# Course Information

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| Course Code | Term | Section: Data 3550 Fall 2024, OA01 |
| Course Name: **Data Programming Fundamentals** |
| Course Details:  Programming languages like Python enables businesses to analyze and interpret data to inform strategies by looking beyond the numbers. This course explores data types, control flow, object-oriented programming, and data analysis libraries. Students will develop fundamental data programming skills which are essential to perform business data analysis |
| Course Start/End Dates: |
| Delivery Method: Delivered via Teams |
| Day, Time, Location: Tuesday/Thursday, 12pm – 2:50pm |

**Instructor Information**

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| Name: Akeem Semper |
| Office Location: CAT301 |
| Contact Information:   * Primary: please inquire before/after class. * Secondary: [akeems@nait.ca](mailto:akeems@nait.ca).   + 48 business hour response time.   + Please ensure your name/class/topic is clear in your message. * Tertiary: For elaborate or sensitive topics, please book an office meeting via the Calendly link on Moodle. |

**Learning Resources**

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| Required Learning Materials:  **Note: I recommend waiting until after the first class before purchasing a text.**  Horstmann, C. S., Necaise, R. D. (2018). Python For Everyone, 3rd Edition.  Looseleaf version – 9781119739951  eBook 150-day rental - 978-1-119-49853-7  Software:   * [Anaconda](https://www.anaconda.com/products/individual) for Data Science * Python * VS Code   **Alternate Text: Think Python**  This is free and posted on the LMS site. |

**Technology Requirements**

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| **JRSSB Minimum Requirements: Students in any JRSSB course should have the minimum technology requirements as specified in the Course Outline.** |
| Section-specific technologies: |

**Assessments | Evaluation**

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| *Name:* Assignments *(Weighting:11 % per assignment)* Note: Universal Design for Learning (UDL) has been built into this Assessment. Each assignment is open for two weeks to accommodate learners. |
| *Date:*  Due at 23:55 on the Monday of the week specified on p.3 of the syllabus or at the instructor's discretion. |
| *Details:* The assignments assess your ability to apply what you have learned in a practical application. The assignments increase in difficulty over the term and assess both core and advanced knowledge of programming fundamentals. |

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| *Name:* Lab Assignments(*Weighting: 6 % per assignment)* *Note: Universal Design for Learning (UDL) has been built into this Assessment* Each lab assignment is open for at least two weeks to accommodate learners. |
| *Date:* Due at 23:55 on the Monday of the week specified on p.3 of the syllabus or at the instructor's discretion. |
| *Details:*  The Lab Assignments are walkthrough lab activities that include both theory and practical components; you will be tasked with creating a simple program at the end of each lab session. You must successfully complete a series of lab tasks to receive credit for the activity. One formative assessment is introductory (i.e., no weight for the course) and 6 lab assignments, each worth 6% of the overall course weight. Even though there is a 6% weight assigned to each lab assignment, it is primarily designed to provide students with feedback on their understanding of the topic via interactions with the instructor and peers. |

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| *Name:* Term Exams *(Weighting: 14% per term exam)* |
| *Date:* Week 5, Week 9, and Week 14, dates specified on p.3 of the syllabus or at the instructor's discretion. |
| *Details:* Exams are timed online activities that test your knowledge of the theory for the course. Even though there is a 14% weight assigned to each term exam, it is primarily designed to provide students with feedback on their understanding of the chapter(s) content as they progress through the course. |

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| **Exam Accommodations**: Accommodations, such as extra time, may already be built-in or provided using universal design for learning (UDL) practices for all students in which case further accommodation may not be required. Please discuss with your instructor.  **Exam Conflicts:** JRSSB actively mitigates known scheduling-based conflicts where possible during the coordinated assessment period. Students are responsible for ensuring their coordinated assessment period is free of scheduling-based conflicts by reporting any un-addressed scheduling-based conflicts to JRSSB’s exam coordination team. Students must report un-addressed scheduling-based conflicts to [busexams@nait.ca](mailto:busexams@nait.ca) immediately upon discovery and prior to the start of the coordinated assessment period.  **Exam Deferrals**: The Deferred Exam process is designed to assist students with extenuating circumstances beyond the student’s control. An exam must be at least 20% of the final course grade to be eligible for a deferral. Please contact your instructor regarding exams worth less than 20% of your final mark. The Student must initiate NAIT's Deferred Exam Booking Process; a completed Deferred Exam Request Form(s) must be sent to [busexams@nait.](mailto:busexams@nait.ca)ca for processing. For more details, please refer to the Grades Procedure, section 4.5. If your request is approved, you will pay an exam deferral fee for each exam. Payment is required prior to writing a Deferred Exam. |

**Course Delivery Plan**

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| Date | Activity | Assessment[[1]](#footnote-2) |
| Week 1  (Monday = Sept 4) | Intro to Programming using Python | **Setting up the Development Environment**  **Lab Session 0** |
| * computers and programming * python programming language * compile-time and run-time errors * algorithm design * input & output |
| Week 2 | Programming with Numbers & Strings | **Lab Session 1 (6%)** |
| * variables and constants * number types * comments and good code layout * arithmetic expressions * strings * graphics |
| Week 3 | Conditional Execution | **Lab Session 2 (6%)** |
| * flowcharts * the if statement and nested branches * relational operators * boolean variables and operators |
| Week 4 | Loops | **Lab Session 3 (6%)** |
| * while and for loops * common loop algorithms * nested loops |
| Week 5 | Review | Term Exam 1 (14%) |
| Week 6 | Functions | **Assignment 1 (11%)** *released* |
| * function basics * formal parameters and actual parameters * the return statement * variable scope |
| Week 7 | Lists | **Lab Session 4 (6%)** |
| * basic properties of lists * common list algorithms * lists with functions * tables |
| Week 8 | Files and Exceptions | **Assignment 1(11%)** *due* |
| * file processing * text input & output * command-line arguments * exception handling |
| Week 9 | Review | Term Exam 2 (14%) |
| Week 10 | Sets and Dictionaries | **Lab Session 5 (6%)** |
| * sets * dictionaries * complex structure |
| Week 11 | Objects and Classes |  |
| * Object-Oriented programming * classes and objects * object references |
| Week 12 | Inheritance | **Lab Session 6 (6%)** |
| * inheritance hierarchies * subclasses |
| Week 13 | Sorting & Searching | **Assignment 2 (11%)** *released* |
| * sorting algorithms * searching algorithms |
| Week 14 | Review | Term Exam 3 (14%) |
| Week 15 | Python for Data Visualization | **Assignment 2 (11%)** *due* |

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**Other Details**

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| **Academic Integrity**:  According to Academic Integrity Procedure (2021):  Academic Integrity is demonstrated by students taking steps to make sure that their instructor can accurately assess a student’s skill level for a given topic. This means that the work students submit must be their own, within the parameters of the assigned work to be assessed, and any part of that work that is not their own is appropriately attributed.  Students also demonstrate Academic Integrity by taking steps to ensure that their efforts are not used by other students to misrepresent their skills during assessment. In other words, supporting others in violations of the principles of Academic Integrity is itself a violation of these principles.  When students, intentionally or not, obfuscate, deceive, or hinder the ability of NAIT instructors and programs to assess their performance they will be considered to have violated the NAIT principles of Academic Integrity. These violations are categorized as Academic misconduct. [(SR 1.3, Section 1.0., 2021)](https://naitca.sharepoint.com/sites/pd/published%20documents/policies%20and%20procedures/academic%20policy/student%20rights%20&%20responsibilities%20policy/sr%201.3%20academic%20integrity%20procedure.pdf)  Every NAIT student must complete NAIT Modules on Academic Integrity for your awareness and to increase your knowledge as to the expectations – knowledge that is critical to your success.  **Student Responsibility**: It is expected that students will be responsible citizens of the Institute by following the Student Rights and Responsibilities Policy (SR 1.0) (2021). As such, each student will assist in the preservation of Institute property and assume responsibility for their education by staying informed of and abiding by academic requirements and policies; demonstrate respect toward others; and meet expectations concerning attendance, assignments, deadlines, and appointments. [(Student Rights and Responsibilities Policy, SR 1.0., 2021)](https://naitca.sharepoint.com/sites/pd/published%20documents/policies%20and%20procedures/academic%20policy/student%20rights%20&%20responsibilities%20policy/sr%201.0%20student%20rights%20and%20responsibilities%20policy.pdf)  **Equity, Diversity and Inclusion**: NAIT is committed to advancing equity and to actively and intentionally creating learning environments that promote a sense of belonging and dignity that ensure all people are safe, respected and valued. Acknowledging that every member of the NAIT community has a role in and responsibility to this work, NAIT provides the resources and support necessary for programs, departments and individuals to champion equity, diversity and inclusion and address barriers in meaningful ways.  **Territorial Acknowledgement**: At NAIT, we honour and acknowledge that the land on which we learn, work and live is Treaty Six territory. We seek to learn from history and the lessons that have come before us, and to draw on the wisdom of the First Peoples in Canada. Only through learning can we move forward in truth and reconciliation, and to a better future together. |
| **Accessibility and Universal Design for Learning:** This course will be delivered according to the principles of Universal Design for Learning.  Multiple Means of Representation: *(describe specific strategies that this principle is being put into action)*  Multiple Means of Engagement: *(describe specific strategies that this principle is being put into action)*  Multiple Means of Action and Expression: *(describe specific strategies that this principle is being put into action)* |
| Other Course-Specific Information: *(optional, may include Attendance/late expectations, essay and citation formatting, on-camera requirement for exams, additional requirements – e.g. specialized equipment and/or supplies, field trips, etc. Could reference the course outline if necessary)* |
| Student Engagement Expectations: At NAIT, every 3 credits represent a total of 135 learning hours (note this does not include WIL Courses). This includes scheduled learning hours (classroom time, labs, shops, etc.) in various settings (face-to-face, blended, hyflex, remote-live, and remote on-demand) and student self-directed learning. Self-directed learning is defined as students engaging with course content on their own outside of scheduled class time. In a 15-week term, students are expected to spend approximately 9 hours per week on scheduled and self-directed learning (for each 3 credit course, 18 hours for a 6 credit course). Please note that the scheduled hours can be affected by the number of holidays in a term.  *(Please, add any other Student Engagement Expectations that are Instructor specific expectations, if applicable)* |

**Online Synchronous Learning**

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| Please note that any synchronous learning session, including any questions or comments submitted by students during such sessions, may be recorded and made available to students following completion of the session(s). This collection of personal information is carried out pursuant to section 33(c) of the Alberta *Freedom of Information and Protection of Privacy Act*, for the purpose of providing reference materials for students while studying, or for the purpose of assisting students who require medical or other accommodations. If you have any questions regarding the collection and use of this personal information, please contact: Student Resolution Office NAIT Main Campus | 11762-106 Street NW, Edmonton, AB T5G 2R1  Tel: 780-378-6136 | Email: resolutions@nait.ca |

**E-proctoring Software** *(If an instructor has chosen to record an assessment using online proctoring software, it is a requirement to be explicit about how this recording will be used and how it will be stored. To meet FOIP requirements, it is* ***critical*** *that instructors provide the following statement(s) to students before the start of the assessment. This statement should also be included in the syllabus and Moodle site.)*

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| Assessments with Online Monitoring:  *Please use this statement if there is no LIVE monitoring*  Assessments will be monitored using online proctoring software that uses your webcam to record you and your immediate surroundings while you complete the assessment. These recordings may be saved and reviewed by NAIT at a later date. This collection of personal information is carried out pursuant to section 33(c) of the Alberta Freedom of Information and Protection of Privacy Act, for the purpose of ensuring academic integrity during the examination (assessment). If you have any questions regarding the collection and use of this personal information, please contact: Student Resolution Office NAIT Main Campus | 11762-106 Street NW, Edmonton, AB T5G 2R1  Tel: 780-378-6136 | Email: resolutions@nait.ca  Please note that the recording will not be monitored by a live NAIT representative, and NAIT therefore will not be able to provide assistance remotely in the event of a medical or other emergency.  *Please use this statement if there is LIVE monitoring:*  Please note that this exam will be monitored using online proctoring software that uses your webcam to record you and your immediate surroundings while you complete the exam. These recordings may be monitored live by a NAIT representative and saved for retrieval at a later date. This collection of personal information is carried out pursuant to section 33(c) of the Alberta Freedom of Information and Protection of Privacy Act, for the purpose of ensuring academic integrity during the examination.  If you have any questions regarding the collection and use of this personal information, please contact: Student Resolution Officer NAIT Main Campus  11762-106 Street NW  Edmonton, AB T5G 2R1 Tel: 780-378-6136  Email: [**resolutions@nait.ca**](mailto:resolutions@nait.ca)  Please note that although the recording may be monitored by a NAIT representative, NAIT cannot guarantee that the recording will be monitored continuously or that someone will be available to provide assistance remotely in the event of a medical or other emergency. |

**Student Support**

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| Your instructor should always be your first point of contact for items concerning course content, navigating Moodle, timelines, assessment instructions, expectations, and grading. |
| Learning Services offers a variety of supports to help you develop your learning skills and achieve your full potential. Learn more about the services and what they have to offer for everyone at NAIT. Please see the Learning Services block in your Moodle Course/Site(s). |
| Library Services: The NAIT Library is a hub of learning, exploring, and creating. They support the NAIT community through access to resources, collaborative and exploratory spaces, cutting edge technology, and programming that supports academic excellence and lifelong learning. See the NAIT Library block in your Moodle Course/Site(s). |
| **I**nformation **T**echnology **S**ervices (ITS): Connect with the ITS Help Desk for technical support related to device issues and for support during an online assessment/examination. [https://www.nait.ca/itspublic >](https://www.nait.ca/itspublic) get help | 780.471.8624 |
| The JR Shaw **B**usiness **I**nformation **C**entre (BIC) is our centralized unit providing Student facing supports for all JR Shaw School of Business programs. Our Program Specialists (student advisors) can assist in providing general information and program specific administrative and advising supports.  Phone:780.471.8998 |E-mail: [businfo@nait.ca](mailto:businfo@nait.ca) | Location: CAT 301 |

1. Some assessments’ schedules are subject to changes for operational purposes. [↑](#footnote-ref-2)