

TCOM 570

Network Automation

Spring 2021

Instructor: Richard Saylor
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Office Hours: Immediately before class (Fridays 7:30PM, or by appointment)

Classes Meet: Fridays 7:30 PM - 10:00 PM, Synchronous Virtual via Blackboard classroom link

Course Description: This is a project-based course that focuses on the process of automating the configuration, management, testing, and operation of physical and virtual devices within a network. Topics covered include: Introduction to Python, PyCharm, Intro to Linux, Loops and conditions, Function, Class, string and data manipulation, Python sockets, Logging, error handling, Regex, Pandas, Database (SQLite3/mongodb), Paramiko, Flask and Graphing, Requests, API and web scrapping and Ansible for network automation.

Course Goals: This course will present students with the foundations of network automation. The course builds upon the use of Python as the basic automation tool and introduces additional tools to guide students through the development and implementation of solutions for the tasks discussed. Students will acquire the skills to develop their own network automation tools to enable new capabilities or to validate the results of existing tools.

Honor Code: - The Mason Honor Code is in effect <http://oai.gmu.edu/honor-code/masons-honor-code/> Student members of the George Mason University community pledge not to cheat, plagiarize, steal, and/or lie in matters related to academic work.

Grading:

- 5 Homework/programming assignments
- 1 Paper
- 1 Final Project

Homework/programming assignments:	50%
Paper:	20%
Final Project:	30%

Course assignments and projects:

Assignments and projects will be assigned during the class and are due at 8AM EST the following week. unless specified differently. Project due dates are firm, as I will grade and discuss the projects in the subsequent class meeting.

Completeness:

You are expected to complete all assignments on time. Incomplete, late, or missing work will negatively affect your final grade.

Term Paper:

There will be one term paper for this course due on April 17th . The topics are to be discussed in class. However, there are no specific requirements on how wide or deep the contents should be. The paper should be use Times New Rome, Font 10, Line Space 1.5 and Margins 1.0' all around. The paper should have a cover page, table of contents, abstract and work/paper cited. The minimum content pages should be NO less than 10.

Final Exam:

Final score will be based on Final Project. Final Project can be individual or a group of max 2 students. Topics for the Final Project will be discussed during class.

Online Lectures: This class is fully virtual, so unless you receive a message from me, the class will proceed, and your attendance at the class is expected. Meeting days are on Fridays at 7:30PM unless otherwise instructed.

Attendance Policy:

You are expected to be in each class, to participate, and to work on class-related tasks only. Unexcused absences or other issues will negatively affect your final grade.

Mason Calendar: https://registrar.gmu.edu/calendars/spring_2022-1/

The above link will provide you will Mason's important dates and deadlines.

Code Storage: A USB thumb drive or cloud storage is recommended to hold your code and data. The drive/space does not need to be large.

Personal Computer:

You may use your own computer for homework and projects.

Required Reading and Optional Material:**Required Texts (Kindle versions are available):**

[Mastering Python Networking: Your one-stop solution to using Python for network automation, programmability, and DevOps, 3rd Edition](#)

by Eric Chou, Michael Kennedy

ISBN-13 : 978-1839214677

Publisher - Packt Publishing

Edition – 3rd

[Python Scripting for Network Engineers: Realizing Network Automation for Reliable Networks](#)

by Wajid Hassan

ISBN-13: 978-1728791685

Publisher - Independently published

Edition – 1st

[Learn Python in One Day and Learn It Well \(2nd Edition\)](#)

ISBN-13: 978-1546488330

Publisher - Independently published

Edition – 2nd

Additional References (optional):

[Network Programmability and Automation: Skills for the Next-Generation Network Engineer](#)

by Jason Edelman, Scott S. Lowe

ISBN-13: 978-1491931257

Publisher – O'Reilly

Edition – 1st

Course Material: All course material is available on Mason Blackboard.

How do I get on Blackboard?

- Go to: <https://mymasonportal.gmu.edu/webapps/portal/frameset.jsp>
- Login with your Mason Credentials
- Click on the Courses tab
- Click on the TCOM-570-001 (Spring 2022)

How do I get to the online lectures (if necessary)?

- Follow instructions to login into Blackboard
- Click on **Tools**
- Click on **Blackboard Collaborate**
- You should see the current session listed
- Previously recorded sessions are accessed via the **Previously Recorded Tab**

In order for Blackboard to work properly, what do I need loaded on my computer?

- JAVA
- Quicktime
- Flash

Communication: All students must have a GMU email account and access to blackboard.gmu.edu. Please only use GMU email and BlackBoard for class-related communications. I will use one, the other, or both to communicate class-related information.

GMU Notice: The material provided in this course is proprietary. Uploading this material anywhere without the express permission of the instructor is strictly prohibited and a violation of the Mason Honor Code.

Office of Disability Services: Students with disabilities who seek accommodations in a course must be registered with the GMU Office of Disability Services (ODS) and inform the instructor, in writing, at the beginning of the semester. See <http://www2.gmu.edu/dpt/unilife/ods/> or call 703-993-2474 to access the ODS.

Final Note: I will make every effort not to adjust this syllabus, but I may do so if in the best interests of students and the learning objectives of the course.