

ILS 103: Introduction to Data Lifecycle Management

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Fall 2021 Semester - Purdue University

Monday 12:30-1:20 p.m. WALC 1087

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Office hours: Mondays 11:00-Noon

STEW 174G or Discord or other times by request

IMPORTANT: If you experience any symptoms of COVID-19 or suspect you may have been exposed to someone with COVID-19, stay home and call the Protect Purdue Health Center at 765-496-INFO.

Course Description

The Habits of Mind (Costa & Kallick, 2008) are an identified set of problem-solving, life-related patterns of behavior that are necessary to effectively operate in society and promote strategic reasoning, insightfulness, perseverance, creativity, and craftsmanship. Introduction to Data Lifecycle Management is an introductory, one-credit course that exposes students to an additional six “Habits of Mind for Data” that are necessary for engineers to navigate in the world of data. Students will be introduced to concepts and begin to develop their own habits for 1) being aware of types of data and their lifecycle; 2) finding and evaluating data purposefully; 3) using data ethically and responsibly; 4) creating and sharing data for reuse, accountability, and enhancement; 5) making decisions and communicating using data, including data analysis and visualization; and 6) protecting and archiving data.

Students will engage these topics through readings, code examples, videos, discussion, lectures, guest speakers, and hands-on activities in class. As a final project, students will demonstrate application of the material by planning, finding and reusing, collecting, analyzing, presenting, and preparing data to be archived.

Enrollment in this section is limited to students accepted into and placed with the [Engineering in the World of Data](#) Learning Community. This course is a prerequisite for ENGR 103 Data Science Applications in Engineering (Brophy) in the spring semester.

Required Reading

- No textbook is required.
- All required reading will be provided via Brightspace.

Learning Outcomes

At the end of this course, students will be able to:

- describe the data lifecycle and types of data that are used in their discipline or profession,
- discuss the ethical and responsible use of data,
- locate and evaluate datasets for reuse that are relevant to their research or work,
- apply a variety of introductory data collection, analysis, and visualization techniques, and
- understand the basics of securing, archiving, and sharing data.

Course Structure

The six Habits of Mind for Data are explored in six modules. In the first week, students will prepare for class by reading or viewing an article, video, or other content that is assigned in Brightspace. They will reflect on the content by responding to an instructor's prompt in an online discussion board and commenting on a classmate's response for that week's module in Brightspace. The class will then meet for a lecture or guest speaker who will concentrate on the module and relate their experience and expertise to it. In its meeting in the second week, the class will recap the topic by revisiting main points, answering questions, and relating the module to the final project. Students will break into teams to engage the module through a hands-on activity in class and take a short quiz to assess their knowledge learned from the module.

Each of the 6 modules typically follows this pattern:

First week

- *Prepare*: Assigned reading, code example, video, or other content to read
- *Reflect*: Post a response to instructor and comment to another student in Brightspace online discussions
- *Concentrate*: Attend and participate in lecture in class

Second week

- *Recap*: Revisit main points in class and how they relate to data science
- *Engage*: Hands-on activity in class
- *Assess*: Quiz

Students should bring a laptop computer to class and be prepared to work in small teams, in person, and online. The modality for the class is face-to-face.

Engineering in the World of Data Learning Community

All students enrolled in this section of ILS 103 belong to the [Engineering in the World of Data Learning Community](#) that will offer a variety of social and educational activities throughout the year. The learning community strives to increase students' awareness of data-related behaviors and ethics in the fields of engineering through combined assignments, learning and social activities, and other shared experiences.

Class Schedule

This is a *tentative* schedule for the semester that is subject to change, for example, to accommodate guest speakers or to address relevant, emerging issues and current events. The current schedule will be updated and maintained in the calendar in Brightspace.

Dates	Topics
August 23	Welcome & syllabus review; learning community introduction
August 30	Guest lecture - Introducing Python
September 6	Labor Day - No class
September 13	Module 1: Be aware of data and its lifecycle
September 20	Quiz Module #1 Module 2: Find and evaluate data purposefully
September 27	Module 2: Find and evaluate data purposefully Quiz Module #2
October 4	Module 3: Use data ethically and responsibly Quiz Module #3
October 11	Fall break - No class
October 18	Module 4: Create and share data for reuse and accountability
October 25	Module 4 : Create and share data for reuse and accountability Quiz Module #4
November 1	Guest lecture - Looking Inside Purdue's COVID-19 Proximity and Contact Tracing Data Lake and Analytics
November 8	Module 5: Make decisions & communicate using data
November 15	Module 5: Make decisions & communicate using data Quiz Module #5
November 22	Final project work session (optional but encouraged)

November 29	Module 6: Mitigate risk and archive data
December 6	Module 6: Mitigate risk and archive data Quiz Module #6 Final projects due Course evaluations

Assignments and Grading

Grades are based on 100 points available through participation (in class and online discussions), attendance of learning community co-curricular/extracurricular activities, quizzes, and the final project. Late assignments will not be accepted without prior approval of an instructor.

Quizzes	6 quizzes (5 points each)	30
Participation	Discussion Board reflections and in-class participation (4 points each)	24
Learning community	Attend 2 Learning Community activities (8 points each)	16
Final project	Data management and curation project	30
Total		100

Quizzes are given in class unless otherwise instructed. There will be one 5-point quiz per module for a total of 30 points.

For each of the six modules, 4 participation points are available for a total of 24 points. For each module, students will read materials, write an answer to an instructor prompt in the online discussion boards in Brightspace (2 points), and respond to one other student's answer (1 point). An additional point is earned by class attendance (online or in person), active listening, and participation. To summarize, for each module:

- Class attendance, listening, and participation: 1 point
- Complete answer to the instructor's online discussion prompt: 2 points
- Meaningful response to another's answer: 1 point

The rubric and due date for the final group project (30 points total) will be distributed in class.

The following grading scale will be used:

Grade	Value
A	94-100 points
A-	90-93 point
B+	87-89 points
B	84-86 points
B-	80-83 points
C+	77-79 points
C	74-76 points
C-	70-73 points
D	60-69 points
F	Below 60 points

Communication

Brightspace will be the primary course website; all assignments, discussion board posts and quizzes will be administered and turned in using Brightspace. Instructors may be contacted via Brightspace or by the email addresses listed above. They are available online during posted office hours or by appointment to meet online or in person at other times.

You are expected to read and respond to your @purdue.edu email on a frequent basis.

A Discord server has been established for the Engineering in the World of Data Learning Community that can be used for informal communication among faculty and students, e.g., information about related seminars and events, social activities, current news and articles related to data, forming study groups, etc. Discord does not act as an official course website; no coursework should be submitted via Discord, and no course-related or assignment related posts will be posted in Discord that are not also posted in Brightspace.

Professional Expectations and Protect Purdue

Professional expectations in ILS 103 reinforce the idea that everyone in our learning environment helps shape the environment to be positive and productive for everyone. Behaving professionally includes arriving for class on time and being prepared; focusing during class on ILS 103; controlling your behavior to minimize distractions to those around you; and engaging

with others in a respectful and professional manner. Therefore, instructors will deduct points from your semester total for behavior that is disruptive to your class or to your team's dynamics and performance.

The Protect Purdue Plan, which includes the [Protect Purdue Pledge](#), is campus policy and as such all members of the Purdue community must comply with the required health and safety guidelines. Required behaviors in this class include: staying home and contacting the Protect Purdue Health Center (496-INFO) if you feel ill or know you have been exposed to the virus, properly wearing a mask in classrooms and campus building, at all times (e.g., mask covers nose and mouth, no eating/drinking in the classroom), disinfecting desk/workspace prior to and after use, maintaining appropriate social distancing with peers and instructors (including when entering/exiting classrooms), refraining from moving furniture, avoiding shared use of personal items, maintaining robust hygiene (e.g., handwashing, disposal of tissues) prior to, during and after class, and following all safety directions from the instructor.

Students who are not engaging in these behaviors (e.g., wearing a mask) will be offered the opportunity to comply. If non-compliance continues, possible results include instructors asking the student to leave class and instructors dismissing the whole class. Students who do not comply with the required health behaviors are violating the University Code of Conduct and will be reported to the Dean of Students Office with sanctions ranging from educational requirements to dismissal from the university.

Any student who has substantial reason to believe that another person in a campus room (e.g., classroom) is threatening the safety of others by not complying (e.g., not wearing a mask) may leave the room without consequence. The student is encouraged to report the behavior to and discuss next steps with their instructor. Students also have the option of reporting the behavior to the [Office of the Student Rights and Responsibilities](#).

Attendance

Students are expected to be present for every meeting of the classes in which they are enrolled. Only an instructor can excuse a student from a course requirement or responsibility. If you are not able to attend a class during the regularly scheduled time due to quarantine or isolation, you are required to contact the instructors for an accommodation to replace your participation points with an additional, short writing assignment or to meet and discuss the module with the instructors during office hours.

Students should stay home and contact the Protect Purdue Health Center (496-INFO) if they feel ill, have any symptoms associated with COVID-19, or suspect they have been exposed to the virus. In the current context of COVID-19, in-person attendance will not be a factor in the final grades, but the student still needs to inform the instructor of any conflict that can be anticipated and will affect the submission of an assignment or the ability to take an exam. When conflicts can be anticipated, such as for many University-sponsored activities and religious

observations, the student should inform the instructor of the situation as far in advance as possible. For unanticipated or emergency conflict, when advance notification to an instructor is not possible, the student should contact the instructor as soon as possible by email, through Brightspace, or by phone. When the student is unable to make direct contact with the instructor and is unable to leave word with the instructor's department because of circumstances beyond the student's control, and in cases of bereavement, quarantine, or isolation, the student or the student's representative should contact the Office of the Dean of Students via email or phone at 765-494-1747. Our course Brightspace includes a link on Attendance and Grief Absence policies under the University Policies menu.

If you become quarantined or isolated at any point in time during the semester, in addition to support from the Protect Purdue Health Center, you will also have access to an Academic Case Manager who can provide you academic support during this time. Your Academic Case Manager can be reached at acmq@purdue.edu and will provide you with general guidelines/resources around communicating with your instructors, be available for academic support, and offer suggestions for how to be successful when learning remotely. Importantly, if you find yourself too sick to progress in the course, notify your academic case manager and notify me via email or Brightspace. We will make arrangements based on your particular situation. The Office of the Dean of Students (odos@purdue.edu) is also available to support you should this situation occur.

Academic Integrity

Academic integrity is one of the highest values that Purdue University holds. Individuals are encouraged to alert university officials to potential breaches of this value by either emailing integrity@purdue.edu or by calling 765-494-8778. While information may be submitted anonymously, the more information is submitted the greater the opportunity for the university to investigate the concern. More details are available on our course Brightspace table of contents, under University Policies.

Students expected to abide by Purdue's Honor Pledge: "As a Boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do. Accountable together – We are Purdue."

Nondiscrimination

Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, Purdue seeks to develop and nurture diversity. We believe that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life. More details are available on our course Brightspace table of contents under University Policies.

Accessibility

Purdue strives to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, you are welcome to let me know so that we can discuss options. You are also encouraged to contact the Disability Resource Center at: drc@purdue.edu or by phone: 765-494-1247. More details are available on our course Brightspace under Accessibility Information.

Mental Health and Wellness

Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at (765) 494-6995 or <http://www.purdue.edu/caps/> during and after hours, on weekends and holidays, or by going to the CAPS office of the second floor of the Purdue University Student Health Center (PUSH) during business hours.

Basic Needs

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact the Dean of Students for support. There is no appointment needed and Student Support Services is available to serve students 8 a.m.-5 p.m. Monday through Friday. Considering the significant disruptions caused by the current global crisis as it relates to COVID-19, students may submit requests for emergency assistance from the [Critical Needs Fund](#).

Emergency Preparation

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor's control. Relevant changes to this course will be posted onto the course website or can be obtained by contacting the instructors via email or phone.