

Spring 2020

## **IT 490-004: Systems Integration**

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## IT 490-003 Syllabus

### **Instructor:**

Matt Toegel (matthew.toegel@njit.edu)

Office Hours: Please visit <https://web.njit.edu/~mt85/> or Canvas for current times

(By Appointment)

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### **Academic Integrity:**

The work done is expected to be your own, any group work should clearly distinguish ownership of tasks. Use of snippets/material from others should be kept to a minimum and the source should be accredited where applicable. That being said, please also note the below:

***Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at:***

***<http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf>***

*Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. **Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university.** If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu* Any violations of the NJIT Honor Code will be brought to the attention of the Dean of Students.

### **Objective:**

This course will utilize your collective knowledge studied thus far. It'll be heavily project oriented simulating real-world work scenarios. You will work in a group on a complex project throughout the semester. It'll cover such skills related to System, Network, Database Administration, Software design/engineering, and full stack development.

### **Grading:**

Exams / Tests will be graded out of 100 points.

Projects / Assignments will be graded on a scale of 0.0 - 5.0. This scale can also be decimals between the whole numbers, but in general the grading schema is as follows:

0 Didn't do anything / No understanding / Comprehension

1 Submitted something relevant / Less than Minimal Understanding / Comprehension

2 Submitted partial requirements / Minimal Understanding / Comprehension

3 Submitted partial requirements (more so than a 2) / Basic Understanding / Comprehension

4 Serious attempt was made but missed criteria / Moderate Understanding / Comprehension

5 All requirements met without issues / Good Understanding / Comprehension

All points will be converted to a final percentage at the end of the semester.

**Grading Breakdown:**

Milestones: 20%

Proposal: 5%

Change Log: 5%

Midterm: 15%

Midterm Milestone: 20%

Final Project / Demo: 25%

Final Exam: 10%

**Grading Scale:**

A	100 % to 89.5%
B+	< 89.5 % to 84.5%
B	< 84.5 % to 79.5%
C+	< 79.5 % to 74.5%
C	< 74.5 % to 69.5%
D+	< 69.5 % to 64.5%
D	< 64.5 % to 59.5%
F	< 59.5 % to 0.0%

**Materials/Technologies:**

VirtualBox

Ubuntu (18.04 - given in class)

Github

Trello

A network router (one per group minimum)

No required textbooks; resources will be online

**Laptop capable of running multiple VMs**

**Submission Criteria:**

Project Proposal: The proposal will be the feature commitments of your project. You mention the goals/features and we'll discuss the grading targets. You must upload the design document to Canvas, but you will be expected to bring one paper copy that we'll annotate during our meeting. Any specific deliverables will be posted/shared to your Canvas thread. Without an approved proposal your project can't be graded and will result in a zero (0).

You will be required to present your project along with the role(s) and tasks for which you were responsible.

Change Log: Your team is expected to submit a complete log of the activities of your group.

This includes your Trello Board (Exported to JSON), All git repos and branch names, All Server Documentation, and Team Chat / Email Logs.

**Professional Conduct:**

This course is about learning to work in a professional team environment as well as the technical aspects. You are all expected to behave in such a manner both in and out of the classroom. You are expected to treat each other with respect and to refrain from any sort of personal misconduct. If there is conflict within a team, troubleshooting the issue is as much a responsibility of the team as any other deliverable. Any amount of disrespect or harassment will not be tolerated. See the NJIT Code of Student Conduct for further guidelines.

**Late Policy:**

Any projects that are submitted late will have a penalty of -1% per day late. No exceptions.

**Project Guidelines:****Option A - Software as Service**

You and your group are to identify a third party data source and build a service based upon that data. An example may include sports statistics, server status, market data, etc. It can be any source as long as it is legal to use and not generated by the team.

**Option B - Mobile / Web Game**

You and your group are to design a server backed game. You will be responsible for building the user tracking system, game state arbiters and databases. You will design the front end to work with web or mobile.

\*Both projects will be simulating a multiple server cluster and setting up basic networking, communication, and security for your cluster.

**Course Topics:**

Software as a service

Project Management

ETL

Messaging Layers

Server Side Development

Change Management

Disaster Recovery

**Illustrative Schedule:**

Week 1: Introduction / GIT & Trello Links Due

Week 2: Communication Layer Demonstration

Week 3: Project Proposals Due / Meetings Begin

Week 4: Milestone - Centralized Logging Functional

Week 5: Milestone - User Authentication Functional

Week 7/8: Midterm Exam / Midterm Project Deliverable Due

Week 9: Milestone - 3 Tiered Cluster Due

Week 12: Milestone - Deployment System Functional

Week 14/15: Final Exam / Final Project Presentations / Change Logs Due

*Syllabus is subject to change, attend class to stay current.*