

Institute of Technology Entrepreneurship and Commercialization

Machine Learning for Technology Entrepreneurship Problem-Solving - 15636 - TIMG 5303 - W

Time and Place

Jan 11 – April 12, 2023, Wednesdays, 6:00 to 9:00 pm, Nicol Building, Room 3020

Instructor

Stoyan Tanev, Associate Professor, Technology Innovation Management Program, Sprott School of Business; e-mail: stoyan.tanev@carleton.ca

Class sessions & course materials

Access to online course sessions, course materials and recorded videos will be provided through the new CU Brightspace system: <https://carleton.ca/brightspace/>. To access Brightspace you should use your CU credentials and select the “TIMG5303W ML for Tech Entrepr Probl Solv (SEM) Winter 2023” course. To join a class session, you need to select *Video Conferencing Links / Zoom*, then *Zoom Meeting*, then *TIMG 5303 Online Channel-Wednesdays 6pm-9pm*. All recorded sessions should be also found there.

Office hours

The instructor can be reached via email and will be available for online meetings by preliminary arranged appointments.

Calendar description

Application of machine learning tools to co-create solutions to entrepreneurial problems, with an emphasis on unstructured text analytics. Topics include machine learning tools, application of topic modeling and text analytics, generation of practical competitive insights for managers, and analysis of publicly available sources including websites. Prerequisite(s): TIMG 5002.

Target audience

The course is designed for graduate students registered in the MABA option of the Technology Innovation Management (TIM) program. Students in other TIM program options and other programs are welcome to attend this course depending on space availability. However, all students will need to meet the academic standards of the TIM program. A preliminary meeting with the professor will be required before admission in the course is granted.

Paul Menton Centre

Students with disabilities requiring academic accommodations in this course are encouraged to contact a coordinator at the Paul Menton Centre (PMC) for Students with Disabilities to complete the necessary letters of accommodation. After registering with PMC, make an appointment to meet and discuss your needs with your instructor at least two weeks prior to requiring accommodation for assignments or presentations. This is necessary in order to ensure sufficient time to make the necessary arrangements.

Objective

- To help students acquire the collaborative skills and business analytics expertise needed to co-create solutions for entrepreneurial problems and generate valuable business insights for companies, organizations supporting local companies and the TIM program ecosystem.
- To acquire proficiency in:
 - applying topic modeling and other text mining machine learning techniques to generate competitive insights from online textual data;
 - applying topic modeling and other text mining machine learning techniques to generate practical insights from collections of journal articles, company documentation and other relevant text documents, focusing on scaling companies early, rapidly and securely.
- To position the TIMG 5303 course as a Living Lab environment for Ottawa-based entrepreneurial companies dealing with growth, innovation, business analytics and competitive market differentiation.

Student groups

The class will be split in 11 groups of 7 students each. Each student will work individually and in one of the groups to perform tasks in class, participate in informal group meetings and contribute to delivering the assignments. The constructive collaboration among group members is part of the group assignments. Leaving and changing groups for any reason will not be tolerated. Once formed, each group should establish a project management structure that will help collaboration between group members and maximize the value of the deliverables. Group members should meet on a weekly basis.

Group work and free loaders

There will be zero tolerance for free loaders. A free loader refers to an individual who takes advantage of team members' efforts without contributing much in return. Group work is an important component of this course. Group conflicts are to be dealt with by the group in a way that is fair, respectful and fast. In case a non-contributing student is excluded from a group, he/she will need to deliver the assignment individually.

Plagiarism

Plagiarism, including copying and handing in for credit someone else's work, is a serious instructional offense that will not be tolerated. Please refer to the section on instructional offenses in the Graduate Calendar for additional information. A case of plagiarism will be referred to the Chair of the Department and the Carleton University Ethics Committee. The instructor will not deal with the matter directly. The University has clear processes to deal with students who are suspected of plagiarism.

Course assignments

1. **Assignment # 1 (group assignment, 30%):** *Applying topic modeling on a corpus of text paragraphs extracted from research articles focusing on value proposition development in a digital business transformation/entrepreneurship context to shape an actionable framework for companies interested to scale early and rapidly.*

This assignment is based on a preliminary developed corpus of text paragraphs extracted from research articles referring to digitalization, value creation and value proposition development. The text

paragraphs refer to actionable insights that could be valuable to companies interested to scale early and rapidly. The corpus of research paragraphs will be provided to all groups by the instructor. The assignment consists of 2 components:

1A. Use the Topic Model Explorer (<http://159.203.63.75:8502>) and adopt the topic modeling process described in class to organize the research paragraphs in different topics. Discuss the stability of the topics and the replicability of the topic modeling results. Examine the sets of the most representative text paragraphs associated with each of the final topics and identify the logic of their association with the specific topic: What are the underlying issues which are the basis for the grouping of the paragraphs within the specific topics?

1B. Use the topic modeling results of component 1A to develop an actionable framework for companies interested to scale early and rapidly. Identify the core topics with their corresponding actionable insights and suggest a logical link between the different topics. Imagine that your group is a consultancy firm helping companies to grow. Can you use the suggested framework to evaluate the potential for or help a real-life company to grow?

2. Assignment # 2 (group assignment, 30%): *Create a corpus of text documents corresponding to the website pages of a sample of technology-based companies operating in the same business domain and apply topic modeling and other text analytics tools to characterize the companies in terms of what they offer, the way they use specific technologies to shape their offers or the things they care to communicate online.*

2A. Select a specific technology-based business domain and create a representative list of companies operating in it. The list should include min 50 companies selected based on a specific criterion, for example – top companies in 2022, best startups to watch in 2023, all the companies that you have found online offering a specific product/service, etc. Some examples of such technologies are: artificial intelligence, machine learning, blockchain, 3D printing, autonomous vehicles, medical devices, fintech, etc. Use an appropriate software tool to scrape the company websites to create a corpus of text documents corresponding to each of the accessible webpages under the main company URLs. Many previous students have used the FireScraper (<https://firescraper.com/>). You are however free to use any scraper you may find appropriate.

2B. Use the Topic Model Explorer (<http://159.203.63.75:8502>) and adopt the topic modeling process described in class to identify a set of topics that could characterize the corpus and, respectively, the list of companies. Discuss the stability of the topics and the replicability of the topic modeling results. Apply any other text analytics tools of your choice to post-process the topic modeling results. Identify 3 to 5 companies that could be considered as exemplars associated with each topic and the logic of their association with the specific topic. What are the insights that you can develop by analyzing the topic modeling results, the text in the documents associated with the topics, and the online information provided by the exemplar companies?

3. Assignment # 3 (group assignment, 20%): *Use the materials provided in the course outline (as well as any other materials you may find appropriate) to get familiarized with the key phases in a typical foreign/international market entry process and select a framework that you can apply in the context of a small company. Use one of the exemplar companies identified in Assignment # 2 (or*

another company of your choice that you know enough to use as case in your analysis) to contextualize the selected foreign market entry framework for a specific foreign country. Design a data collection plan about that type of textual data you can collect and analyze to inform some of the key steps in the foreign-market entry decision-making process. Use text analytics tools of your choice to analyze the textual data and generate insights that could inform the foreign-market entry decision-making process of the selected company.

4. Take home exam (individual assignment, 20%): Will be provided during the last class on April 6.

Student evaluation and assignment grading

Final grade will be assigned using the following mark allocation:

	Assignment	Deliverable	Date	%
1	Apply topic modeling on a corpus of text paragraphs from research articles providing actionable insights for companies interested to scale early and rapidly.	<u>1A</u> : Adopt the topic modeling process described in class to structure a corpus of text paragraphs in different topics.	Wednesday, Feb. 1	15
		<u>2A</u> : Use the topic modeling results of component 2A to develop an actionable framework for companies interested to scale early and rapidly.	Wednesday, Feb. 15	15
2	Applying topic modeling to generate business insights by examining the textual information provided on the websites of a sample of companies in a specific business domain	<u>2A</u> : Select a specific technology-based business domain and create a representative list of companies operating in it. Use an appropriate software tool to scrape the websites of the companies to create a corpus of text documents corresponding to each of the accessible webpages under the main company URLs.	Wednesday, March 8	10
		<u>2B</u> : Apply topic modeling and other text analytics tools to identify a set of topics that could characterize the corpus and, respectively, the list of companies. Identify 3 to 5 companies that could be considered as exemplars within each topic and the logic of their association with their specific topic. Develop actionable insights that could be valuable to new companies interested to scale.	Wednesday, March 22	15
3	Collect textual data and apply text analytics tools to generate insights that could inform the foreign market entry of a small company.	Use the materials provided in the course outline (as well as any other materials you may find appropriate) to get familiarized with the key phases in a typical foreign/international market entry process and select a framework that you can apply in the context of a small company. Use one of the exemplar companies identified in Assignment # 2 (or another company of your choice that you know enough to use as case in your analysis) to contextualize the selected foreign market entry framework for a specific foreign country. Design a data collection plan about that type of textual data you can collect and analyze to inform some of the key steps in the foreign-market entry decision-making process. Use text analytics tools of your choice to analyze the textual data and generate insights that could inform the foreign-market entry decision-making process of the selected company.	Wednesday, April 5 Wednesday, April 12	25
4	Take home exam	To be provided on April 12 at the last class session.	April 27, 2023	20
Total				100

Class schedule

Session #	Date	Topic	Assigned readings & details
1	Wednesday, Jan 11	<ul style="list-style-type: none"> • Introduction to course objectives • Detailed presentation of Assignments • Introduction to content analysis and planning the text analytics process • Brief introduction to the W-tool for topic modeling • Student group formation 	<ul style="list-style-type: none"> • Course outline document • The Fundamentals of Content Analysis, Chs. 2 & 3 in: Anandarajan et al. (2019). <i>Practical Text Analytics</i>. • Topic Model Explorer: http://159.203.63.75:8502
2	Wednesday, Jan 18	<ul style="list-style-type: none"> • Text preprocessing • Familiarization with the W-tool topic modeling process • Finalizing student group formation and project assignment 	<ul style="list-style-type: none"> • Text Preprocessing, Ch. 4 in: Anandarajan et al. (2019). <i>Practical Text Analytics</i>. • Topic Model Explorer: http://159.203.63.75:8502
3	Wednesday, Jan 25	<ul style="list-style-type: none"> • Term-Document representation • Latent semantic analysis • Q & A about Assignments # 1 	<ul style="list-style-type: none"> • Term-Document Representation, Ch. 5 in: Anandarajan et al. (2019). <i>Practical Text Analytics</i>. • Semantic Space Representation and Latent Semantic Analysis, Ch. 6 in: Anandarajan et al. (2019). <i>Practical Text Analytics</i>. • Group work on Assignment # 1
4	Wednesday, Feb 1	<ul style="list-style-type: none"> • Student group presentations of progress with Assignment # 1. • Cluster Analysis: Modeling Groups in Text • Q & A about Assignment # 1 	<ul style="list-style-type: none"> • Delivery of Assignment 1 component 1A • Cluster Analysis: Modeling Groups in Text, Ch. 7 in: Anandarajan et al. (2019). <i>Practical Text Analytics</i>. • Group work on Assignment # 1
5	Wednesday, Feb 8	<ul style="list-style-type: none"> • Probabilistic Topic Models 	<ul style="list-style-type: none"> • Probabilistic Topic Models, Ch. 8 in: Anandarajan et al. (2019). <i>Practical Text Analytics</i>. • Feedback and group work on Assignment # 1
	Wednesday, Feb 15	<ul style="list-style-type: none"> • Sentiment analysis • Group presentations of Assignment 1B results. 	<ul style="list-style-type: none"> • Delivery of Assignment 1 component 1A • Modeling Text Sentiment, Ch. 10 in: Anandarajan et al. (2019). <i>Practical Text Analytics</i>.
6	Week of Wednesday, Feb 22	<i>Winter break</i>	
7	Wednesday, March 1	<ul style="list-style-type: none"> • Developing marketing insights from text analysis • Q&A and group work on Assignment 2 	<ul style="list-style-type: none"> • Berger et al. (2022). Marketing insights from text analysis. <i>Marketing Letters</i>, 33, 365–377. • Berger et al. (2020). Uniting the Tribes: Using Text for Marketing Insight. <i>Journal of Marketing</i>, 84(1), 1–25. • Group work on Assignment 2
8	Wednesday, March 8	<ul style="list-style-type: none"> • Storytelling Using Text Data • Group work on Assignment # 2 	<ul style="list-style-type: none"> • Delivery of Assignment 2 component 2A • Storytelling Using Text Data, Ch. 11 in: Anandarajan et al. (2019). <i>Practical Text Analytics</i>.

			<ul style="list-style-type: none"> • Group work on Assignment # 2
9	Wednesday, March 15	<ul style="list-style-type: none"> • Visualizing Analysis Results • Group work on Assignment 2 	<ul style="list-style-type: none"> • Visualizing Analysis Results, Ch. 12 in: Anandarajan et al. (2019). <i>Practical Text Analytics</i>. • Group work on Assignment 2
10	Wednesday, March 22	<ul style="list-style-type: none"> • Group presentations on Assignment 2 component 2A • Group work focusing on Assignment 3 	<ul style="list-style-type: none"> • Delivery of Assignment 2 component 2B • Group work focusing on Assignment 3
11	Wednesday, March 29	<ul style="list-style-type: none"> • Workshop focusing on the delivery of Assignment # 3 	<ul style="list-style-type: none"> • Interactive discussion and group work
12	Wednesday, April 5	<ul style="list-style-type: none"> • Group presentations of Assignment 3 – Groups 1-7 	<ul style="list-style-type: none"> • Delivery of assignment # 3
13	Wednesday, April 12	<ul style="list-style-type: none"> • Group presentations of Assignment 3 – Groups 8-11 	<ul style="list-style-type: none"> • Delivery of assignment # 3

Take home exam is due before midnight on April 27, 2023.

Main textbook

Anandarajan, M., Hill, C. & Nolan, T. (2019). *Practical Text Analytics - Maximizing the Value of Text Data*, Springer.

Recommended books

- Albrecht, J., Ramachandran, S., Winkler, C. (2020). *Blueprints for Text Analytics Using Python*. O'Reilly Media, Inc.
- Bengfort, B., Bilbro, R., & Ojeda, T. (2018). *Applied Text Analysis with Python. Enabling Language-Aware Data Products with Machine Learning*. O'Reilly Media.
- Fortino, A. (2021). *Text Analytics for Business Decisions - A Case Study Approach*. Boston, Massachusetts: Mercury Learning and Information.
- Hovy, D. (2020). *Text Analysis in Python for Social Scientists. Discovery and Exploration*. Cambridge University Press.
- Isson, J. P. (2018). *Unstructured Data Analytics*, Wiley.
- Kwartler, T. (2017). *Text Mining in Practice with R*. John Wiley & Sons.
- Landauer, T., et al. (2011). *Handbook of Latent Semantic Analysis*, New York: Routledge.
- Mehta, P., & Majumder, P. (2019). *From Extractive to Abstractive Summarization: A Journey*. Springer Nature Singapore.
- Munzert, S., Rubba, C., Meißner, P. & Nyhuis, D. (2015). *Automated Data Collection with R. A Practical Guide to Web Scraping and Text Mining*. Wiley.
- Sarkar, D. (2016). *Text Analytics with Python*, Apress.
- Schwarz, J., Chapman, C. & Feit, E. (2020). *Python for Marketing Research and Analytics*. Springer.
- Silge, J. & Robinson, D. (2017). *Text Mining with R*, O'Reilly.
- Vassilev, Y. (2020). *Natural Language Processing with Python and Spacy. A Practical Introduction*. No Starch Press.

Recommended articles

- Albalawi, R., Yeap. T., & Benyoucef, M. (2020). Using Topic Modeling Methods for Short-Text Data: A Comparative Analysis. *Frontiers in Artificial Intelligence*, 3(42): 1-14. doi: 10.3389/frai.2020.00042.

- Antons, D., Grünwald, E., Cichy, P., & Salge, T. (2020). The application of text mining methods in innovation research: current state, evolution patterns, and development priorities. *R&D Management*, 50(3): 329-351.
- Berger, J., Packard, G., Boghrati, R. *et al.* (2022). Marketing insights from text analysis. *Marketing Letters*, 33, 365–377: <https://doi.org/10.1007/s11002-022-09635-6>.
- Berger, J., Humphreys, A., Ludwig, S., Moe, W. W., Netzer, O., & Schweidel, D. A. (2020). Uniting the Tribes: Using Text for Marketing Insight. *Journal of Marketing*, 84(1), 1–25: <https://doi.org/10.1177/0022242919873106>.
- Blei, D. (2012). Probabilistic Topic Models. *Communications of the ACM*, 55 (4): 77–84.
- Brookes, G. & McEnery, T. (2019). The utility of topic modelling for discourse studies: A critical evaluation. *Discourse Studies*, 21(1): 3–21.
- Choi, J., Menon, A., & Tabakovic, H. (2021). Using machine learning to revisit the diversification–performance relationship. *Strategic Management Journal*, 2(9), 1632-1661: <https://doi.org/10.1002/smj.3317>.
- Davis, I., Keeling, D., Schreier, P., & William, A. (2007). The McKinsey approach to problem solving. *McKinsey Staff Paper* No. 66, July 2007.
- Evangelopoulos, N. (2013). Latent semantic analysis. *WIREs Cognitive Science*, 4:683–692. doi: 10.1002/wcs.1254.
- Evangelopoulos, N., Zhang, X., & Prybutok, V. (2012). Latent Semantic Analysis: five methodological recommendations. *European Journal of Information Systems*, 21: 70–86.
- Hannigan, T., Haans, R., Vakili, K., Tchalian, H., Glaser, V., Wang, M., Kaplan, S., Jennings, P. (2019). Topic modeling in management research: Rendering new theory from textual data. *Academy of Management Annals*, 13(2): 586–632. <https://doi.org/10.5465/annals.2017.0099>
- Harel, J. (2009). Things You Should Know (from Linear Algebra).
- Jelodar, H., Wang, Y., Yuan, C. *et al.* (2019). Latent Dirichlet allocation (LDA) and topic modeling: models, applications, a survey. *Multimedia Tools and Applications*, 78, 15169–15211: <https://doi.org/10.1007/s11042-018-6894-4>.
- Karl, A., Wisnowski, J & Rushing, W.H. (2015). Practical guide to text mining with topic extraction. *WIREs Computational Statistics*, 7:326–340. doi: 10.1002/wics.1361
- Kolomoyets, Y., & Dickinger, A. (2023). Understanding value perceptions and propositions: A machine learning approach. *Journal of Business Research*, 154, 113355: <https://doi.org/10.1016/j.jbusres.2022.113355>.
- Landauer, T., Foltz, P. & Laham, D. (1998). An introduction to latent semantic analysis. *Discourse Processes*, 25(2-3): 259-284. DOI: 10.1080/01638539809545028.
- Lu, Q. & Chesbrough, H. (2022). Measuring open innovation practices through topic modelling: Revisiting their impact on firm financial performance. *Technovation*, 114, 102434: <https://doi.org/10.1016/j.technovation.2021.102434>.
- Maier, D., Waldherr, A., Miltner, P., Wiedemann, G., Niekler, A., Keinert, A., Pfetsch, B., Heyer, G., Reber, U., Häussler, T., Schmid-Petri, H., & S. Adam. (2018). Applying LDA Topic Modeling in Communication Research: Toward a Valid and Reliable Methodology. *Communication Methods and Measures*, 12(2-3): 93-118, DOI: 10.1080/19312458.2018.1430754.

- Miric, M., Jia, N., & Huang, K. (2022). Using supervised machine learning for large-scale classification in management research: The case for identifying artificial intelligence patents. *Strategic Management Journal*, Online Version of Record before inclusion in an issue: <https://doi.org/10.1002/smj.3441>.
- Reisenbichler, M. & Reutterer, &. (2019). Topic modeling in marketing: recent advances and research opportunities. *Journal of Business Economics*, 89:327–356. <https://doi.org/10.1007/s11573-018-0915-7>
- Silge, Julia. (2020). Package ‘tidytext’: <https://github.com/juliasilge/tidytext>
- Spradlin, Dwayne (2012). Are You Solving the Right Problem? *HBR*, Sept 2012 issue.
- Thomo, T. Latent Semantic Analysis (Tutorial): <https://www.engr.uvic.ca/~seng474/svd.pdf>
- Veeckman, C., D. Schuurman, S. Leminen, & M. Westerlund (2013). Linking Living Lab Characteristics and Their Outcomes: Towards a Conceptual Framework. *Technology Innovation Management Review*, 3(12): 6-15. <http://timreview.ca/article/748>
- Welbers, K., Van Atteveldt, W. & Benoit, K. (2017). Text Analysis in R. *Communication Methods and Measures*, 11(4): 245–265. <https://doi.org/10.1080/19312458.2017.1387238>
- Wedell-Wedellsborg, T. 2017. Are You Solving the Right Problems? *Harvard Business Review*, January-95(1): 76-83: <https://hbr.org/2017/01/are-you-solving-the-right-problems>
- Wedell-Wedellsborg, T. 2016. Reframing the problem (video): <https://www.facebook.com/HBR/videos/10154597616307787>
- Wickham, H. (2014). Tidy Data. *Journal of Statistical Software*, 59(10): 1-23.
- Structural topic modeling: <https://towardsdatascience.com/introduction-to-the-structural-topic-model-stm-34ec4bd5383>

Foreign/International Market Entry

BDC article “5 key questions your export plan should answer”: <https://www.bdc.ca/en/articles-tools/marketing-sales-export/export/small-business-export-plan-key-questions>

Burgel, O. & Murray, G. (2000). The International Market Entry Choices of Start-Up Companies in High-Technology Industries. *Journal of International Marketing*, 8(2), 33-62.

Fuchs, M. (2022). *International Management. The Process of Internationalization and Market Entry Strategies*. Springer-Verlag. ISBN 978-3-662-65869-7 <https://doi.org/10.1007/978-3-662-65870-3>.

Glowik, M. (2020). *Market Entry Strategies. Internationalization Theories, Concepts and Cases*. Berlin : Walter de Gruyter.

Hopkins, R. (2017). *Grow Your Global Markets: A Handbook for Successful Market Entry*. Apress.

Schellenberg, M., Harker, M. & Jafari, A. (2018). International market entry mode – a systematic literature review, *Journal of Strategic Marketing*, 26:7, 601-627, DOI: [10.1080/0965254X.2017.1339114](https://doi.org/10.1080/0965254X.2017.1339114)

Foreign Market Entry Resources

Explore the resources available at: <https://www.edc.ca/>

International market research information resources provided by Simon Fraser University Library: <https://www.lib.sfu.ca/help/research-assistance/subject/business/international-market>

International Trade Statistics Canada: https://www.statcan.gc.ca/en/subjects-start/international_trade

Canadian Trade Data Online: <https://ised-isde.canada.ca/site/trade-data-online/en>

Country Commercial Guides (USA): <https://www.trade.gov/ccg-landing-page>

Machine learning tools that could be used in delivering the assignments

1. *Voyant tools*: <https://voyant-tools.org/>
2. *Orange*: <https://orange.biolab.si/>
3. *Answer the public*: <https://answerthepublic.com/>
4. Text Compare is an online tool that allows you to easily make a text comparison and find the differences between two texts: <https://text-compare.com/>
5. TextSeek helps you search document contents for Windows and MacOS within seconds, including PDF, Word, Excel, Power point and other formats. It performs full-text scanning within several seconds, and render the search results like Google: https://download.cnet.com/TextSeek/3000-2248_4-77927689.html
6. Cortical.io provides natural language understanding (NLU) solutions that enable large enterprises to automate the extraction, monitoring, and analysis of key information from any kind of text data: <https://www.cortical.io/>
7. ParseHub is a free web scraping tool. With our advanced web scraper, extracting data is as easy as clicking the data you need: <https://www.parsehub.com/>
8. Open Web Scraper: https://www.webscraper.io/cloud-scraper?utm_source=extension&utm_medium=popup
9. <https://www.tensorflow.org/>
10. <https://www.outwit.com/>
11. Scrapy.org: An open source and collaborative framework for extracting the data from websites.
12. <https://code.google.com/archive/p/topic-modeling-tool/>
13. Sanil Mhatre, 2020, Text Mining and Sentiment Analysis with R: <https://www.red-gate.com/simple-talk/databases/sql-server/bi-sql-server/text-mining-and-sentiment-analysis-with-r/>

Open source software resources for text mining

1. UC Business Analytics R Programming Guide: <http://uc-r.github.io/>
2. Julia Silge and David Robinson (2020). Text Mining with R. A Tidy Approach: <https://www.tidytextmining.com/>
3. stmgui: Shiny Application for Creating STM Models - provides a graphical user interface via Rstudio's Shiny package for Structural Topic Modeling: <https://cran.r-project.org/package=stmgui>
4. <https://www.machinelearningplus.com/nlp/topic-modeling-gensim-python/>
5. https://github.com/susanli2016/NLP-with-Python/blob/master/LDA_news_headlines.ipynb

Appendix: ADDITIONAL INFORMATION

Group work

The Spratt School of Business encourages group assignments in the school for several reasons. They provide you with opportunities to develop and enhance interpersonal, communication, leadership, follower-ship and other group skills. Group assignments are also good for learning integrative skills for putting together a complex task. Your professor may assign one or more group tasks/assignments/projects in this course. Before embarking on a specific problem as a group, it is your responsibility to ensure that the problem is meant to be a group assignment and not an individual one.

In accordance with the Carleton University Undergraduate Calendar (p. 34), the letter grades assigned in this course will have the following percentage equivalents:

A+ = 90-100	B+ = 77-79	C+ = 67-69	D+ = 57-59
A = 85-89	B = 73-76	C = 63-66	D = 53-56
A - = 80-84	B - = 70-72	C - = 60-62	D - = 50-52
F = Below 50			

Grades entered by Registrar:

WDN = Withdrawn from the course

DEF = Deferred

Academic Regulations

University rules regarding registration, withdrawal, appealing marks, and most anything else you might need to know can be found on the university's website, here:

<http://calendar.carleton.ca/undergrad/regulations/academicregulationsoftheuniversity/>

Requests for Academic Accommodation

You may need special arrangements to meet your academic obligations during the term. For an accommodation request, the processes are as follows:

Pregnancy obligation

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf

Religious obligation

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf

Academic Accommodations for Students with Disabilities

If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or pmc@carleton.ca for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. carleton.ca/pmc

Survivors of Sexual Violence

As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and its survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: carleton.ca/sexual-violence-support

Accommodation for Student Activities

Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. <https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf>

For more information on academic accommodation, please contact the departmental administrator or visit: students.carleton.ca/course-outline

Academic Integrity

Violations of academic integrity are a serious academic offence. Violations of academic integrity – presenting another's ideas, arguments, words or images as your own, using unauthorized material, misrepresentation, fabricating or misrepresenting research data, unauthorized co-operation or collaboration or completing work for another student – weaken the quality of the degree and will not be tolerated. Penalties may include; a grade of Failure on the submitted work and/or course; academic probation; a refusal of permission to continue or to register in a specific degree program; suspension from full-time studies; suspension from all studies at Carleton; expulsion from Carleton, amongst others. Students are expected to familiarize themselves with and follow the Carleton University Student Academic Integrity Policy which is available, along with resources for compliance at: <https://carleton.ca/registrar/academic-integrity/>.

Sprott Student Services

The Sprott student services office, located in 710 Dunton Tower, offers academic advising, study skills advising, and overall academic success support. If you are having a difficult time with this course or others, or just need some guidance on how to successfully complete your Sprott degree, please drop in any weekday between 8:30am and 4:30pm. Our advisors are happy to discuss grades, course selection,

tutoring, concentrations, and will ensure that you get connected with the resources you need to succeed! <http://sprott.carleton.ca/students/undergraduate/learning-support/>

Centre for Student Academic Support

The Centre for Student Academic Support (CSAS) is a centralized collection of learning support services designed to help students achieve their goals and improve their learning both inside and outside the classroom. CSAS offers academic assistance with course content, academic writing and skills development. Visit CSAS on the 4th floor of MacOdrum Library or online at: carleton.ca/csas.

Important Information:

- Students must always retain a hard copy of all work that is submitted.
 - All final grades are subject to the Dean's approval.
 - For us to respond to your emails, we need to see your full name, CU ID, and the email must be written from your valid CARLETON address. Therefore, in order to respond to your inquiries, please send all email from your Carleton CMail account. If you do not have or have yet to activate this account, you may wish to do so by visiting <http://carleton.ca/ccs/students/>
-