

**JHU - Krieger School of Arts & Sciences / Whiting School of Engineering**  
**ASEN.2017.Fall**

**Course:** EN.601.618.01.FA17: Operating Systems

**Instructor:** Peng Huang \*

**1 - The overall quality of this course is:**

Response Option	Weight	Frequency	Percent	Percent Responses			Means				
Poor	(1)	0	0%				4.50	4.07	4.02		
Weak	(2)	0	0%								
Satisfactory	(3)	2	12.5%								
Good	(4)	4	25%								
Excellent	(5)	10	62.5%								
N/A	(0)	0	0%								
				0	25	50	75	100	Instructor	School Level	Department Level
<b>Return Rate</b>	<b>Mean</b>	<b>STD</b>	<b>Median</b>	<b>School Level</b>	<b>Mean</b>	<b>STD</b>	<b>Median</b>	<b>Department Level</b>	<b>Mean</b>	<b>STD</b>	<b>Median</b>
16/17 (94.12%)	4.50	0.73	5.00	10,238	4.07	0.98	4.00	1,807	4.02	1.02	4.00

**2 - The instructor's teaching effectiveness is:**

**Peng Huang**

Response Option	Weight	Frequency	Percent	Percent Responses			Means				
Poor	(1)	0	0%				4.50	4.05	3.92		
Weak	(2)	1	6.25%								
Satisfactory	(3)	1	6.25%								
Good	(4)	3	18.75%								
Excellent	(5)	11	68.75%								
N/A	(0)	0	0%								
				0	25	50	75	100	Instructor	School Level	Department Level
<b>Return Rate</b>	<b>Mean</b>	<b>STD</b>	<b>Median</b>	<b>School Level</b>	<b>Mean</b>	<b>STD</b>	<b>Median</b>	<b>Department Level</b>	<b>Mean</b>	<b>STD</b>	<b>Median</b>
16/17 (94.12%)	4.50	0.89	5.00	10,146	4.05	1.05	4.00	1,785	3.92	1.14	4.00

**3 - The intellectual challenge of this course is:**

Response Option	Weight	Frequency	Percent	Percent Responses			Means				
Poor	(1)	0	0%				4.69	4.15	4.25		
Weak	(2)	0	0%								
Satisfactory	(3)	0	0%								
Good	(4)	5	31.25%								
Excellent	(5)	11	68.75%								
N/A	(0)	0	0%								
				0	25	50	75	100	Instructor	School Level	Department Level
<b>Return Rate</b>	<b>Mean</b>	<b>STD</b>	<b>Median</b>	<b>School Level</b>	<b>Mean</b>	<b>STD</b>	<b>Median</b>	<b>Department Level</b>	<b>Mean</b>	<b>STD</b>	<b>Median</b>
16/17 (94.12%)	4.69	0.48	5.00	10,136	4.15	0.90	4.00	1,781	4.25	0.88	4.00

**4 - The teaching assistant for this course is:**

Response Option	Weight	Frequency	Percent	Percent Responses			Means				
Poor	(1)	0	0%				4.50	4.16	4.17		
Weak	(2)	0	0%								
Satisfactory	(3)	1	6.25%								
Good	(4)	6	37.5%								
Excellent	(5)	9	56.25%								
N/A	(0)	0	0%								
				0	25	50	75	100	Instructor	School Level	Department Level
<b>Return Rate</b>	<b>Mean</b>	<b>STD</b>	<b>Median</b>	<b>School Level</b>	<b>Mean</b>	<b>STD</b>	<b>Median</b>	<b>Department Level</b>	<b>Mean</b>	<b>STD</b>	<b>Median</b>
16/17 (94.12%)	4.50	0.63	5.00	10,133	4.16	0.99	4.00	1,783	4.17	1.00	4.00

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## ASEN.2017.Fall

**Course:** EN.601.618.01.FA17: Operating Systems

**Instructor:** Peng Huang \*

### 5 - Please enter the name of the TA you evaluated in question 4:

- Guoye Zhang
- Guoye
- Guoye Zhang
- Guoye
- Guoye
- Guoye
- Guoye
- Guoye Zhang
- Guoye
- Guoye
- Guoye Zhang

### 6 - Feedback on my work for this course is useful:

Response Option	Weight	Frequency	Percent	Percent Responses			Means				
Disagree strongly	(1)	0	0%			4.47	3.88	3.78			
Disagree somewhat	(2)	1	6.25%								
Neither agree nor disagree	(3)	0	0%								
Agree somewhat	(4)	5	31.25%								
Agree strongly	(5)	9	56.25%								
N/A	(0)	1	6.25%								
				0	25	50	75	100	Instructor	School Level	Department Level
Return Rate	Mean	STD	Median	School Level	Mean	STD	Median	Department Level	Mean	STD	Median
16/17 (94.12%)	4.47	0.83	5.00	10,091	3.88	1.08	4.00	1,767	3.78	1.14	4.00

### 7 - Compared to other Hopkins courses at this level, the workload for this course is:

Response Option	Weight	Frequency	Percent	Percent Responses			Means				
Much lighter	(1)	0	0%			4.63	3.35	3.63			
Somewhat lighter	(2)	0	0%								
Typical	(3)	1	6.25%								
Somewhat heavier	(4)	4	25%								
Much heavier	(5)	11	68.75%								
N/A	(0)	0	0%								
				0	25	50	75	100	Instructor	School Level	Department Level
Return Rate	Mean	STD	Median	School Level	Mean	STD	Median	Department Level	Mean	STD	Median
16/17 (94.12%)	4.63	0.62	5.00	10,120	3.35	1.03	3.00	1,773	3.63	1.00	4.00

### 8 - What are the best aspects of this course?

- The projects were good for reinforcing the course content and making sure we understood the material.
- Well organized course syllabus and materials. Interesting topic.
- Comprehensive understanding of OS internals through Pintos modification. Guoye was amazing.
- The lectures were wonderful and the professor is very easy to approach. I got the impression that he really cared about our understanding of the material and was a great teacher.
- Excellent teaching. Before I took the class, I got two problems, taking OS running for granted and having trouble to deal with OS level coding. After the course, those problems are solved. The content build up little by little and finally make the operating system running smoothly. And also you can see the growth of operating system. The design of OS is full of brilliant ideas and worth spending time on it. This course not only introduce me the knowledge in OS, but also make me think about programming, system design, and how to be a better programmer in the future.
- I loved this course, it was very challenging but very satisfying and I learned a lot
- The project are very hard. But completing them is very rewarding.
- The lecture notes are really details and helpful.
- Interesting material, useful.
- teachers are responsible and patient, workloads are reasonable, learned a lot
- Instructor is good at lecturing (if we didn't seem engaged, it was mostly because it was 9am). Pintos projects were very good at reinforcing the concepts.

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## ASEN.2017.Fall

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### 9 - What are the worst aspects of this course?

- Since we started from an existing operating system, some parts seemed magic and I wasn't sure where other parts should go to integrate into the existing system.
- So darn hard.
- Group work. I felt like course grade suffers much because of the difficulty of merging work with group partners with wildly different schedules, skills, and motivation.
- The projects were really time consuming and challenging. Not a lot of guidance on them was provided. It was sometimes the case where I would work on one non-stop for a week, and still not do well because the design was fundamentally flawed - but attempts to get advice on said design early on often failed because it was either vague or given a false OK (i.e. I'm told it looks fine only for it to not work when actually implemented I would then come in to get help debugging, and get a "why did you think that would work?" type of response. I would then have to re-write the entire code anyways with a different design).
- Sleep deprivation.
- Nothing! or maybe just the challenging labs but that was fun
- It is very hard to get started on the projects.
- For each lab, didn't explain the correct implementation details. Even though we complete each lab, we still have some tests cannot pass or still have some confusions (But lacking time to go deeper, as each lab has very heavy workload). Hope this course will have tutorials for each lab. Not just the review sessions that just outline the implementation.
- Difficult exams and homeworks. Coding is very difficult to debug.
- I think the project work is too heavily bunched up. A larger number of smaller-scope projects would let us apply what we learned soon after learning it, rather than sometimes several weeks later. It would also let us get feedback earlier that we could apply in later projects. Exams seemed to have a lot of opportunities to lose points for reasons not related to understanding the material (e.g. math errors, bookkeeping errors while imitating various algorithms, short answer questions that actually included multiple questions, which was easy to miss, etc.). Poorly-written code from one group member reflected badly on all group members.

### 10 - What would most improve this class?

- We had weekly lab discussion sessions, but due to some scheduling issue, I missed a lot of those. In the future, I think we might want to materialize the tutorial and make it available online somewhere.
- If we can implement an OS from scratch, that would be cool, but I don't know if that would drastically increase workload.
- Nothing really, the course is orchestrated well enough.
- Spend a whole class working on deep level GDB skills, or make a whole lab on it. It is critical to Pintos success, but to most students is a mystery.
- Breaking the projects down into shorter and smaller chunks. They honestly seemed too much at times, so taking one part of the table might also be good.
- For some project, we need to finish the project right after we be introduced the content. Maybe a change in the order of projects would be good.
- more office hours maybe
- Dividing the projects into smaller ones.
- Reduce the workload, let us have more time to understand each lab.
- Peer reviews on each homework project. We need to be able to report how we feel our teammates are contributing/not contributing to the project.
- Split projects into multiple pieces. Reduce dependency on math or bookkeeping (such as when imitating various algorithms) in exams. Also, starting later than 9am would help.

### 11 - What should prospective students know about this course before enrolling? (You may comment on any aspect of this course such as assumed background, readings, grading systems, and so on.)

- There's a lot of work but it's worth it. The online textbook is really good - entertaining and informative.
- It would be very helpful to find at least one partner that you know well enough to trust with the shared workload. I know some of you are really confident and plan to do the labs alone, but I strongly recommend this in retrospective.
- The professor has made it clear that this class will not be curved, but there are opportunities for extra credit. The lectures are really good and interesting but the projects are challenging and time consuming. The workload is much much heavier than your average CS course. I would only recommend this class to those with no other technical courses or an otherwise light load. Be prepared to spend entire weeks working on nothing but the material for this course. If you start only one week in advance you WILL NOT finish without at least two all-nighters! I typically started two weeks out, was still stressed, and got an average of 3 hours of sleep every night on the weeks where a project was due.
- A hard course, but worth the effort. Operating system is not only about getting the machine work, it includes the fundamental philosophy of computer science. Working on pintos is hard at first. But when you sit down and look at it for long enough, it will reveal the meaning of itself.
- IT IS CHALLENGING
- Students should have a strong background in the C language.
- Need very strong C programming skill!
- this course is quite hardcore, need to spend an amount of time
- Be familiar with C before entering, and make sure your project partners are also familiar with C.

# JHU - Krieger School of Arts & Sciences / Whiting School of Engineering

## ASEN.2017.Fall

**Course:** EN.601.418.01.FA17: Operating Systems

**Instructor:** Peng Huang \*

### 1 - The overall quality of this course is:

Response Option	Weight	Frequency	Percent	Percent Responses			Means				
Poor	(1)	0	0%								
Weak	(2)	0	0%								
Satisfactory	(3)	0	0%								
Good	(4)	1	25%								
Excellent	(5)	3	75%								
N/A	(0)	0	0%								
				0	25	50	75	100	Instructor	School Level	Department Level
Return Rate	Mean	STD	Median	School Level	Mean	STD	Median	Department Level	Mean	STD	Median
4/4 (100%)	4.75	0.50	5.00	10,238	4.07	0.98	4.00	1,807	4.02	1.02	4.00

### 2 - The instructor's teaching effectiveness is:

**Peng Huang**

Response Option	Weight	Frequency	Percent	Percent Responses			Means				
Poor	(1)	0	0%								
Weak	(2)	0	0%								
Satisfactory	(3)	0	0%								
Good	(4)	1	25%								
Excellent	(5)	3	75%								
N/A	(0)	0	0%								
				0	25	50	75	100	Instructor	School Level	Department Level
Return Rate	Mean	STD	Median	School Level	Mean	STD	Median	Department Level	Mean	STD	Median
4/4 (100%)	4.75	0.50	5.00	10,146	4.05	1.05	4.00	1,785	3.92	1.14	4.00

### 3 - The intellectual challenge of this course is:

Response Option	Weight	Frequency	Percent	Percent Responses			Means				
Poor	(1)	0	0%								
Weak	(2)	0	0%								
Satisfactory	(3)	1	25%								
Good	(4)	0	0%								
Excellent	(5)	3	75%								
N/A	(0)	0	0%								
				0	25	50	75	100	Instructor	School Level	Department Level
Return Rate	Mean	STD	Median	School Level	Mean	STD	Median	Department Level	Mean	STD	Median
4/4 (100%)	4.50	1.00	5.00	10,136	4.15	0.90	4.00	1,781	4.25	0.88	4.00

### 4 - The teaching assistant for this course is:

Response Option	Weight	Frequency	Percent	Percent Responses			Means				
Poor	(1)	0	0%								
Weak	(2)	0	0%								
Satisfactory	(3)	0	0%								
Good	(4)	0	0%								
Excellent	(5)	2	50%								
N/A	(0)	2	50%								
				0	25	50	75	100	Instructor	School Level	Department Level
Return Rate	Mean	STD	Median	School Level	Mean	STD	Median	Department Level	Mean	STD	Median
4/4 (100%)	5.00	0.00	5.00	10,133	4.16	0.99	4.00	1,783	4.17	1.00	4.00

# JHU - Krieger School of Arts & Sciences / Whiting School of Engineering

## ASEN.2017.Fall

**Course:** EN.601.418.01.FA17: Operating Systems

**Instructor:** Peng Huang \*

### 5 - Please enter the name of the TA you evaluated in question 4:

• Guoye

### 6 - Feedback on my work for this course is useful:

Response Option	Weight	Frequency	Percent	Percent Responses	Means						
Disagree strongly	(1)	0	0%			4.50	3.88	3.78			
Disagree somewhat	(2)	0	0%								
Neither agree nor disagree	(3)	0	0%								
Agree somewhat	(4)	1	50%								
Agree strongly	(5)	1	50%								
N/A	(0)	0	0%								
0 25 50 75 100					Instructor	School Level	Department Level				
Return Rate	Mean	STD	Median	School Level	Mean	STD	Median	Department Level	Mean	STD	Median
2/4 (50%)	4.50	0.71	4.50	10,091	3.88	1.08	4.00	1,767	3.78	1.14	4.00

### 7 - Compared to other Hopkins courses at this level, the workload for this course is:

Response Option	Weight	Frequency	Percent	Percent Responses	Means						
Much lighter	(1)	0	0%			4.50	3.35	3.63			
Somewhat lighter	(2)	0	0%								
Typical	(3)	0	0%								
Somewhat heavier	(4)	1	50%								
Much heavier	(5)	1	50%								
N/A	(0)	0	0%								
0 25 50 75 100					Instructor	School Level	Department Level				
Return Rate	Mean	STD	Median	School Level	Mean	STD	Median	Department Level	Mean	STD	Median
2/4 (50%)	4.50	0.71	4.50	10,120	3.35	1.03	3.00	1,773	3.63	1.00	4.00

### 8 - What are the best aspects of this course?

- The projects were a lot of work but it was clear that they were relevant, important OS concepts. Lectures were really interesting too, easy to follow, and directly related to the project concepts.
- You learn a lot about operating systems and computers in general

### 9 - What are the worst aspects of this course?

- The amount of time spent debugging and fixing edge cases in the programs - especially in the early projects where we weren't as familiar with the starter code. It would've been nice to have a more thorough explanation of the code from the beginning, and maybe a quick tutorial on the utilities like the list functions, etc. This would've helped a lot for me!
- The labs can be extraordinarily time consuming

### 10 - What would most improve this class?

- As above, some more specific guidance for the early projects.
- If the instructor were to go over how to individually run tests in gdb. My partner and I figured this out for ourselves and it helped us immensely

### 11 - What should prospective students know about this course before enrolling? (You may comment on any aspect of this course such as assumed background, readings, grading systems, and so on.)

- The workload is large relative to other upper-level electives but the projects are definitely worthwhile if you are interested in the topics.

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**ASEN.2017.Fall**

**Course:** EN.601.318.01.FA17: Operating Systems

**Instructor:** Peng Huang \*

**1 - The overall quality of this course is:**

Response Option	Weight	Frequency	Percent	Percent Responses	Means							
Poor	(1)	0	0%		4.11	4.07	4.02					
Weak	(2)	1	11.11%									
Satisfactory	(3)	1	11.11%									
Good	(4)	3	33.33%									
Excellent	(5)	4	44.44%									
N/A	(0)	0	0%									
					0	25	50	75	100	Instructor	School Level	Department Level
Return Rate	Mean	STD	Median	School Level	Mean	STD	Median	Department Level	Mean	STD	Median	
9/9 (100%)	4.11	1.05	4.00	10,238	4.07	0.98	4.00	1,807	4.02	1.02	4.00	

**2 - The instructor's teaching effectiveness is:**

**Peng Huang**

Response Option	Weight	Frequency	Percent	Percent Responses	Means							
Poor	(1)	0	0%		4.33	4.05	3.92					
Weak	(2)	0	0%									
Satisfactory	(3)	2	22.22%									
Good	(4)	2	22.22%									
Excellent	(5)	5	55.56%									
N/A	(0)	0	0%									
					0	25	50	75	100	Instructor	School Level	Department Level
Return Rate	Mean	STD	Median	School Level	Mean	STD	Median	Department Level	Mean	STD	Median	
9/9 (100%)	4.33	0.87	5.00	10,146	4.05	1.05	4.00	1,785	3.92	1.14	4.00	

**3 - The intellectual challenge of this course is:**

Response Option	Weight	Frequency	Percent	Percent Responses	Means							
Poor	(1)	0	0%		4.89	4.15	4.25					
Weak	(2)	0	0%									
Satisfactory	(3)	0	0%									
Good	(4)	1	11.11%									
Excellent	(5)	8	88.89%									
N/A	(0)	0	0%									
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**4 - The teaching assistant for this course is:**

Response Option	Weight	Frequency	Percent	Percent Responses	Means							
Poor	(1)	0	0%		4.00	4.16	4.17					
Weak	(2)	1	11.11%									
Satisfactory	(3)	2	22.22%									
Good	(4)	2	22.22%									
Excellent	(5)	4	44.44%									
N/A	(0)	0	0%									
					0	25	50	75	100	Instructor	School Level	Department Level
Return Rate	Mean	STD	Median	School Level	Mean	STD	Median	Department Level	Mean	STD	Median	
9/9 (100%)	4.00	1.12	4.00	10,133	4.16	0.99	4.00	1,783	4.17	1.00	4.00	

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## ASEN.2017.Fall

**Course:** EN.601.318.01.FA17: Operating Systems

**Instructor:** Peng Huang \*

### 5 - Please enter the name of the TA you evaluated in question 4:

- Guoye Zhang
- Guoye
- Guoye Zhang
- Guoye
- Guoye

### 6 - Feedback on my work for this course is useful:

Response Option	Weight	Frequency	Percent	Percent Responses				Means			
Disagree strongly	(1)	0	0%								
Disagree somewhat	(2)	1	11.11%								
Neither agree nor disagree	(3)	1	11.11%								
Agree somewhat	(4)	5	55.56%								
Agree strongly	(5)	2	22.22%								
N/A	(0)	0	0%								
<b>Return Rate</b>	<b>Mean</b>	<b>STD</b>	<b>Median</b>	<b>School Level</b>	<b>Mean</b>	<b>STD</b>	<b>Median</b>	<b>Department Level</b>	<b>Mean</b>	<b>STD</b>	<b>Median</b>
9/9 (100%)	3.89	0.93	4.00	10,091	3.88	1.08	4.00	1,767	3.78	1.14	4.00

### 7 - Compared to other Hopkins courses at this level, the workload for this course is:

Response Option	Weight	Frequency	Percent	Percent Responses				Means			
Much lighter	(1)	0	0%								
Somewhat lighter	(2)	0	0%								
Typical	(3)	0	0%								
Somewhat heavier	(4)	1	11.11%								
Much heavier	(5)	8	88.89%								
N/A	(0)	0	0%								
<b>Return Rate</b>	<b>Mean</b>	<b>STD</b>	<b>Median</b>	<b>School Level</b>	<b>Mean</b>	<b>STD</b>	<b>Median</b>	<b>Department Level</b>	<b>Mean</b>	<b>STD</b>	<b>Median</b>
9/9 (100%)	4.89	0.33	5.00	10,120	3.35	1.03	3.00	1,773	3.63	1.00	4.00

### 8 - What are the best aspects of this course?

- Interesting material
- The lectures are interesting, and relevant. The instructor cares about the well-being and learning of his students.
- Prof. Huang is an amazing professor, he truly cares about students and learning OS. He's great to speak to if you have any problems, very understanding and helpful.
- Direct engagement of lecture material in labs.
- Interesting material.
- One strength of the course is that students get to directly implement or improve OS features, giving students a very good understanding of how an OS works. The homeworks are optional so students are able to do them on their own time. The professor was also very reasonable with student accommodations for issues such as group members dropping the course or shifting around.
- I thought that this course was very good at putting operating systems into practice by a bootable operating system and requiring understanding of pintos to do the homework.

### 9 - What are the worst aspects of this course?

- Homeworks are very long and difficult, not given any time in class.
- The projects are insanely time consuming.
- The work load is huge. You essentially build an OS from ground up, and it makes it hard to actually enjoy the work.
- Labs are somewhat bloated and could be broken up into smaller parts due individually
- Tons of work. There shouldn't be group assignments because it will always end up just one or two people doing the bulk of work.
- The assignments were at times very time consuming, and sometimes project directions seemed somewhat unclear - a few more pointers in the right direction would have helped immensely without compromising the learning experience for students.
- I felt that at times pintos can be mysterious as to what things are for, and that it is very difficult to debug pintos because of all of the moving parts of the OS.

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## ASEN.2017.Fall

**Course:** EN.601.318.01.FA17: Operating Systems

**Instructor:** Peng Huang \*

### 10 - What would most improve this class?

- Nothing. This was an excellent class.
- A more extended schedule with which to perform the projects.
- Change up how the projects are done - Pintos is great, but its so massive that its hard to learn.
- If student labs were broken up into their individual parts and then due more frequently
- No group projects. Individual assignments only.
- Slightly more explicit directions for the lab assignments.
- I feel that spending more time in class on Pintos specifics would have helped in understanding exactly what was going on instead of reading and guessing which parts did what.

### 11 - What should prospective students know about this course before enrolling? (You may comment on any aspect of this course such as assumed background, readings, grading systems, and so on.)

- Low level (C) programming absolutely necessary. Need to be fearless about breaking code (and then fixing it later).
- You should have a strong grasp of C for this class. Knowing assembly language is also a plus.
- If you're worried about your course load this semester, maybe consider putting this class off for a later year.
- The course is a great OS course, but be prepared to do work long hours on the projects - MUST start projects early to finish comfortably. Homework assignments given in class are important materials to go over for the exams.
- This course is very homework heavy and people need to be confident in touching and modifying large systems of code.