



THE GEORGE WASHINGTON UNIVERSITY  
S C H O O L O F  
B U S I N E S S

Department of Decision Sciences

## **DNSC: 6290: Responsible Machine Learning**

Summer 2020

**Instructor:** Mr. Patrick Hall

**Email:** [jphall@gwu.edu](mailto:jphall@gwu.edu)

**Class time & location:** Webex - Thursdays 6:10-8:40 pm

**Office hours:** Webex - Thursdays 5:00-6:00 pm

**Pre-requisite course:** DNSC 6279 or equivalent, MSBA Program Candidacy or instructor approval.

**Course description:** Materials for a technical, nuts-and-bolts course about increasing transparency, fairness, security and privacy in machine learning.

**Class website:** [https://jphall663.github.io/GWU\\_rml/](https://jphall663.github.io/GWU_rml/)

**Course outline:**

- **Lecture 01: Interpretable Machine Learning**
- **Lecture 02: Post-hoc Explanation**
- **Lecture 03: Discrimination Testing and Remediation**
- **Lecture 04: Machine Learning Security**
- **Lecture 05: Machine Learning Model Debugging**
- **Lecture 06: Responsible Machine Learning Best Practices**

**Grading:** The course grade will be based on participation (emails, in-class questions and answers, etc.), a team or individual project, and public Kaggle leaderboard performance - with equal weights for each category. Each grading component is described in detail below.

- Individual participation: Attend class during the lecture, attend office hours, and ask or answer questions by email, blackboard, or other digital communication methods.
- Project: The project is designed to serve as an exercise in applying one or more of the machine learning techniques covered in the course to analyze realistic datasets. Students can use a variety of software tools to perform the analysis, including standard Python, R, or SAS packages. The deliverable for the final project is a GitHub repository or Kaggle kernel that displays your work in a manner appropriate for sharing with potential employers.
- Public Kaggle leaderboard: Your project must include at least one entry on a public Kaggle leaderboard. Considerations will be made for the difficulty of the contest when assessing student performance.

#### **Grading Weights:**

- Individual Participation: 1/3
- Kaggle Project: 1/3
- Public Scoreboard: 1/3

#### **Recommended Texts:**

- *Responsible Artificial Intelligence*, by Virginia Dignum (2019), Springer.
- *The Elements of Statistical Learning*, by Trevor Hastie, Robert Tibshirani, and Jerome Friedman (2017), Springer.

**Blackboard:** Some materials for this class have personal or corporate copyrights or licenses that prevent them from being shared on GitHub. Those materials or other internal information will be shared with students via [Blackboard](#).

**Reading Assignments:** The student is responsible for studying and understanding all assigned materials. If reading generates questions that are not discussed in class, the student has the responsibility of addressing the instructor privately or raising the issue in an appropriate digital medium.

**Copyrights and Licenses:** Most code examples are copyrighted by the instructor and provided with an [Apache Version 2 license](#). These code examples can be used for nearly any purpose, even commercially, as long as the copyright and license notice are preserved.

**Academic Integrity:**

If you are struggling with an assignment or class materials, require extra time for an assignment, or simply require additional assistance, see the instructor immediately.

Cheating and plagiarism will not be tolerated. Any case will automatically result in loss of all the points for the assignment, and may be a reason for a failing grade and/or grounds for dismissal. In case of a group assignment, all group members will receive a zero grade.

Any suspected case of cheating or plagiarism or behavior in violation of the rules of this course will be reported to the Office of Academic Integrity. Students are expected to know and understand all college policies, especially the code of [academic integrity](#).

**Attendance:** Regular attendance is expected. Students are held responsible for all of the work of the courses in which they are registered, and all absences must be excused by the instructor before provision is made to make up the work missed.

**Disability Services:** Please contact the [Disability Support Services](#) to establish eligibility and to coordinate reasonable accommodation.

**Class Policy Changes:** The instructor reserves the right to revise any items on this syllabus, including, but not limited to any class policy, course outline or schedule, grading policy, tests, etc. Note that the requirements for deliverables may be clarified and expanded in class, via email, on GitHub, or on Blackboard. Students are expected to complete the deliverables incorporating such additions.