

## FAQ FOR PROSPECTIVE STUDENTS

**What will I learn?** We focus on high-level theory of how AI works, and soft skills in using/ideating AI products.

- **In Person:** “Soft-skill” knowledge
  - o **Part 1:** Using AI Products (Prompt Engineering; AI Literacy)
  - o **Part 2:** Designing AI products for business applications (Product Management)
  - o **Part 3:** Governance, Legal, and Ethical Issues (Guardrails for AI products)
- **Online:** (High level) intuitions on how AI works
  - o **Part 1:** How machines learn (Neural networks)
  - o **Part 2:** How machines “talk” like humans (Natural Language Processing)
  - o **Part 3:** How machines “think” like humans (Agents and reasoning).

**What won't I learn?** We will NOT learn how to code or (tangibly) create AI products. The underlying philosophy is that your HR/business job will not require you to code AI systems. Instead, your current unique skillset better positions you to serve as business partners on AI teams. This course will help with AI literacy (useful for any job) and combine business/design thinking with AI literacy.

**What skills can I put on my resume after taking this course?** You will learn ‘prompt engineering’ and ‘product design’ skills.

But, the reality is, these are rarely skills you see on undergrad resumes. You might consider this a “general knowledge” course rather than a “skills course.” If you want more marketable “hard skills,” I recommend our SMLR courses on Excel, Analytics, Data Viz, and Consulting. Again, we will NOT create (tangible) AI products.

If you're considering certifications, parts of this course cover the Azure AI Fundamentals certification. GCP and AWS offer similar certifications. Contact me for student discounts.

**I don't like AI, math, or coding. Should I take this course?** Yes. We don't do coding or math in this course. I occasionally use math concepts to explain AI, but you'll never be tested on formulas or math.

**I like AI, math, or coding. Should I take this course?** Probably. I still use math at a high-level to deepen our understanding of how AI work. This is a no-code course, so look elsewhere if you want coding experience.

**What should I know about grading philosophy?** The weekly assignments are mostly pass/fail, I'll tell you EXACTLY what is on the exam with study guides, and I'll give you the rubric for the final project. My philosophy is to give you clear expectations and resources; your job is to do the work.

Show up to class, do the assignments, and I suspect you'll easily manage a B. If you study, my hope is you'll earn an A. When students get a C or below, they either don't come to class or don't do the work.

**Is the workload manageable?** Probably. I expect the course takes ~3 hrs/week (online/in-person combined). This does not include time for exam studying and the final project.

**What does a typical week look like?** The class is hybrid (online and in-person lectures). Weekly assignments are mostly reflections of in-person material, and AI-assisted reflections of online lecture material. All reflections are (mostly) complete/no-complete. You should expect to come to class and do some studying for the exams. There are questions embedded in the asynchronous lectures intended to reinforce learning points and retain focus (unlimited retakes for each video).

**Do I have to buy anything for this course?** No.

## COURSE OVERVIEW

This course provides students with knowledge on how to **use** and **ideate** AI products.

The underlying philosophy is that your HR/business jobs will not require you to code AI systems. Instead, your current unique skillset better positions you to serve as business partners on AI teams. This means you need to understand two things. One, at a high level, how does AI work and what is it capable of? Two, how do you identify business problems and design AI solutions?

The course's learning modality is hybrid: There is an asynchronous portion and an in-person portion.

- **Asynchronous portion:** We cover high-level theory behind of how AI works. How does it “learn” (gradient descent, neural networks), how does it “talk” (word embeddings, attention, transformers), and how does it “think” (reinforcement learning, reasoning).
- **In-person portion:** We focus on the “soft skills” of using and designing AI products. We will focus on how to use AI (prompt engineering frameworks, co-intelligence), how to design AI products (business case frameworks), and how to govern AI (ethics and laws). Each class includes a case or exercise.

Asynchronous portions should be completed BEFORE the in-person portion.

## COURSE MATERIAL

### Class Material:

- Canvas will contain PowerPoint slides, lecture videos, announcements, and assignments.

### Textbooks:

- Mollick, E. (2024). Co-intelligence: living and working with AI. Portfolio/Penguin.  
Note: Book is available online FOR FREE via Rutgers

### Additional Materials:

- ChatGPT or Gemini  
Note: Other LLMs are fine, but we'll focus on ChatGPT. A premium account is not necessary.

## GRADING AND COURSE REQUIREMENTS

Activity	Points
Weekly In-Person Lectures + Exercise	15%
Weekly Online Lectures + Reflections	15%
Short Reflection 1 (due Exam 1)	5%
Short Reflection 2 (due Exam 2)	5%
Exam 1 (In Person; Non-cumulative)	20%
Exam 2 (In Person; Non-cumulative)	20%
Final Project	20%

	Grading Scale
90-100%	A
85-89.9%	B+
80-84.9%	B
75-79.9%	C+
70-74.9%	C
60-69.9%	D

### AI POLICY

- **WEEKLY REFLECTIONS: Don't use it.**
  - Reflections are personal. They are low-stakes: Graded on a complete / no-complete basis. You don't "need" AI.
  - If I suspect AI once, I'll warn you.
  - If I suspect twice. You will video record all your reflections for the rest of the semester.
- **ALL OTHER ASSIGNMENTS: Use it.**
  - You'll be given explicit prompts and instructions.
- **FINAL PROJECT: Use it.**
  - I won't give you explicit prompts. But you're encouraged to use it.

## AI Policy: Follow Instructions



Reflections: Don't use AI.

Reflections are personal.  
You don't "need" AI: Graded complete/no-complete.  
If I catch you once. I'll warn you. If I catch you twice,  
**you will video record all your assignments for the rest of the semester.**



Other Assignments: Use AI!

Explicit prompts and instructions are provided.

### TECHNOLOGICAL REQUIREMENTS

- You are expected to have access to a reliable laptop and internet
- You are expected to have access to a LLM Chatbot. You don't need a premium version.
  - ChatGPT will be our default, followed by Gemini.
- Sign up for a FREE TopHat account
  - To register, go to our Canvas page and click on the link for Top Hat (found among the links on the left). Do not register through the TopHat website. You must register via Canvas or else you will be removed from the TopHat course roster.

### WEEKLY ASSIGNMENT AND STRUCTURE

- **Total Time:** Each week, you should allocate 2.5 to 3.5 hours to the course.
- **Asynchronous Portion (1 to 2 hours):**
  - **Lecture:** Videos explain how AI works. There are questions embedded into the lecture videos; unlimited retakes per video.
  - **Reflections:** Assignments are a combination of personal reflections, AI tutoring sessions, and journals of current events. These should take approximately 20-30 minutes, and are typically (but not always) graded complete / no-complete.
- **In Person Portion (1.5 hours)**
  - **Lecture:** We review the asynchronous material and discuss the “soft skills” associated with using AI, designing AI, and governing AI.
  - **Case Study / Activity:** Designed to practice the “soft skills” discussed in class. You will be randomly assigned to groups every class and will discuss a case study or exercise. Must be in person to receive credit.

### REFLECTIONS

- **Reflection 1 (Due Exam 1):** Reflect on the prompt engineering techniques and frameworks we discussed in class. Which ones work best for you? Why do you think the techniques work? How do you keep the human-in-the-loop? What skills have you kept/outsourced?
- **Reflection 2 (Due Exam 2):** Reflect on the business case techniques for identifying new AI use cases. Ideate a new AI product that would help you “get a job.” Identify your pain points, and where AI can help. Use the AI deployment lifecycle to propose a rollout strategy.

### EXAMS

Exam 1 & 2 are in-class and closed-book. Study guides are given to focus your efforts.

### FINAL PROJECT

- **Goal:** Create an infographic to explore AI's use at multiple levels: How can workers use AI (individuals), how can companies find new use-cases for new AI (companies), and what societal issues should we be aware of (society)?
- **Deliverable:** A ~5 minute pre-recorded (asynchronous) presentation.
- **Group versus Individual Projects:** You can work in groups to develop an infographic. However, everyone needs to submit their own recorded presentation.

### LATE POLICY

- **Assignments and Final Project:** Submissions late by 0-12 hours will lose 25%; 12-24 hours will lose 50%; past 24 hours will not be accepted
- **Exams:** Unless excused prior to the exam date, makeup exams will start with a 25% deduction.

## TENTATIVE COURSE SCHEDULE

Note that **dates are tentative and subject to change** (some topics may take more time and others less time, depending on students' interests).  
**Exam dates are firm.**

Week	Asynchronous	In Person	
1	N/A	Syllabus + Course Structure Intelligence: Human, Artificial, Hybrid Prompt Engineering: I	
2	Regression Cost Functions Gradient Descent	How LLMs work (high-level) Prompt Engineering: II Co-Intelligence	
3	Neural Network Structure Backward Propagation Forward Propagation	Task based view of automation Human-in-the-loop task design	
4	Training, Development, Test Sets Bias and Variance	Reviewing AI output System Prompts	
5	Exam (1 – 4; In-Person) Reflection 1 Due		
6	Word Vectors Word Embeddings Word2Vec	Pain Points and Stakeholder Analysis Product Strategy	
7	Recurrent Neural Networks Sequence to Sequence Models	Machine Learning Use-Cases Business Case Processes	
8	Attention Encoder and Decoder Models	NLP Use-Cases A/B Testing	
9	Supervised Fine-Tuning Reinforcement Learning with Human Feedback	Computer Vision Use-Cases CIRCLE: Designing Products	
10	Exam (6 – 9; In-Person) Reflection 2 Due		
11	LLM Reasoning	AI and governance liability	

	Group Proximal Reinforcement Learning	AI laws: EU and US	
12	Fine-Tuning and LORA Retrieval Augmented Generation	Trust in AI AI's impact on the labor market	
13	Mixture of Experts Multimodality	Career Development: Interviewing & Networking	
14	FINAL PROJECT DUE		

## THOUGHTS ON STUDYING AND RESOURCES FOR SUPPORT

### ADVICE FOR STUDYING

Here are some resources to help improve your studying skills and habits.

- **Free academic coaching:** <https://rlc.rutgers.edu/student-services/academic-coaching>
- **Some tips:**
  - <https://www.snexplores.org/article/top-10-tips-study-smarter-not-longer-study-skills>
  - <https://learningcenter.unc.edu/tips-and-tools/studying-101-study-smarter-not-harder/>
  - <https://students.dartmouth.edu/academic-skills/learning-resources/studying-tips>
- **Repetition is key.** Studying begins with reading the material, and paying attention in the lectures. The focus should be on compiling and organizing information. Then, review your notes shortly after the lecture or readings.
- **Use flashcards and space your repetition.** Space your repetition over time. For example, instead of cramming 200 flashcards in one session, try 10 old flashcards and 10 new flashcards every day. There are apps (e.g., Anki) to space your repetition.
- **Pretend you are teaching the material to someone else** (e.g., a friend, pet, or inanimate object). This will force you to compile the information and translate it into your own words.
- **Pace your studying.** Have an exam? Be done with things 48 hours in advance. Test on Tuesday morning? That means you should finish studying by Sunday morning.
- **Study only one subject at a time.** Please don't try to cram for multiple classes simultaneously.

### RESOURCES TO SUPPORT YOU

If you find yourself struggling academically, financially, or with mental health, contact me ([chto@smlr.rutgers.edu](mailto:chto@smlr.rutgers.edu)) or the Dean of Students (<https://smlr.rutgers.edu/about-smlr/dean-students>).

If you prefer to approach the university first, the school provides resources to including academic tutoring (<https://rlc.rutgers.edu/>), letters of accommodations regarding learning (e.g., ADD; <https://ods.rutgers.edu/>), emergency financial assistance (<https://studentaffairs.rutgers.edu/support-students/donate-to-student-affairs/emergency-assistance>), and mental health assistance (<http://health.rutgers.edu/medical-counseling-services/counseling/>).

If you want help navigating the above resources, send me a message, chat with me before/after class, or reach out for office hours.

## LEARNING GOALS MET BY THIS COURSE

### **SMLR LEARNING GOALS**

#### **I) Written & Oral Communication - "Communicate effectively at a level and in modes appropriate to an entry level professional.**

- Communicate complex ideas effectively, in standard written English
- Analyze and synthesize information and ideas from multiple sources to generate new insights
- Produce quality research papers with proper convention of attribution/citation
- Produce high quality executive summaries
- Make an argument using contemporary and/or historical evidence
- Present ideas and arguments in a logical and effective way"

#### **II) Quantitative Skills – Apply appropriate quantitative and qualitative methods for research workplace issues.**

- Formulate, evaluate, and communicate conclusions and inferences from quantitative information
- Apply quantitative methods to analyze data for HR decision making including cost-benefit analyses, ROI, etc. (HRM)
- Apply qualitative methods appropriately, alone and in combination with quantitative methods

#### **VI) Application – Demonstrate an understanding of how to apply knowledge necessary for effective work performance**

- Apply concepts and substantive institutional knowledge, to understanding contemporary developments related to work
- Understand the legal, regulatory and ethical issues related to their field
- Develop human resource management functional capabilities used to select, motivate, and develop workers (HRM)
- Understand the internal and external alignment and measurement of human resource practices (HRM)

#### **VII) Professional Development - Demonstrate an ability to interact with and influence others in a professional manner, and to effectively present ideas and recommendations.**

- Develop effective presentation skills appropriate for different settings and audiences
- Develop career management skills to navigate one's career
- Understand cultural differences and how to work in a multicultural environment
- Work productively in teams, in social networks, and on an individual basis
- Develop cultural agility competencies
- Demonstrate lifelong personal & professional development skills



## UNIVERSITY GUIDELINES AND RESOURCES

The University's policy on cheating and use of copyrighted materials is enforced in this class. Students are expected to pursue knowledge with integrity. Please refer to the Academic Integrity Policy for more detail regarding these policies: <http://academicintegrity.rutgers.edu/academic-integrity-at-rutgers>

All students registered for this course are asked to sign an Academic Integrity Contract (refer to the last two pages of this syllabus). You must return a signed copy to me or the course TAs and keep a copy for yourself. This contract includes detailed explanations of behavior that constitutes plagiarism and cheating. Examples of a breach of this contract with regard to this specific course include, but are not limited to: sharing your answers or copying another student's answers on examinations; sending a fellow student who did not attend class the answers to a poll to falsely indicate their presence; copying material that is not your own without providing proper documentation (in the example of the HRM media extra credit). In the event that this contract is breached, the punishment can range from receiving a failing grade on the assignment, to being placed on disciplinary probation or permanent expulsion from Rutgers.

### STUDENTS WITH DISABILITIES

Students requesting accommodations for disabilities should contact the Office of Disability Services to determine his/her Coordinator. The Coordinator will then provide documentation to the student. Upon review and approval, the student must then provide this documentation to the instructor. Please refer to the Office of Disability Services for Students for more detail regarding this policy:

<http://disabilityservices.rutgers.edu/>. Students may make requests for accommodations:  
<http://disabilityservices.rutgers.edu/request.html>

### STUDENT RESOURCES (MENTAL HEALTH, ACADEMIC COACHING, FINANCIAL ASSISTANCE)

Students may experience unique challenges as they progress through their academic careers. Rutgers has a number of resources to assist you. If you need support in one of the following areas, we encourage you to utilize the following resources. In addition, if you think I may be of help at any point, you are strongly encouraged and welcomed to send me a message or chat with me before/after class or during office hours.

<https://smlr.rutgers.edu/about-smlr/fall-2022-information-smlr-students>

### SCHOLARSHIPS

The School of Management and Labor Relations offers a number of scholarships and fellowships to support its students. Relevant deadlines and criteria can be found here:

<https://smlr.rutgers.edu/academic-programs/scholarships>