Georgia Institute of Technology

Summer 2017, CS 7646 Mach Learn For Trading Section O01
Instructor: Balch, Tucker (Primary)

Georgia Tech

There were: 154 possible respondents.

	Question Text	N	RR	Interpol. Median	0-3	3-6	6-9	9-12	12-15	15-18	18 +	N/A
1	Student: Hours per week	87	56%		0	11	18	29	14	11	4	0
					0-30	30-50	50-70	70-80	80-90	90-100	N/A	
2	Student: Percent attendance	85	55%		0	0	0	1	3	69	12	
3	Student: Percent homework completion	87	56%		0	0	1	2	2	82	0	
					5 Extremely Well	4	3	2	1 Completely Unprep	N/A		
5	Course: How prepared to take subject	87	56%	4.1	30	37	12	7	1	0		
					5 Exceptional Amt	4	3	2	1 Almost Nothing	N/A		
6	Course: Amount learned	87	56%	4.4	41	37	6	2	1	0		
					5 Exceptional	4	3	2	1 Very Poor	N/A		
7	Course: Assignments facilitated learning	85	55%	4.7	51	29	4	0	1	0		
8	Course: Assignments measured knowledge	87	56%	4.3	37	29	17	2	2	0		
9	Course Met Objectives	87	56%	4.6	50	30	4	2	1	0		
					5 Strongly Agree	4	3	2	1 Strongly Disagree	N/A		
10	Course: Overall effectiveness	86	56%	4.7	52	29	1	2	2	0		
					5 Exceptional	4	3	2	1 Very Poor	N/A		
15	Instructor: Clarity (Balch)	86	56%	4.7	54	29	2	0	1	0		
					5 Strongly Agree	4	3	2	1 Strongly Disagree	N/A		
16	Instructor: Communicated how to succeed (Balch)	83	54%	4.7	55	20	5	1	2	0		
					5 Exceptional	4	3	2	1 Very Poor	N/A		
17	Instructor: Respect for students (Balch)	84	55%	4.8	57	18	5	1	3	0		
					5 Extremely Enthus	4	3	2	1 Detached	N/A		
18	Instructor: Enthusiasm (Balch)	84	55%	4.8	57	25	1	0	1	0		
					5 Made Me Eager	4	3	2	1 Ruined Interest	N/A		
19	Instructor: Stimulates interest (Balch)	84	55%	4.7	54	23	5	1	1	0		
					5 Highly Accessible	4	3	2	1 Hard To Find	N/A		
20	Instructor: Availability (Balch)	83	54%	4.7	47	19	6	1	2	8		
					5 Extremely Helpful	4	3	2	1 Not Helpful	N/A		
21	Instructor: Feedback helpfulness (Balch)	83	54%	4.4	34	26	9	3	3	8		
					5 Strongly Agree	4	3	2	1 Strongly Disagree	N/A		
22	Instructor: Overall effectiveness (Balch)	84	55%	4.8	59	19	3	1	1	1		

Instructor	Text Responses
	Question: Course best aspect
	All of it! I loved this class.
	I loved how the assignments built on each other. Very cool.

	TAs, especially Andrew Cassidy went above and beyond to help students out.
	The projects were fun and challenging. The section on market theory and insights was enjoyable.
	The lectures were very informative and entertaining, and the rundown of the Python libraries was great.
	The best aspect was that pertaining to learning about the market. Some of the homework problems actually tested our knowledge about what we learned from the market.
	After several very theoretical courses in areas related to ML and AI, it was nice to have a chance to apply the material to a practical subject. I enjoyed learning something new about finance in the process.
	The projects really helped me understand the ML and finance portions of the course
	The instructors were outstanding. The materials and assignments were clear. The lectures were interesting and entertaining. The class was a pleasure to take
	This course has a good balance of theory and hands on practice. I really like the assigments/projects and feel they are practical.
	I was able to see machine learning applied to an entirely new domain, and learned the basic concepts of finance in the process.
	assignments
	Working with a real-life application: quantitative analysis of stock data
	The first part of the course is very well developed
	This was my first course in ML, so was really great to understand Supervised and Reinforcement Learning.
	udacity videos.
	Prof. Balch , Prof. David Byrd and Andrew were exceptional in responding to the students questions and over all a well organized course.
	Great projects for learning
	The projects helped solidify my understanding
	Really enjoyed the assignments. They were tied into the course material well.
	The projects were well thought out and facilitated the learning process.
	Nice balance of theory and practice
	Projects really helped understanding of concepts and how they might beimplemented
	learned the fundamental theory for trading
	The programming projects were the perfect blend of challenging, practical, educational, and interesting. I genuinely wanted to learn about this topic and would have considered it worthwhile to complete the programming projects in this course in my free time even if they were not assigned.
	Assignments and tests were always returned very promptly
	Projects
	The programming assignments in this course were really good. After implementing the algorithms, I definitely had a stronger understanding of how they work.
	The projects were spot on for effort, doability, and learning
	I found the lectures informative, including the ones on YouTube, even though the organization was less there. The sample questions for the exams were most useful and appreciated during the review for the exams.
	I learned about an area about which I had no interest nor knowledge before.
	The professionally produced lectures are very good. The classroom lectures and office hours helped with projects.
	Clear lectures and supporting youtube videos Active instructors and students on Piazza Real world application / project based
	The lectures were very informative and the projects reinforced the learning and were very challenging.
	Final Assignment being a capstone one.
	The projects
	I thought that the projects in this course were well-designed to illustrate applications of machine learning.
	Projects were very interesting
	detailed analysis of stocks
	The projects.
	I think it does a good job of tying fundamentals of finance to the machine learning problem and makes a good case for why you might want to do such a thing.
	the project helps me understand the machine learning algorithms and how to apply them in real life
	Interdisciplinary projects, combining ML coding and finance
	The project design is thoughtful and the work directly supports the learning objectives. I also appreciate the thoroughness of the assignment rubrics so that I can clearly know how my submission will be evaluated.

	The final project pulled everything together very well. It was difficult but really showed how everything works together very nicely.
	Learnt a lot on trading and Reinforcement Learning on trading was particularly interesting.
	The strong focus on applied knowledge and not just theoretical knowledge was a big plus for this course. And the energy that Prof Balch brought to his lectures was contagious. I especially enjoyed Prof Byrd's lecture on options and Vectorization
	All the quick response and support in the Piazza forums for questions regarding the lectures and assignments.
	Great projects
	The projects were really helpful in solidifying the material learned in the course.
	This was the best course of the four I've taken so far in the program. It surveyed a large amount of material at an appropriate level of depth, and the programming material was very useful and intresting.
	Each of the projects sort of coming together to form the basic components of the final project I thought was a really good thing.
	Office hours and TA access were great, and I loved the way the assignments were graded

Question: Course improvements

	On-line OMSCS instructor MIA most of the time and caused delay in responding time sensitive questions.
	I wish I had more time to spend on the final project. The shortened semester really hurt the overall flow of the course.
	Would have been better to focus on more on ML concepts, but understandably finance knowledge is an important prerequisite that must be covered.
	Less concentration on mechanics of the ML and more on how to apply that know to the market.
	Only complaint was having to skip some material and assignments due to the compressed summer schedule, but that always happens during summer semesters. Also, would be nice to see some of the Python libraries we use be upgraded to latest and greatest versions in the lab machines.
	The summer version of the class felt extremely crammed and rushed. I would have learned more if maybe there was one less exam.
	More topics. There was an extra topic on options that was also excellent... more like that would be great!
	Have the final revisions for assignments done earlier; also, it would be nice to use the most recent versions of libraries (Pandas, Python3.6, etc.)
	exam format 30 minutes 30 questions
	Production quality of the classroom lectures
	The last part of the course seems disorganized. Overall, Some videos contain errors that should be fixed in the video instead of mentioning that in a note below the video. Also could be improve the evaluation. A final project and a final exam seems like too much considering the time frame.
	assignment videos.
	Clearer project descriptions
	Moving to the newer versions should address some of the gotchas I encountered with the libraries as someone rather new to the python and scientific programming scene.
	It was the summer so this is said with a grain of salt, BUT we really didn't get to parameter selection/optimization, especially when evaluating stocks! While algorithms and mechanics of how learners work in really interesting to me but what I find most challenging when approaching problems like these are the assumptions made to discretize features and optimize parameters. I would have loved to see more focus on this aspect.
	More in depth material in the video lectures. Taking ML4T after ML and RL made the lectures seems extremely shallow at times. However, had I taken this course before ML and RL, I think it would've been a perfect preparation for those two courses!
	Add more lectures
	Better spacing of projects, summer semester seemed rushed towards the end
	show some real example which can beat the market
	Project instructions were being updated later than I expected in the course, and in a few cases instructions were inconsistent which made for a confusing experience. Example: In MC3P4 (final project) the Classifier hints page FAQ mentioned a 21 day holding requirement from a prior semester and confirmed it should be used in this project too, but the main project instructions didn't mention it and on t-square a TA confirmed the restriction didn't apply this semester. I understand the course is actively evolving based on feedback (which is great), but proof reading instructions for all assignments to make sure they're setting the desired expectations within a given semester would help give this excellent course the refined feel it deserves.
	If you take this after taking the intro to machine learning class it feels a bit high level. Would like to see more specifics to finance because often times it felt like we were building some machine learning algo and we just happened to be applying it to financial data sets
	It might be difficult, but I think it works best to have many smaller projects that build on each other rather than a few big projects where a slipup can cause the whole project to fail. Also I'm personally not a fan of multiple choice exams... I don't think they are a good fit for this kind of content. I think open book essay exams would work far better at evaluating our knowledge, plus help us learn the content since we'd have to explain our reasoning with logic and back it up with researched facts. And programming questions on an exam for a graduate class is just pointless IMHO. I feel like these types of exams are used in some of the OMSCS courses just because the classes are too big to do it the right way
	Too heavy on testing esoteric Python and Pandas syntax. This does not really promote learning the material, and feels more like gotcha questions for a master's level class.
	Exams should allow more time. 35 min is a very short time for the exams, specially if you want use the exams as a thinking / learning exercise for the students on top of them being a way to grade them.
	Not sure; it was a bit rushed, but it was summer
	Would be great to get the standard answer of the assignment, although I understand why the instructors hesitant to do that

Many students, including myself felt the very detailed python syntax questions on the short, timed first exam were not representative of learning about the broader concepts. This is why I had to rate Degree to which exams, quizzes, homework (or other evaluated assignments) measured your knowledge and understanding: with a three.

Better communication with the students, especially at the beginning of the semester.

Earlier release of final project. 2 weeks to complete along with completing final exam was more compressed than necessary. i.e. the previous project I finished in week 1 of 2. Had week idle, unable to get started on the most difficult/time consuming project.

Some of the project descriptions were outdated, and so students had to double check to make sure that they still apply for this semester. This should be fixed.

Split the final project into two.

Perhaps I have more financial background or dealt with those topics before, but the MC1P1 and MC2P1 (portfolio assessment and market simulator) could have been combined into one project. Personally, I would have enjoyed an additional ML project -- though this may be due the fact that MC3P3 was dro pped due to the shorter summer calendar.

I got a 100% on test 1, and am expecting a good grade on test 2, so please understand that context. I don't think the python code questions belong on a test. Humans are not a compiler/interpreter and should not be expected to be.

More machine learning

The tests....30 questions in 30 minutes? That's an undue level of stress that favors strong test takers.

While I think the in depth treatment of Python and Pandas is important, some of the esoteric indexing questions on the midterm could use tweaking.

NA

Too much is of the course unrelated to the actual material is ambiguous and left for piazza conversations to figure out before getting into the material.

Some project lectures can be rerecorded for better quality. Currently, some lectures were recorded from on-campus class, and the quality is not that good.

The midterm questions that covered Python seemed a bit ticky-tacky and gotcha style questions rather than testing for understanding. Also, it is only days away from the final, and we still haven't received information on which questions we missed on the midterm which would help for studying for the final.

Machine Learning for Trading II

No, it cant.

More lectures from Prof Byrd on Vectorization and Options- They were really good.

Timing on the assignments could be adjusted a little bit more depending on the complexity of the assignments (e.g., we had the same amount of time to complete easier and harder tasks and I think that should be adjusted according to the difficulty of the assignment). Also, I think the last video-lectures could be better organized (e.g., the first half of the Time Series data video on YouTube was used in one week and the second half was used in a subsequent week, thus making it a bit confusing when the syllabus pointed to the same video on different weeks). For some of those videos, there were no slides available to follow and as a consequence, I felt a bit lost on what was relevant enough to write as part of my notes.

Some parts of the exams were not very relevant, memorizing Python syntax is not useful.

The first exam is mostly on Python syntax, which feels outside of the scope of the content that we're trying to learn in this course and should be reserved for more entry level CS classes.

Exams - please get rid of the tricky python syntax gotcha questions. Please increase time limit.

Question: Other comments about quality of course

I was disappointed with this class because there was minimal application of the technics on the market. The last project made a jump from previous homework problems in that it expected that the student would know what indicators should be used and what approach to take. This is something that I was hoping to learn in the class vs. being self taught.

I enjoyed the Wiki site and thought it was a much easier way to view information about the course and assignments than in previous classes, where information was distributed via T-Square.

Outstanding quality. Thanks for putting all the effort into making a great course!

One of the highest quality classes I've seen.

course participation bu survey and activity in piazza is not appropriate. the participation survey is open for very short period, less than 1 week. and only top 150 active user got credit in piazza. then how about everyone is active? then they competing with each other, even with meaningless post sometimes? I feel the participation should be bonus instead of credit.

Excellent course overall. Really enjoyed both the lectures and the programming assignments. The exams were tough, but even they were fun in their own way.

Good course and well organized.

Very high quality course and great instructor. On par with the best in the program.

This is a really great course. I wish there had been time to implement a few other algorithms (like KNN) and maybe even get into neural networks. Basing the work in real problems (like stock trading) really helps to bring the classroom theory into real-world application.

While I have not taken the Machine Learning course yet, reading the Piazza comments from students who did complete that course makes me curious if there's a natural order between ML4T and Machine Learning for someone who is new to this area of computer science. I plan to also take Machine Learning, so I'll find out!

Lectures were well done and the supplementary lectures from the Atlanta campus on YouTube were also well done. I really found value in watching them all.

Brilliant

Great instructor, really good TAs with helpful office hours.

Question: Other overall comments

	Like other courses in this programming, I was expecting to have a quality teaching experience, but I was left with yet another self taught experience to do somewhat esoteric homework problems. I was also extremely disappointed with the format of the tests. While I understand the idea that short exam times attempt to show if the knowledge is retained, 1 min per problem for questions that you have seen for the first time is ridiculous.
	I think having a shared online forum (Piazza) for both online and on-campus sections of the course was a net positive. I enjoyed having a broader group of students to interact with throughout the course of the semester.
	Awesome course! Thanks to the instructors and TAs.
	Overall good course
	I learned a lot, but struggled with couple of assignments.
	Excellent course!
	course is easy to learn compared other core courses. but its real implementation in trading is not well explained and exemplified.
	Overall I loved this course.
	Great class. I had no experience with Machine Learning, and I feel very well prepared for taking the full Machine Learning course next semester!
	I would have appreciated the projects being release earlier. I am aware of the downside where the questions in office hour and on Piazza are less focused.
	Great instructor and TA interaction on Piazza. For OMSCS students this makes a HUGE difference. And I loved the on campus and on line classes both being handled through the same Piazza group. This took all the is the on campus course different discussion away. Great job all!
	Very enjoyable course. Manageable learning curve (as first ML course)
	This is a marvelous class! I wish there were more lectures! It would have been great if we could cover more topics in either ML or trading.
	Excellent practical course
	Providing the autograder is immensely helpful!
	Good course.
	I enjoyed the course and I feel like I learned a lot.
	Great course
	Great experience, would recommend the courses to others.
	This was a great and fun course, and the instructors were very helpful.
	Keep it up
	Question: Instructor greatest strength
Balch	The overall course content and the assignments that built on each other which lent the course a very strong coherence that is sometimes lacking in other courses.
Balch	Very engaging, very active and responsive on the student forums
Balch	Loved Dr. Balch's enthusiasm for the materials. The lectures were fun and easy to follow.
Balch	Corny jokes.
Balch	Dr. Balch was fantastic! I can tell he really enjoys teaching this material. I appreciated all of the videos that accompanied the Udacity lectures, especially those in which he explained key concepts about upcoming assignments. He also has a great sense of humor which comes through at times and made the class really enjoyable.
Balch	The material was explained very well. Lots of recorded lectures that helped me further grasp concepts. Very active on piazza!
Balch	Clarity. Clear desire to make courses that were clear and entertaining.
Balch	Professor was deeply knowledgeable and transmitted a lot of useful knowledge (that was outside the scope of the class)
Balch	recorded office hours that provide details for assignments
Balch	Knowledge of the subject
Balch	Prof. Balch videos on assignments and Q&A sessions, Andrew Cassidy office hours
Balch	Class videos and the TA's are very good.
Balch	Knowledgeable
Balch	Professor tucker was very responsive on Piazza during the entire semester. The course was planned out very well and built on the experience of the previous semesters.
Balch	Deep knowledge of the material.
Balch	Prof Balch explains complex topics in fun and intuitive ways.
Balch	Accessibility. Always responding on piazza
Balch	Industry experience
Balch	The lectures and resource material was great. There were plenty of extra YouTube videos of Prof. Balch has posted if students wanted to go more in-depth.

Balch	He was very communicative and timely in his Piazza interactions
Balch	Professors Balch and Byrd were very available on Piazza. Their response really improved the learning environment of the class.
Balch	Great enthusiasm for the subject is contagious; very quick responses to piazza questions
Balch	Clear communication Sense of humor Engaged and active on Piazza
Balch	Prof. Balch was knowledgable, enthusiastic, and funny. I could only imagine that attending his classes in person would have been enjoyable. Also, Prof. Balch was very active in Piazza, and this, in some ways, boosted morale.
Balch	Knowledge of the topic
Balch	I thought the instructor's mastery of both the financial topics as well as ML algorithms provided an excellent perspective for this material. As someone who is new to the field of machine learning, I found ML4T and Dr. Balch's instruction to be particularly effective at using an area that was somewhat known to me (financial analysis) to open up Machine Learning.
Balch	Clear communication and goal-oriented teaching. Overall excellent instructional capability.
Balch	I think Prof Balch presented material clearly and broke concepts down in a manner that was consistent and easy to understand.
Balch	Industry knowledge.
Balch	Active in piazza.
Balch	Bring real-world problems to the class, and have many interactions.
Balch	Concepts were very clearly explained.
Balch	Videos of the instructor giving guidelines on assignment was really good.
Balch	Because the instructor has real-world experience in the subject, all his comments and examples were very useful to understand the material of the class. Also, he was very active in the Piazza forums, which helped us whenever we had discussions regarding the lectures and assignments.
Balch	Background in Lucena provides very relevant practical experience
Balch	final project was really interesting - wish we had more time to spend on it and it didn't coincide with final exam.
	Question: Instructor improvements
Balch	Be more present to answer time sensitive questions such as exam format, exam questions, exam topics, etc.
Balch	You need to get in touch with students that are seeing this for the first time. While I understand you think you are correct for all aspects, you probably have not sat down and viewed the course from the perspective of a student.
Balch	Perhaps a little more concern for online students would be nice. Sometimes professor made comments on piazza that made him seem unwilling to help communicate information to online students via email or Tsquare notifications
Balch	None.
Balch	In the recorded classroom presentations the number of speech disfluencies was very distracting.
Balch	please improve the quality of assignment videos
Balch	Summer semester is a very tight fit for all the material. Some projects could've been released a bit earlier to make it easier for students that are working full time and need every extra evening hour they can get. This is an absolute minor point though as I know Professor Tucker and his TAs worked very hard to get the projects out as quickly as possible.
Balch	Prof Balch has a good sense of humor, but a few comments on the forums might have been interpreted as a bit snarky. Example: a student pointing out an area of confusion about a project that seemed worth clarifying in the project instructions or via an end of week update email with clarifications, Prof Balch suggested he'd also try to take out a full page ad in a newspaper. I liked the joke, but in writing it's sometimes unclear what someone's tone is. Not a major area for improvement, but a subtlety to keep in mind.
Balch	Focus and consolidation. His lectures are on Udacity, youtube, etc... felt like i was jumping around too much
Balch	Nothing
Balch	Nil
Balch	His ego. He comes off as extremely arrogant.
Balch	Nothing comes to mind.
Balch	Not having a finalized schedule ready to go was very annoying. The instructor's job is to instruct and administrate. The administrative part was a complete failure until the finalized schedule was released. This should be ready to go on day 1.
Balch	None
Balch	The part how machine learning could be used in finance could have more contents, this part is very interesting.
Balch	The professor was conspicuously absent for the first week or two and it was difficult to know what work I should be doing. If it weren't for other students who found the class website from previous semesters and posted it on Piaza, I would have been a good deal behind.
Balch	Sometimes answers on Piazza were too brief to be helpful.
Balch	Nothing

Balch	The effort the professor put into recording the videos on a live classroom and then into posting them to YouTube for the online section of the class was really good. I would love to see the use of a camera that could follow him along the classroom when he is writing on the board and a better microphone to listen to the students' questions.
Balch	exams: tricky python questions, time limit too low.
	Question: Instructor other comments
Balch	This class could have been so good, but it simply was not.
Balch	Great teacher!
Balch	Great teacher, great material. Loved the class and the subject matter.
Balch	Perfect
Balch	I was really glad to see Prof. Balch posting on Piazza. I've had several courses where the professor only posted in the very beginning and at the very end. I really appreciate that he took time to personally answer questions and we could see his involvement in the course.
Balch	I am grateful for Prof. Balch. I really wish we could go in much more depth in many of the topics in class. Also, I appreciate his sense of humor very much!
Balch	A great and enjoyable course!
Balch	The professor's sense of humor made this class more enjoyable.