



## Technology & Visual Arts Computer Studies

### Mathematics for Data Analytics – BDAT1005-23S v1r0

Section 1 (CRN 30735) – Fridays, 14:00-16:50<sup>1</sup>, K326 GCFlex<sup>2</sup>

Section 2 (CRN 30736) – Fridays, 18:00-20:50<sup>1</sup>, K224 GCFlex<sup>2</sup>

Section 3 (CRN 30737) – Thursdays, 14:00-16:50<sup>1</sup>, N202 GCFlex<sup>2</sup>

Section 4 (CRN 30738) – Tuesdays, 17:00-19:50<sup>1</sup>, K320 GCFlex<sup>2</sup>

**1 – All dates and times given in this course are local to southern Ontario** – we use North American Eastern Standard Time (EST=UTC-5h) during the winter, but **we'll use Eastern Daylight Time (EDT=UTC-4h) for the whole summer term.** We switched to 'summer time' in March and won't switch back until November.

**2 – All sections are offered in GCFlex mode.** Students may choose to attend classes synchronously online or (when available) in person, and/or consume class recordings after the fact. All quizzes, exams, and assignment and project submissions will be online. The course may also be offered in online hybrid and/or in-person versions. The learning outcomes are identical; the subject material, delivery and assessments are similar.

*Due to extenuating circumstances and to accommodate the need for this program to be offered remotely, there may be some modifications to the evaluation/assessment. This has been approved by the Dean of Technology & Visual Arts (TVA), as directed by the Vice President, Academic.*

*For information regarding Campus Evacuation, Lockdown and Closures please see the Syllabus Addendum.*

*To support access to course content, classes will be recorded and links to these recordings posted in Blackboard. Recordings should primarily capture faculty and on-screen content, but it is possible that your image, voice, name, personal views and course work may be collected. If you have concerns with recording, we suggest that you do not use a profile image, keep your video/microphone off, and communicate directly with your professor instead of using the group chat.*

*Recordings may not be reproduced, posted or shared anywhere. Recordings should only be used by students currently registered in this course. Students creating unauthorized recordings or sharing posted recordings may be in violation and subject to disciplinary actions under Georgian College's Student Code of Conduct.*

## Course Description:2

This course is designed to support students in learning the mathematical principles required to apply the concepts of data analysis and big data analytics. Students work through a series of hands-on assignments covering topics such as probability, distributions, regression, topological analysis, and descriptive and inferential statistics. *(From current Course Outline: for details, content & learning outcomes, see original document.)*

## Resources:

*Lesson descriptions and links to course learning & evaluation materials and recordings will be available weekly.*

## Instructor(s) and Office Hours

Primary contact method for each professor is **highlighted in yellow**. Office hours *by appointment only*.

- s.1, 2 **Dr. Ehsan Pourjavad**, PhD, P.Eng. – e-mail [ehsan.pourjavad@georgiancollege.ca](mailto:ehsan.pourjavad@georgiancollege.ca) – I will almost always respond to e-mails or texts within one business day.
- s.3 **Jonathan Gladstone**, BES, BAsC, P.Eng. (Faculty Course Lead) – Text or call (249) 388-1734 (answered only when available); [jonathan.gladstone@georgiancollege.ca](mailto:jonathan.gladstone@georgiancollege.ca) - I will almost always respond to e-mails within one business day. You can also reach me in the General channel chat in your course Team.
- s.4 **Jonathan Wiersma**, MSc – **Text or call (705) 790-4399**; [jonathan.wiersma@georgiancollege.ca](mailto:jonathan.wiersma@georgiancollege.ca) - I will almost always respond to texts within one business day.

## Expectations for Success:

To be successful in this course you need to keep up with your lessons, attend discussion groups where possible, ask for help when you need it, and strive to complete all work to the best of your ability within the required time frames. Courses at the post-graduate level require a minimum grade of 60% to fulfill graduation requirements. Please refer to the **Georgian College Academic Policies and Procedures**, available at: <http://www.georgiancollege.ca/admissions/policies-procedures/>

## Evaluation:

*In order of due date (NOTE this is not the same order as the alignment document):*

<b>Math Take-home Evaluation (MT)</b> <i>Individual submission, due after week 1</i>	<b>2%</b>
<b>Lesson 1-2 Quiz</b> <i>Individual submission, due after week 3</i>	<b>4%</b>
<b>Dataset Exploration Pt 1 (DE1) – Data Description &amp; Questions</b> <i>project portion, due after week 4</i>	<b>8%</b>
<b>Lesson 3-4 Quiz</b> <i>Individual submission, due after week 5</i>	<b>4%</b>
<b>Lesson 5 Quiz</b> <i>Individual submission, due after week 6</i>	<b>2%</b>
<b>Mid-term Exam – Limited-window asynchronous, open during week 7</b>	<b>15%</b>
<b>Dataset Exploration Part 2 (DE2) – Univariate Analysis</b> <i>project portion, due after week 7</i>	<b>10%</b>
<b>Dataset Exploration Part 3 (DE3) – Hypothesis Testing</b> <i>project portion, due after week 9</i>	<b>10%</b>
<b>Lesson 6-7 Quiz</b> <i>Individual submission, due after week 10</i>	<b>4%</b>
<b>Lesson 8-9 Quiz</b> <i>Individual submission, due after week 12</i>	<b>4%</b>
<b>Dataset Exploration Part 4 (DE4) – Inferential Techniques &amp; Final Report</b> <i>project final submission, due after week 13</i>	<b>12%</b>
<b>Final Exam – Limited-window asynchronous, open during week 14</b>	<b>25%</b>

**Blue** is Projects/Assignments: 40% per Course Outline

**Green** is Tests/Quizzes: 20% per Course Outline

**Red** is Exams: 40% per Course Outline

*For further information, see the Schedule of Activities below and the Alignment document in the Course Information folder.*

# Schedule of Activities:

This course is taught in a standard term (7 weeks of classes, 1 Study Week, then 7 more weeks of classes) in GCFlex mode. All sections will get the same lessons and activities, in exactly the same order, whether you are in class, synchronous remote, or asynchronous online. You can participate however works best for you week by week (or even hour by hour), but please do so in the section you're registered in.

<b>COURSE WEEK</b> <i>Calendar dates</i>	<b>LESSON #: Topics; Activity #</b>	<b>EVALUATIONS &amp; ASSESSMENTS Assigned</b>	<b>IN CLASS &amp; SUBMISSIONS DUE</b>
<b>NOTE: Exams are during the indicated week. All other due dates are end of day Sunday after the indicated week.</b>			
Week 1 May 8-12	Introduction; Course Intro; L1: FINER questions and SMART objectives; variable types	<b>Math Take-home Evaluation</b> and <b>Dataset Exploration part 1 (DE1)</b> assigned.	<b>For Dataset Exploration Project:</b> start looking for a dataset.
Week 2 May 15-19	L2: Why "big data analytics"? Statistics & Variables; Data Presentation	<b>Lesson 1-2 Quiz</b> opens.	<b>For Dataset Exploration Project:</b> selection discussion for datasets; what questions to ask (hypotheses); what data do we have, need, or want? <b>Submit Math Take-home</b>
Week 3 May 22-26	L3: Univariate Analysis; Central tendency; Variation (including standard deviation); Outliers.	<b>Dataset Exploration part 2 (DE2)</b> assigned.	<b>For Dataset Exploration Project:</b> confirmation of datasets; confirmation of direction of analysis; discussion of analysis paralysis. <b>L1-2 Quiz closes</b>
Week 4 May 29 - Jun 2	L4: Probability distributions – Pareto and Problem Statements	<b>Lesson 3-4 Quiz</b> opens.	<b>Submit DE1</b>
Week 5 Jun 5-9	L5: Hypothesis testing 1 – T-tests, Chi-squared tests	<b>Lesson 5 Quiz</b> assigned.	<b>L3-4 Quiz closes</b> , and <b>submit Univariate Analysis</b>
Week 6 Jun 12-16	L6: Hypothesis Testing 2 – ANOVA, MANOVA	<b>Dataset Exploration part 3 (DE3)</b> assigned.	<b>For Dataset Exploration Project:</b> proper applications of hypothesis tests. <b>L5 Quiz closes</b>
Week 7 Jun 19-23	<b>Mid-term Exam</b> <b>NO CLASS</b>		<b>Mid-term Exam</b> , then <b>Submit DE2</b>
<b>NO CLASSES</b> Jun 26 - 30	<b>STUDY WEEK</b> <b>NO CLASS</b>	<i>Catch up on your exercises and assignment work.</i>	<i>No, really!</i>
Week 8 Jul 3-7	L7a: Inferential Analytics 1 – Correlation & Regression		<b>Submit Hypothesis Testing</b>
Week 9 Jul 10-14	L7b: Inferential Analytics 2 – Forecasting	<b>Dataset Exploration part 4 (DE4)</b> and <b>Lesson 6-7 Quiz</b> assigned.	<b>For Dataset Exploration Project:</b> proper applications of regression & forecasting.
Week 10 Jul 17-21	L8: Advanced Techniques: Cluster, Discriminant & Factor Analysis		<b>L6-7 Quiz closes</b>
Week 11 Jul 24-28	L9: Performance Measurement; Effective Communication of Data and Analysis	<b>Lesson 8-9 Quiz</b> assigned.	<b>For Dataset Exploration Project:</b> finalizing your analysis & report..
Week 12 Jul 31- Aug 4	Practical Applications; Data Day		<b>For Dataset Exploration Project:</b> bring general methodology questions to class! <b>L8-9 Quiz closes</b>
Week 13 Aug 7-11	Review for Final Exam		<b>Submit DE4</b>
Week 14 Aug 14-18	<b>Final Exam</b> <b>NO CLASS</b>		<b>FINAL EXAM</b>
<i>The sequence and content of this syllabus may change due to unanticipated opportunities or challenges, or to accommodate the learning styles of the students.</i>			