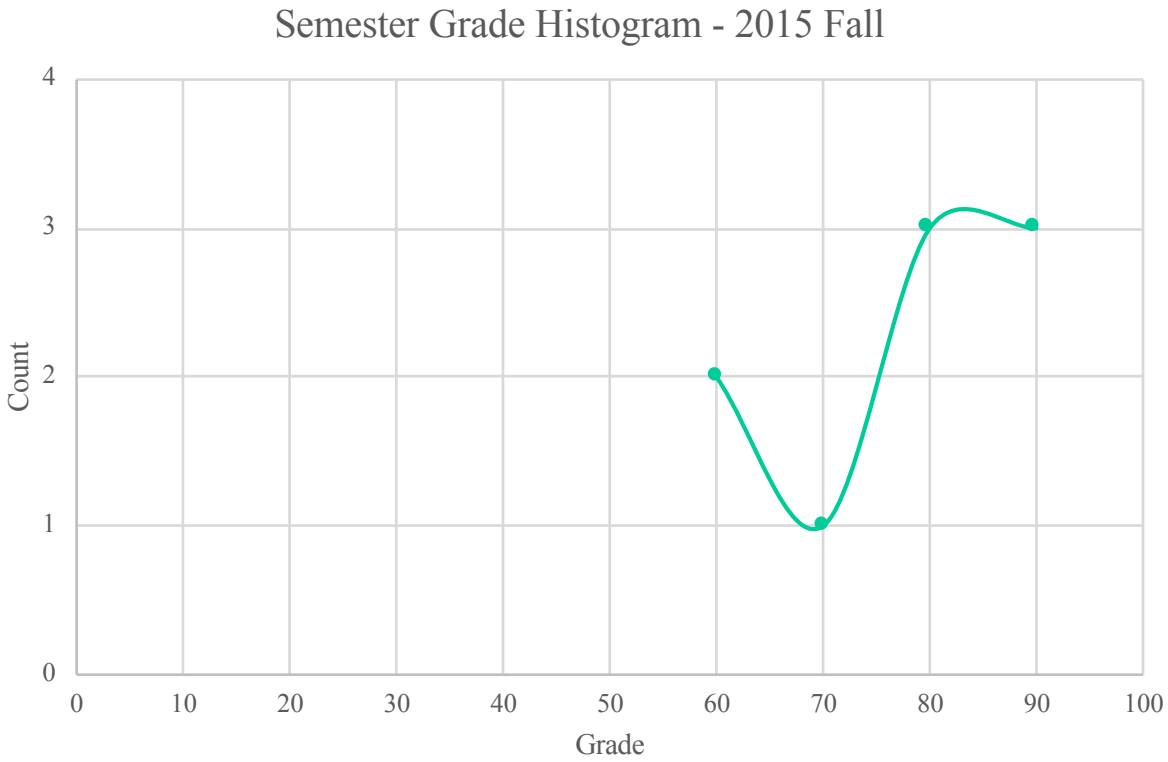

Semester Grade Histogram - 2007 Fall
# of Students
35
30
25
20
15
10
5
0
0
20
40
60
80
100
Grade

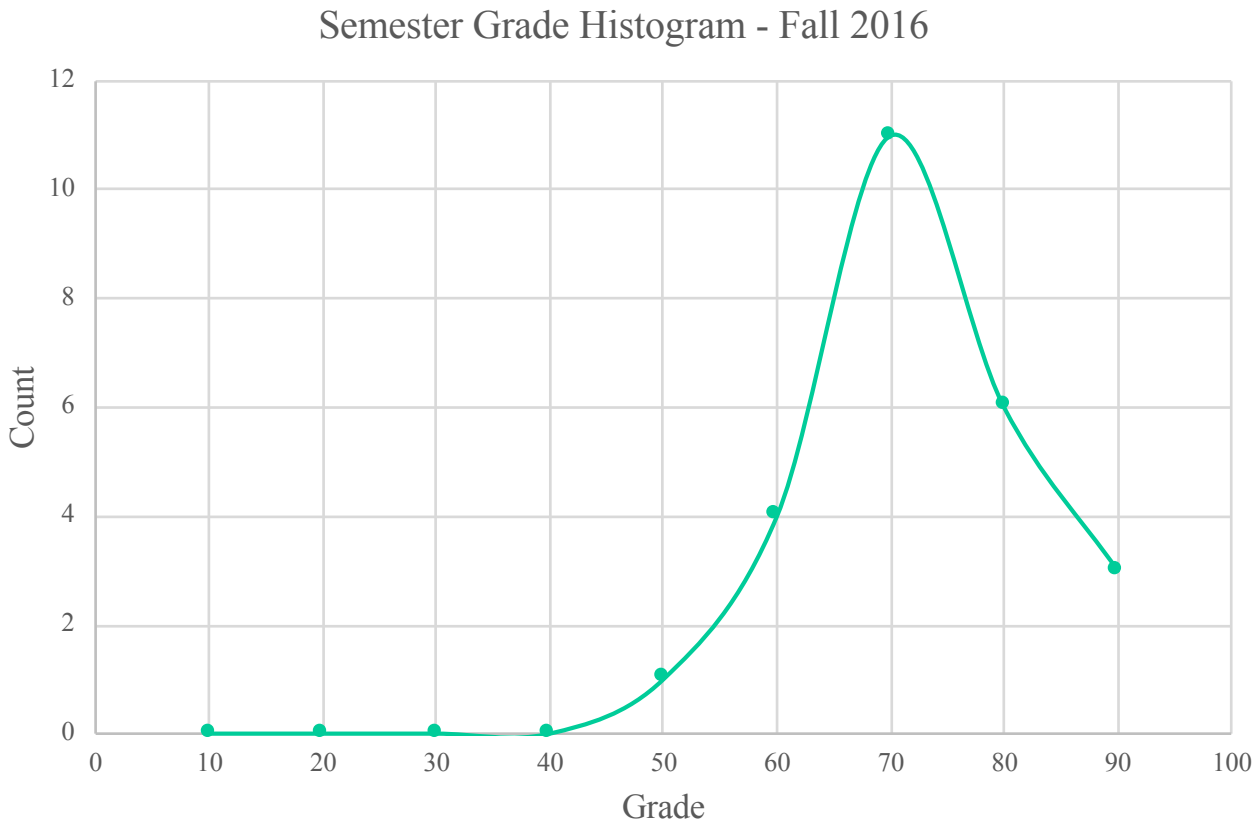

Semester Grade Histogram - 2008 Fall
# of Students
40
35
30
25
20
15
10
5
0
0
20
40
60
80
100
Grade

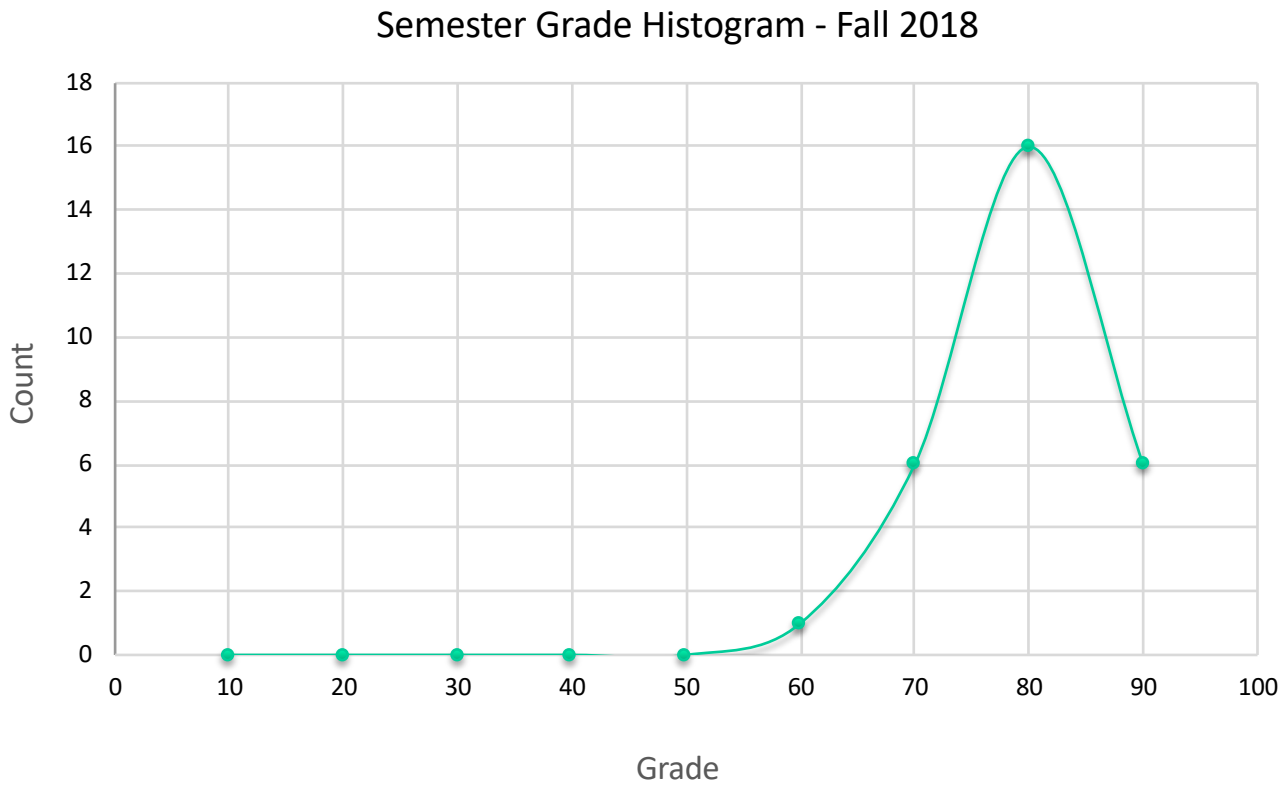

Semester Grade Histogram - 2009 Fall
# of Students
18
16
14
12
10
8
6
4
2
0
0
10
20
30
40
50
60
70
80
90
100
Grade


Semester Grade Histogram - 2012 Fall
Count
12
10
8
6
4
2
0
0
10
20
30
40
50
60
70
80
90
100
Grade


Semester Grade Histogram - 2014 Fall
Count
Grade
0
2
4
6
8
10
12
0
10
20
30
40
50
60
70
80
90
100


Semester Grade Histogram - 2015 Fall
Count
Grade
0
1
2
3
4
0
10
20
30
40
50
60
70
80
90
100


Semester Grade Histogram - Fall 2016
Count
Grade
0
2
4
6
8
10
12
0
10
20
30
40
50
60
70
80
90
100


Semester Grade Histogram - Fall 2018
Count
Grade
0
2
4
6
8
10
12
14
16
18
0
10
20
30
40
50
60
70
80
90
100

Today

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-fall-19/
- Polly Huang
  - http://homepage.ntu.edu.tw/~pollyhuang
  - Click the ‘Teaching’ link
  - Then, click the ‘Fall 2019’ under the ‘Introduction to Computer Networks’ category

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Lecture Info

- Location
  - BL-212
- Time
  - Wednesday, 1:20-2:10;
  - Thursday, 10:20-11:10, 11:20-12:10
  - Please note that during the breaks the priority goes to the calls of nature. Questions will be addressed afterwards

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 12:10-1:00
- Or by appointment

The TA

- None

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Nature

- A first course on data networks
- Designed for EECS students

Prerequisite

- Introduction to Computer Programming (must)
- Introduction to Computers (must)
- Data Structure and Programming Language (preferred)

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 Half

- 01 09/11- Class Admin
- 02 09/18- Overview
- 03 09/25- Overview (PA#1)
- 04 10/01- Application Layer: Web/HTTP, FTP
- 05 10/09- Application Layer: SMTP, DNS, P2P (EA#1)
- 06 10/16- Application Layer: Unix Socket Programming
- 07 10/23- Transport Layer: UDP, Reliable transfer (PA#2)
- 08 10/30- Transport Layer: TCP error recovery
- 09 11/06- Transport Layer: TCP congestion control (EA#2)

Syllabus+Schedule: 2nd Half

- **10 11/13- Midterm Examination**
- 11 11/20- Network Layer: Routing Principle
- 12 11/27- Network Layer: IPv4 (PA#3)
- 13 12/04- Network Layer: IPv6, Multicast Routing
- 14 12/11- Link Layer: MAC (PA#4)
- 15 12/18- Link Layer: Ethernet
- 16 12/25- Wireless and Mobile (EA#3)
- 17 01/01- Multimedia Networking
- **18 01/08- Final Examination**

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- **Your responsibility & Grading policy**
  - Homework
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Grading

- Homework
  - Essay assignments (15%)
  - Practical assignments (20%)
- Interaction
  - In-class quiz (15%)
  - Participation (10%)
- Exams
  - Midterm (20%)
  - Final (20%)

Team vs. Individual

- Teamwork
  - Essay assignments (15%)
  - Practical assignments (20%)
  - In-class quiz (15%)
- Individual
  - Participation (10%)
  - Midterm (20%)
  - Final (20%)

Team Up – Loners Allowed

- 1-3 students per team
  - No more
- Same members for
  - Homework
  - In-class quiz
- Break-up allowed
  - But be cautious of your decision

Homework Assignments

- 3 essay assignments
- 4 practical assignments
  - Unix and socket programming exercises

- Submission all in electronic format
- **No late assignments**

Essay Assignments

- Essays
  - Assigned topic
  - Search for additional material (google or else)
  - Read and discuss as a group
  - Set your storyline
  - Write a 3-page essay about it
  - Submission all in electronic format
- To fulfill this requirement
  - 3-page write-up (5% each)

Practical Assignments

- PA1: Basic Unix commands (5%)
- PA2: Unix socket web server stage 1 (5%)
  - A Simple Echoer
- PA3: Unix socket web server stage 2 (5%)
  - A Simple HTTP 1.0 Command Interpreter
- PA4: Unix socket web server stage 3 (5%)
  - A Simple HTTP 1.0 Web Server

In-Class Quiz

- Random quiz
  - Problem related to the topics of the week
  - Given time to work on in class
- To fulfill this requirement
  - Submit your solutions in/off class (by the Friday of Week 17)
  - Graded by completion rate (total 15%)
  - Top sharers get special reward

Class Participation

- Any in-class or **off-class** interaction counts
  - Remember to state your **name**
- Off-class interaction includes
  - Coming to the office hour
  - Interacting over FB/email
- Graded by curve (scale to min/max of the class)

Exams

- **1 Midterm (20%)**
- **1 Final (20%)**
- In Q&A form
- Old exams available from the class page
- **No early/makeup exams**
  - **Many sorries to exchange students who need to leave early for the winter quarter at home universities**

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

- Local carrier

  歐亞 Eurasia Book Co.

  Tel: 02-8912-1188, FAX: 02-8912-1166

Additional Material

- Lecture slides in pdf format

- Available from the course page

Which is again here:

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Questions?

Or join the Facebook group and post!

Quiz Time!