	Spring 2023, First 8 Weeks DATA101 Intro to Data Analytics
Department	Department of Mathematics & Science
Instructor	Prof. K. Seefeld, EdD
NCC Email	kseefeld@ccsnh.edu
Telephone Number	(603) 578–6815 ext. 1554
Office Hours and location	Arranged
Class Days/Meeting Time	Online, asynchronous with a weekly deadline structure
Class Location	Canvas

Rationale

This course explores the field of data analytics and data science. It introduces the tools and concepts used in the field and acquaints students toward areas that may interest them. It also serves as the first ‘orientation’ course for the NCC data analytics program (certificate or degree).

Course Description

In this course students receive an introduction to the tools and processes used by data analysts. This course gives an overview of the data life cycle including collecting, storing, formatting, and preparing data. This course introduces the ideas behind analyzing data to make data informed decisions. Additionally, this course will introduce how to communicate results through visualizations. A basic understanding of spreadsheets is recommended.

Course Competencies

1. Describe data science in the context of big data.
2. Describe and apply the data science life cycle.
3. Describe data
4. Describe the extract, transform, and load process and why it is important.
5. Apply programming to the extract, transform and load process.
6. Analyze real-world problems based on data analysis techniques
7. Explain solutions

Essential Questions

1. Why does it mean for data to be “cleaned” and why is it so important?
2. What is the extract, transform and load process?
3. How can data be investigated to determine the answers to key business questions?

Required Materials

Textbook(s):

Textbooks (purchase through NCC bookstore, has paper and electronic version)

Intro to Data Science

ISBN: 9781506377537

Author Saltz

Publisher: Sage Publications, Incorporated

Copyright Year: 2018

Software (no cost to students, course videos will explain how to obtain/install)

Microsoft Excel software

R software (R studio)

Course Structure and Expectations:

This course is 100% online with no live meetings. It requires students to have the ability to work independently. There are however course activities designed to foster a sense of community in the class. Although we will not be together at the same time you will interact with each other and get to know your classmates during this course.

Canvas is the home base for the class – all work and course activities occur on Canvas. This course will follow a structured weekly pattern where weeks (except for week 1) begin on Friday 8 am and ends on the following Friday at 4 pm (there is an overlap on Fridays, and I am generally more available to assist online students on Fridays). All work for that week must be done when expected – this is not a self-paced course. Many of the course components build upon each other and several involve timely interaction with classmates.

Every week I will post a video for you as a weekly overview (I will be making these weekly, so they are current for the class). This is a short 'class' orienting you to the week's work and discussing any issues or special things for that week. This will be approximately 30 minutes long and will be the first thing you will do each week.

The text will be relatively closely followed (see schedule) and provides a reference for you and a guide for the class. You are expected to read it independently (I will highlight in weekly videos what's important).

Weekly activities will always involve some analytical lab activities (for which I will post guided activities and videos demonstrating) and associated homework (for which you will do on your own and submit) using R Studio. Generally, there will be a discussion board to post on as well. It is very important you participate in discussions in this online class to foster community and create a learning environment. Some weeks there is a practicum assignment. Here you will do something 'practical' related to data analytics (think of it as a virtual exploration/field trip) and share it with the class in a discussion the following week. These practicums should be short video recordings you do and share with the class.

There are no quizzes or exams in this class as this is an applied course.

Grading:

Practicums 30%
Labs/HW 40%
Discussions 30%

The time to negotiate a disappointing grade is immediately after the grade is awarded (within 72 hours of posting the grade) and not the end of the semester. I am generally very good about promptly posting grades.

Final course grades are assigned based on the standard scale below.

		B+	87-89	C+	77-79	D+	67-69		
A	93-100	B	83-86	C	73-76	D	63-66	F	< 60
A-	90-92	B-	80-82	C-	70-72	D-	60-62		

Course Calendar

Week	Theme	Topics	Text
1	Introduction	Install R and RStudio, Excel Overview of data analytics as a field, NCC program Connections to other fields Tools of the trade	3 and 7
2	Data basics	Data structures Data frames, rows/columns Simple csv data uploading Clean data	4, 5 and 6
3	Analytics basics	Functions Basic statistics Sampling and simulation Overview of other statistical packages	8, 9, 10 and 16
4	Moving data Other tools	Import/Export Spreadsheet skills SQL SAS overview	
5	Visualizing data	Graphs Maps	12 and 13
6	Text analytics	Reading text files Word clouds Text mining	14 and 15
7	"Big" data	Data mining Machine learning Artificial intelligence	17,18,20
8	Course completion		

Technology

In order to be successful at NCC, all students need a laptop or personal computer (PC) as well as reliable internet access. It is recommended that students purchase a laptop for in-class use. Specifications can be found by clicking on the link below. If you do not have Internet access or the right kind of computer equipment (e.g., laptop, webcam, etc.) you may be eligible for the college's technology lending program, which is a first

come first served program. Click on this link for more information
<https://www.nashua.cc.edu/technology>

Laptops that meet NCC technology specifications are available for purchase at the NCC bookstore. Financial aid may be used for purchases made at the bookstore. Contact the bookstore for more information
<https://www.bkstr.com/nashua.cc/store/home>

Diversity, Equity, and Inclusion Statement:

We are all responsible for creating a diverse, equitable, inclusive, and just environment. Thus, we must treat individuals with respect by valuing all types of diversity. This is fundamental in creating a welcoming and inclusive learning environment. Diversity may include multiple ways of identifying ourselves, including, but not limited to race, color, national origin, language, sex, disability, age, sexual orientation, gender identity, religion, creed, ancestry, belief, veteran status, or genetic information. These diverse identities, among many others not mentioned, influence the perspectives our students, faculty, and staff bring to the NCC community. Through use of various approaches that enhance intellectually rich, respectful, safe, and inclusive learning environments, this dynamic process will demonstrate our sustained commitment at NCC. It is our core belief that diversity, equity, and inclusion promote excellence, collaboration, and innovation while also seeking justice.

Available Support Services

NCC Library: Get help with research for your papers and assignments from the NCC librarian and staff. Email ncclibrary@ccsnh.edu

Tutoring and Writing Center: The Tutoring and Writing Center, located in the library, offers free academic support services to all NCC students. Meet in-person or via Zoom with experts who can tutor you in math or accounting or help you with writing for any course. Tutoring is drop-in or by appointment. View the current tutoring schedule at <https://library.nashua.cc.edu/home/tutoring>

Online chat tutoring is also available 24/7 with *Sm@rthinking*. Find a link on the left navigation menu inside Canvas courses.

Disability & Accessibility (*Reasonable Accommodation Plan*): Students who think they may have or have a documented disability (*physical, learning, or mental health*) and/or had an IEP or 504 Plan in high school who may need classroom accommodations must meet with the Disability Services Coordinator to set up an NCC Reasonable Accommodation Plan (RAP). For more information view the Disability & Accessibility page: <https://www.nashua.cc.edu/student-services/disability-accessibility-information> and/or contact Jodi Quinn, Disability Services Coordinator (office located in the library), at jquinn@ccnsh.edu or (603) 578-8996.

In order to receive reasonable accommodations, it is the student's responsibility to email the current semester's RAP to each instructor and as needed meet with instructors to discuss the Plan. Each term the student wants to utilize accommodations, the RAP must be renewed and the student provides the current term Plan to instructors even if provided a Plan to an instructor for a previous term course.

Audio Record Classroom Lecture: Please note that as a student in this class, you may have a classmate who by permission can audio record class lectures for his/her learning purposes. **Only students with prior written permission** from the instructor or the Disability Services Coordinator may audio record class lectures - *for educational purposes only*. Students who audio record class lectures are prohibited from selling, transcribing, or distributing the recordings in *any manner* and are asked to delete the recordings when it is no longer essential for their learning purposes.

Instructors may record their own class lectures, activities, and discussions using electronic video, still photo, or audio recording for educational purposes, including academic research, professional development, and recording of course content for access through online learning and other formats. Every student present will be informed by the instructor of any recording at the beginning of class.

CARE Team

If you need information or a referral to local resources in the areas of Mental Health or basic support services (such as food, clothing, shelter, substance abuse or others including domestic and sexual violence), you can email the NCC CARE team (NCCCare@ccsnh.edu) and we will assist you in connecting to community resources. <https://nashuacc.edu/student-services/care-team>

Student Assistance Program: The Community College System of NH (CCSNH), which includes NCC, offers a Student Assistance Program (SAP) provided by Kepro to provide students with access to free confidential Student Counseling Services (SCS) by licensed mental health professionals in the local area and other supports 24 hours a day, 7 days a week, 365 days a year. Kepro's services are confidential. <https://nashuacc.edu/student-services/student-assistance-program>

College Policies

Non-Discrimination: The NCC Equity Committee is designated to coordinate compliance with the Non-Discrimination Policy and handles all concerns of discrimination that occur on campus that are not covered under Title IX. View more information here [Non-Discrimination Policy and Grievance Procedure](#)

Title IX: Classroom instructors at Nashua Community College are encouraged to create and maintain a safe learning environment in which students feel able to share opinions and related life experiences in classroom discussions, in written work, and in meetings with professors. To the greatest extent possible, this information will be kept private. However, staff and faculty have a legal obligation to report information concerning sexual misconduct, violence and exploitation of individuals per federal statute and in compliance with established policies and procedures at Nashua Community College. If you have been subjected to sexual misconduct, violence or exploitation, we encourage you to contact your Title IX Coordinator, Vice President Lizbeth Gonzalez, for support and assistance. She can be reached at Nashua Community College, 505 Amherst Street, Nashua, NH, 603-578-8928 or lgonzalez@ccsnh.edu. View more information here [Title IX Policy and Grievance Procedure](#)

Attendance: Regular attendance and active participation are essential for academic success. Every student should carefully review the department and college attendance requirements posted in the Department and College Policies Sections of this syllabus.

If a student must be absent from class, the student should contact his/her professor and follow the professor's make up policy listed in the syllabus under Course Expectations. In an online or hybrid class, measures of attendance and active participation include contributing to discussion board, submitting an assignment, taking a test or quiz on Canvas, etc. Logging into Canvas does not count as class attendance or participation. (For a complete definition of active participation, see regular and substantive interaction statement in student handbook.)

Rarely, a student may experience a serious situation that prevents that student from attending class for an extended period. This could be for reasons such as illness/hospitalization, loss of child care, or lack of transportation. In these situations, the student should notify his/her professor as soon as possible and contact the advising center for assistance NCCAcademicAdvisingCenter@ccsnh.edu.

AF Policy: If a student is absent more than the number of hours the course meets during a two-week period, the faculty may withdraw a student from the course with an "AF" grade. **In all cases, faculty will issue an AF grade if a student has 1) missed more than two consecutive weeks of class and 2) failed to communicate with the instructor by responding to EAB attendance alerts and other outreach. Students should also refer to department attendance policy under the Department Policies section of the syllabus.**

In addition, an instructor or administrator may issue an AF grade if a student's behavior violates the Student Code of Conduct and disrupts classroom instruction.


Please be advised that if the behavior of any student (or students) disrupts the learning of his/her classmates, the following steps will be taken by the instructor: 1) verbal warning; 2) meeting with instructor and department chair; 3) filing of written complaint and referral to Vice President of Academic Affairs for possible removal from the course with AF grade.

An AF grade may also be issued if a student registered in a clinic, practicum, internship, or lab is deemed unsafe or performing in an unsatisfactory manner as determined by an evaluation by a faculty member/agency supervisor in accordance with department criteria and procedure.

An "AF" grade is calculated in the GPA as an "F". Students should refer to the student handbook for additional information about the AF policy.

Canvas: Canvas is the online learning management system used by instructors and learners at Nashua Community College. Instructors will post syllabi, course related documents and grades in Canvas. Students may be required to submit assignments and/or take assessments through Canvas and/or participate in discussion boards. **If class is ever cancelled because of instructor illness or inclement weather, students will need to check Canvas for their assignment.**

24/7 Canvas Support: To access support through email, phone or chat

click on the  icon. Students can also find guides, videos, and a Canvas community by clicking on the *CCSNH Resources* icon on the toolbar at the left of the Canvas screen then choosing Canvas Resources.

If you have forgotten your Easy Login Password information, please visit the following link: <https://password.ccsnh.edu/accounts/Reset>

EAB Alerts Faculty can issue "Alerts" for students at any time. The administration at NCC encourages professors to issue alerts for any student who may be having difficulty in the course. When a faculty member raises an alert, both the student and student's advisor receive an automated email based on the alert raised. Faculty can issue an alert through EAB Navigate on the college website or directly using the following link: <https://nashuacc.campus.eab.com>

College Email System: Nashua Community College has established a College email system as a means of the College sending official information to enrolled students, and for students to send communication to their instructors and College personnel. All students registered at NCC will be assigned a College email account/address to be used as the only email address for all email communication: 1) sent to the students from their instructors and from all College personnel; and, 2) sent by the students to their instructors and to all College personnel.

In addition:

- Students should check their College email account regularly to ensure they are staying current with all official communications. Official communication includes, but is not limited to, policy announcements, registration and billing information, schedule changes, emergency notifications and other critical and time sensitive information.
- Students should also check their college email account to be sure that they are current with all email communication from their faculty.
- The student email account/address should be the only e-mail address students use to send email to faculty and College personnel so that student email is recognized and opened.
- This service is provided exclusively to the students of NCC. Accounts are for individual use only, and are not transferable or to be used by any other individual.
- Students using their College email account do so under the policies set forth in the Student Handbook under "Student Computer Conduct Code".

Sensitive Materials Policy: During the semester, in order to cover certain academic topics, there may be occasions to view or discuss material which may not meet the student's own personal definition of appropriateness. At such times, every student has the right to decide not to participate. Every effort will be made by the instructor to notify students in advance of when such sensitive material will be used so that students can make alternative arrangements. Faculty will guide students in the identification of alternative learning opportunities consistent with relevant course objectives so that students opting out of scheduled "sensitive" learning experiences will not be penalized academically in any way. Please note the opportunity to leave the classroom discretely is always available to each student when such sensitive material is being discussed. The student then has the responsibility before the next class meeting to inform the instructor as to the reason for leaving.

Academic Conduct

All students are expected maintain high standards of academic integrity as they complete their coursework at NCC. Cheating and plagiarism are violations of the Student Code of Conduct and all instances of academic dishonesty are taken very seriously by the College.

Cheating: Cheating includes, but is not limited to: (1) use of any unauthorized assistance from other persons or technologies in taking quizzes, tests, or examinations or in the preparation and completion of class assignments; (2) dependence upon the aid of resources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments; (3) the acquisition, without permission, of tests or other academic material belonging to a member of college faculty, staff, or students; or (4) knowingly providing unauthorized assistance of any kind to another for the purpose of providing unfair advantage to the recipient in the completion of course assessments/ assignments (sometimes known as facilitation).

When a student is found to have cheated on an academic assignment, it will be up to each instructor to determine the grading penalty. Depending on the severity of the incident, this could range from a warning to a loss of credit for the course. **In all cases of cheating, the instructor will notify the student's advisor and the advisor will document the incident on EAB using advisor notes.**

If any further incidents of cheating are reported to the student's advisor, the advisor or VPAA will file a complaint with the appropriate college Judicial Body. Additional sanctions may be imposed.

Plagiarism: Plagiarism is a serious violation of a student's academic integrity and the trust between a student and his or her teachers. Plagiarism is the act of a person presenting another person's work as if it were his or her own original work. Such acts of plagiarism include, but are not limited to:

1. A student submitting as his or her own work an entire essay or other assignment written by another person.
2. A student submitting as his or her own creation the artwork (including but not limited to a painting, drawing, photograph, object, digital representation) of another person.
3. A student taking word for word a section or sections of another person's work without proper acknowledgment of the source and quotation.
4. A student using statistics or other such facts or insights as if they were the result of the student's efforts and thus lacking proper acknowledgment of the original source.
5. The paraphrasing of another person's unique work with no acknowledgment of the original source.
6. Copying another student's work on a quiz or test.

Some instructors may consider self-plagiarism to be a form of plagiarism. Self-plagiarism includes **submitting the same paper** in response to two **different** assignments. Please consult with your instructor and carefully review instructor expectations posted on your syllabus if you have any questions.

When a student is found to have plagiarized an academic assignment, it will be up to each instructor to determine the grading penalty. **Depending on the severity of the incident**, this could range from a warning to a loss of credit for the course. **In all cases of plagiarism, the instructor will notify the student's advisor by posting an alert on EAB Navigate. The advisor will then document the incident on EAB using advisor notes.** If any further incidents of plagiarism are reported to the student's advisor, the advisor or VPAA will file a complaint with the appropriate college Judicial Body. Additional sanctions may be imposed. For other examples of Academic Misconduct and a full description of the Student Disciplinary Process, please refer to the NCC Student Handbook

Credit Hour Guidelines

1. A credit hour shall be the equivalent of one (1) hour of classroom or direct faculty instruction and a minimum of two (2) hours of out-of-class student work each week for 15 or 16 weeks.
2. A credit hour shall be allocated based on the following:

Category	Contact Hours per Week	Contact Hours per Sem. (based on minimum 15 week semester)
Class	1	15
Laboratory	2 or 3	30-45
Clinical	3 to 5	45-75
Practicum, Fieldwork	3	45
Internship	3 to 6	45-90
Co-op	Variable by Dept.	Variable by Dept.