

# QST BA 885: Advanced Analytics II

Spring 2022

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Instructor: Nima Doroud

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Office: HAR 610

Office Hours:

- In person: Mondays and Wednesdays 11:00 – 13:00.
- Over zoom: Anytime with prior appointment.

Teaching Assistant: TBD

Class Meetings: Mondays and Wednesdays 8:00 – 10:45

Class Location: HAR 306

## COURSE DESCRIPTION

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This course will build on BA865 by going deeper into various aspects of Neural Networks and Deep Learning. Our programming language of choice will be Python and we will primarily use TensorFlow/Keras for implementing Deep Learning models.

## COURSE MATERIALS

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The Jupyter/Colab notebooks presented during the lectures will be made available on [github](#). The lectures will be based on the references below which you can refer to for further reading.

- *Deep Learning with Python (2nd Edition)* by Francois Chollet
- *Deep Learning* by Ian Goodfellow, Yoshua Bengio and Aaron Courville
- *Deep Learning Cookbook* by Douwe Osinga

## COURSE EVALUATION (*Tentative*)

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- Class contributions and exercises 30%

You are encouraged to ask questions and actively participate in the discussions during the lectures. This can help improve the course quality and provide feedback to the lecturer. We will also have short hands-on exercises during the lectures.

- Minor assignments 30%

There will be 2 assignments to reinforce and expand on the course concepts. They will be graded based on your grasp on the fundamentals, your approach to solving the problems and your ability to communicate your solutions.

- Major assignments 40%

There will be a project which you can work on in pairs or on your own. The project will be broken down to 2 stages which you will report on at the end of the 4th and the 7th week by submitting a Jupyter/Colab notebook.

## COURSE POLICIES

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### 1. Attendance

There will be many detailed examples and discussions during my lectures as well as hands-on exercises from which you can only benefit if you are in attendance. While attendance is not mandatory, do bear in mind that it is a factor in your final grade.

### 2. Students with special needs

In keeping with university policy, any student with a disability who needs or thinks they need academic accommodations must call the Office of Disability Services at 353-3658 or stop by 19 Deerfield Street to arrange a confidential appointment with a Disability Services staff member. Accommodation letters must be delivered to me in a timely fashion (within two weeks of the date on the letter and not later than two weeks before any major examination). Please note that accommodations will not be made without an official letter of accommodation.

### 3. Conduct policy

You are expected to abide by the Academic Conduct Code which can be found [here](#). Succinctly put, any work present should be entirely your own. You are also expected to conduct yourself professionally when attending the lectures.

### 4. Sexual misconduct/Title IX Policy

The Questrom School of Business is committed to fostering a safe learning environment for all members of the community and preventing sexual misconduct. All forms of sexual misconduct, including rape, acquaintance rape, sexual assault, domestic and dating violence, stalking, and sexual harassment are violations of Boston University's policies, whether they happen on campus or off campus. Title IX of the Education Amendments of 1972 is a federal civil rights law that prohibits sex-based discrimination in federally funded education programs and activities. This law makes it clear that violence and

harassment based on sex and gender is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, etc. If you or someone you know has been harassed or assaulted, you can find the appropriate resources [here](#).

#### 5. Diversity and inclusion statement

In preparing this course I have, to the best of my ability, been mindful of how identity and culture impact the course content. You are encouraged to share your related personal experiences and perspective which will be respected and help me improve on my ability in this regard in the future. If there are topics that you feel would benefit from incorporation of social context or varying perspective, please do let me know. I will explore resources and opportunities for us to engage a wide variety of perspectives in our classroom.

### COURSE SCHEDULE (*Tentative*)

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Week	Topic	Notes
1	Course Logistics and review of the fundamentals	
2	Importance of data and model building, Transfer learning	minor hw due
3	Convolutional Neural Networks	
4	Recurrent Neural Networks, Natural Language Processing	Major hw due
5	How to talk to data engineers: Docker, SQL, Cloud computing	minor hw due
6 & 7	Guest lecturer, Generative models, Reinforcement Learning, Productionization	Major hw due