

A PRACTICAL
GUIDE TO
USING
GENERATIVE
ARTIFICIAL
INTELLIGENCE
TO EDUCATE
DIETETIC
STUDENTS

Sponsored by: NDEP Development
Committee

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CONFLICT OF INTEREST DISCLOSURE

David Cavallo, Nadine Braunstein and Sandy Sarcona have no conflicts to report.

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LEARNING OBJECTIVES

1. Create effective prompts with GenAI tools.
2. Identify ways that GenAI can assist with course development.
3. Describe pedagogical approaches that use GenAI
4. Articulate key ethical considerations with the use of GenAI in education.

3

LEARNING NEEDS CODES


1.1.2 demonstrates integrity in personal and organizational behaviors and practices

7.6.1 Makes decisions about the design and development of curricula by applying knowledge, understanding and skills of curriculum theory, design, development, assessment and evaluation.

7.7.1 Designs course syllabi and lessons plans based on curriculum goals, objectives and related competencies.

7.8.3 Contributes to student learning by creating and implementing activities and environments that encourage active learning and joint student/teacher engagement.

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<p>PLEASE PUT YOUR QUESTIONS IN THE CHAT AS WE GO</p>	
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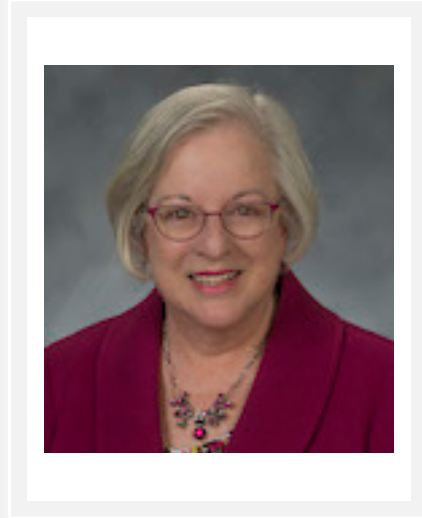
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	<p>DR. DAVID CAVALLO</p> <ul style="list-style-type: none">• Dr. Cavallo is an Assistant Professor in the Department of Nutrition at Case Western Reserve University. He is an educator and behavioral scientist who studies the use of emerging technologies in community based and educational interventions. He also serves on the CWRU Provost's Task Force for AI in Education and completed Auburn University's AI in Education Explorer Certificate Program.
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DR. NADINE BRAUNSTEIN

- Nadine Braunstein, PhD, RD, FAND is an Associate Professor and Dietetic Internship Director at California State University, Sacramento in the U.S. At her prior university Dr. Braunstein taught a graduate Medical Ethics course, as well as served on the Ethics Committee at Sheppard Pratt Hospital in Towson, Maryland. She earned a certification for Teaching with AI from Course Hero. Nadine received the Excellence in Education Award from the California Academy of Nutrition and Dietetics in 2023. She was a 2013-14 Robert Wood Johnson Foundation Health Policy Fellow.



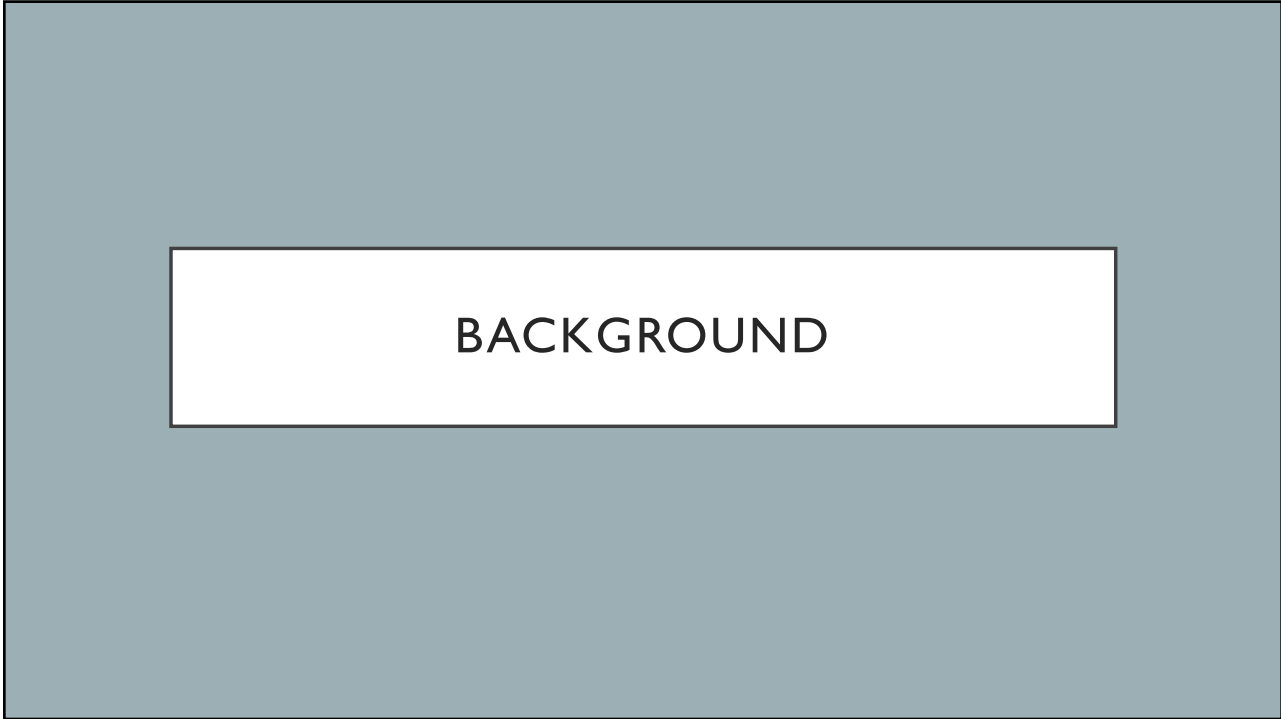
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WHAT IS
YOUR
EXPERIENCE
WITH AI?

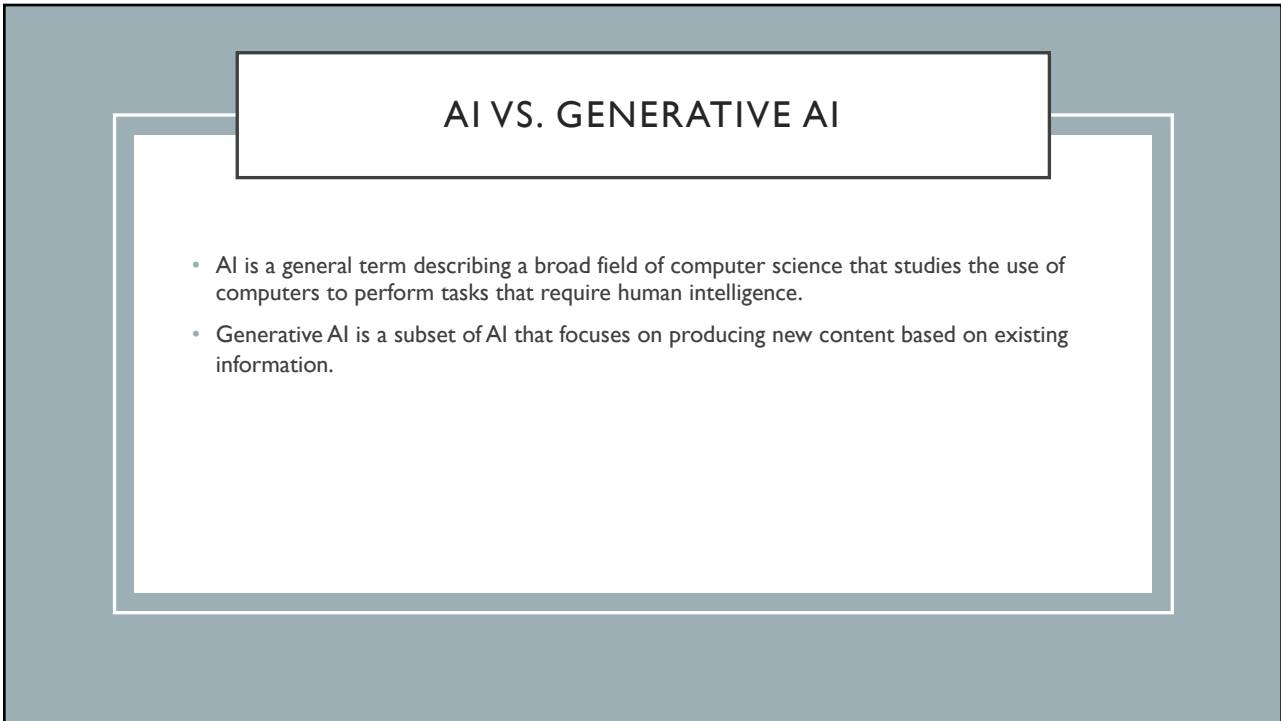
- Super User
- Occasionally
- Novice

Please put your answer in the chat

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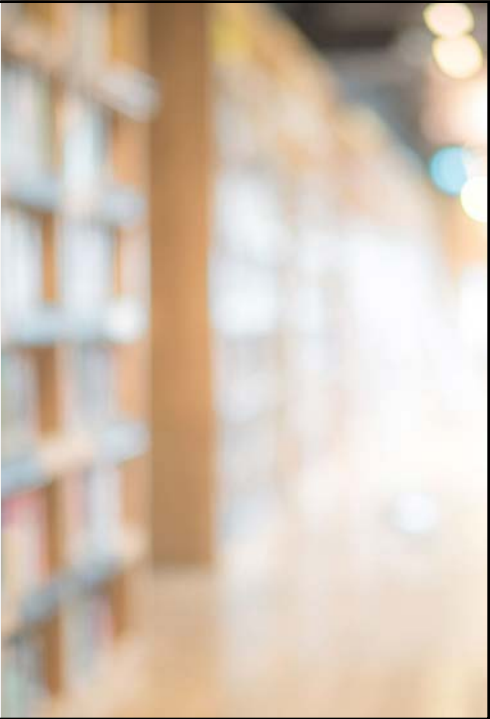


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LARGE LANGUAGE MODELS

“A large language model is like a massive, multilingual library filled with billions of interconnected books. Each book contains knowledge and stories from different cultures and times. When you ask a question, the model, like a skilled librarian, quickly scans the relevant books, understands the context, and crafts a response by drawing from various sources. The more books it has, the better it can generate accurate and contextually appropriate answers, just as a well-stocked library provides richer information.”

ChatGPT. (2024). OpenAI. Retrieved August 18, 2024, from <https://chat.openai.com>

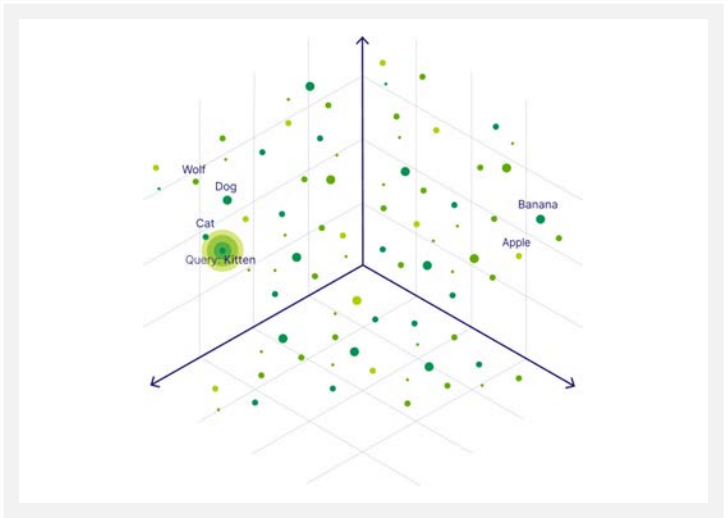


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LARGE LANGUAGE MODELS

GPT -4

~1,000,000,000,000
parameters (unverified)



<https://weaviate.io/blog/what-is-a-vector-database>, accessed 9/9/24

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SCALABILITY



- Easily create large volumes of content (e.g., quiz questions, sample problems).


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WHAT CAN YOU CREATE?

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BRAINSTORMING WITH AI

 Copilot

Certainly! Let's focus on three **key points** when discussing GLP-1 receptor agonists (GLP-1s):

- Benefits of GLP-1s:**
 - **Glycemic Control:** GLP-1s effectively lower blood sugar levels without causing significant hypoglycemia.
 - **Cardioprotective Effects:** Some GLP-1s have demonstrated cardiovascular benefits, making them valuable for patients with diabetes and heart disease.
 - **Weight Loss:** GLP-1s can lead to weight reduction, which is especially beneficial for patients with obesity.
- Side Effects and Precautions:**
 - **GI Effects:** Patients may experience gastrointestinal symptoms like nausea or diarrhea.
 - **Hypoglycemia Risk:** Although rare, it's essential to be aware of the potential for low blood sugar.
 - **Pancreatitis:** While uncommon, GLP-1s may be associated with pancreatitis.
 - **Thyroid C-Cell Tumors:** Inform patients about this rare risk.
- Choosing the Right GLP-1 Medication:**
 - **Options:** Different GLP-1 receptor agonists are available (e.g., liraglutide, exenatide). Discuss which one aligns best with your needs.
 - **Frequency of Administration:** Some are daily, while others are weekly.
 - **Injection Technique:** Educate patients on proper injection techniques.

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COURSE MATERIALS

You
create a one page syllabus for a course about glp1 agonists

Copilot
Certainly! Below is a concise one-page syllabus for a course on GLP-1 receptor agonists (GLP-1s):

Course Title: Introduction to GLP-1 Receptor Agonists

Course Overview:
This course provides an in-depth understanding of GLP-1 receptor agonists, their mechanisms of action, clinical applications, and safety profiles. Participants will explore the role of GLP-1s in managing type 2 diabetes mellitus (T2DM) and obesity.

Learning Objectives:
By the end of this course, participants will be able to:

1. **Identify Mechanisms of Action:**
 - = Understand how GLP-1 receptor agonists work in diabetes and weight loss management.
 - = Evaluate the efficacy and safety profiles of GLP-1s.
2. **Clinical Applications:**
 - = Explore the role of GLP-1 receptor agonists in treating patients with T2DM and obesity.
 - = Discuss options for cardiovascular protection using GLP-1s.

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COURSE MATERIALS

Copilot
Certainly! Here's a short assignment related to the side effects of GLP-1 agonists for college students studying nutrition:

Assignment: Understanding GLP-1 Agonist Side Effects

Objective:
To explore the side effects of GLP-1 receptor agonists (GLP-1s) and their implications for individuals with diabetes and obesity.

Instructions:

1. **Background Research:**
 - = Research GLP-1 receptor agonists (e.g., Ozempic®, Victoza®, Trulicity®) and their use in managing diabetes and promoting weight loss.
 - = Understand the role of GLP-1 hormones in regulating blood sugar levels and appetite.
2. **Side Effects Analysis:**
 - = Identify the most common side effects associated with GLP-1 agonists:
 - Loss of appetite
 - Nausea
 - Vomiting
 - Diarrhea
 - = Explain why these side effects occur based on the mechanism of action of GLP-1s.
3. **Clinical Considerations:**
 - = Discuss how healthcare professionals manage nausea caused by GLP-1 drugs.
 - = Explore strategies to mitigate gastrointestinal symptoms while using GLP-1 agonists.
4. **Critical Thinking:**
 - = Reflect on the balance between the benefits (weight loss, improved glycemic control) and potential side effects of GLP-1s.
 - = Consider the impact of diet quality on overall health, especially when using GLP-1 agonists ¹ ².

Submission:
Write a concise report (approximately 1-2 pages) summarizing your findings. Include references to credible sources.

Remember to cite relevant research articles and clinical guidelines in your report. Good luck with your assignment! 🍀📖

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COURSE MATERIALS

Copilot

Certainly! Here are three multiple-choice exam questions related to the health effects of GLP-1 receptor agonists (GLP-1s):

- Question:** What is the primary mechanism of action of GLP-1 agonists in managing blood sugar levels? A) Inhibiting insulin release from the pancreas
B) Increasing glucagon secretion
C) Slowing stomach emptying
D) Enhancing appetite **Answer: C) Slowing stomach emptying** Explanation: GLP-1 agonists slow down stomach emptying, reducing the release of glucose into the bloodstream after meals ¹.
- Question:** Which side effect is commonly associated with GLP-1 agonists, especially during initial use or dose adjustments? A) Dizziness
B) Increased heart rate
C) Constipation
D) Loss of appetite **Answer: D) Loss of appetite** Explanation: GLP-1 agonists often cause loss of appetite, nausea, and vomiting, particularly when starting the medication or adjusting the dose ¹.
- Question:** What additional benefit do GLP-1 agonists offer besides blood sugar control? A) Weight gain
B) Improved liver function
C) Cardiovascular protection
D) Increased insulin production **Answer: C) Cardiovascular protection** Explanation: Some GLP-1 agonists have demonstrated cardioprotective effects, making them beneficial for patients with type 2 diabetes and heart disease ¹.

Remember to review the material thoroughly before the exam! 📖 🔍

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VIRTUAL TA?



You
when is the first assignment due for the course

Case Cooks Sous Chef
The first assignment for the "Case Cooks: Ethnic Eats" course is due on Friday at 11:59 PM in the second week of each half of the semester. Specifically, the Mediterranean and Italian Diets lab report is due on January 26 for the first half of the semester, and March 29 for the second half of the semester.

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STUDY GUIDE

You
GLP1Agonists_NTRN337_SP24.pdf
create a study guide one page for this lecture

ChatGPT
Here's a one-page study guide for the lecture on GLP-1 agonists:

NTRN 337/437 - GLP-1 Agonists Study Guide

Introduction to GLP-1

- **Origin:** Hormone produced by the small intestine.
- **Function:** Regulates appetite and blood sugar through insulin release, glucagon suppression, and delayed gastric emptying.

Mechanisms of Action

- **Insulin Release:** Promotes insulin secretion from the pancreas, aiding in glucose utilization.
- **Glucagon Suppression:** Inhibits glucagon release, reducing blood glucose levels.
- **Brain Activity:** Influences central nervous system to reduce food intake and may modulate neurotransmission affecting hunger.

Clinical Applications

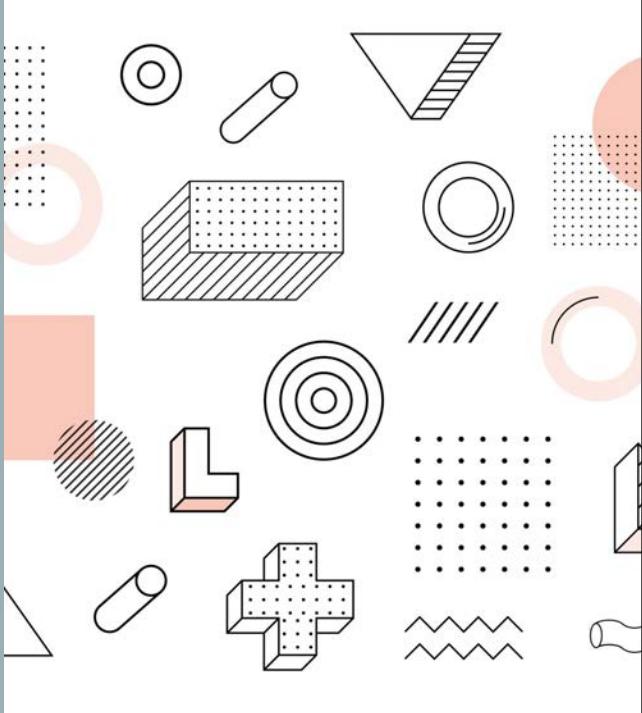
- **Type 2 Diabetes Management:** Improves blood sugar levels by mimicking natural GLP-1 effects.
- **Obesity Treatment:** Aids in weight loss and is marketed under various brands like Saxenda and Bydureon.

Clinical Effectiveness

- **Blood Sugar Control:** All GLP-1RAs significantly lower HbA1c levels.
- **Weight Loss:** Shows significant reduction in body weight compared to controls in clinical trials.
- **Blood Pressure:** May lower systolic blood pressure, contributing to cardiovascular risk reduction.

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PEDAGOGY WITH AI



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THE ELEPHANT IN THE ROOM

- You cannot detect the use of AI in assignments
- You will need to think about learning objectives and the types of assessments you are using in your courses.



This Photo by Unknown Author is licensed under CC BY-SA

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EXAMPLE – CASE COOKS

Learning Objectives:

Students will be able to...

1. Use prompt engineering to produce dishes using ingredients found in the course cuisine considering health, cost, and convenience.
2. Describe more fully the types of cuisine focused on in the course.
3. Identify dishes like the cuisine studied in class using similar ingredients.
4. Use prompt engineering to create a one-page educational handout for a recommended recipe.



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STUDENTS USE AI TO BRAINSTORM

- Using the provided chatbot, expand upon the cuisine cooked in class. What are 3 examples of another dish of the same cuisine/lifestyle that incorporates the main ingredient of the dish made in class?

Submit an AI generated picture of what you provided in your assignment.



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STUDENTS USE AI TO CREATE

- Using the AI tool of your choice, create a one-page educational handout including images for one recipe. Provide alternate examples for a person with dietary restrictions.



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**STUDENTS USE AI
TO EVALUATE
THEIR OWN WORK**

Using the provided Chatbot, choose one of the three recipes and have the Chatbot evaluate the recipe on these terms:

- Healthy
- Time efficient
- Cost efficient
- Palatable

evaluate how healthy cost efficient and time consuming this recipe is
<https://www.allrecipes.com/recipe/9959/marshmallow-treats/>

Searched 1 site

Health:

- **Nutrition:** Each serving contains 65 calories, 2g of fat, and 12g of carbohydrates, mostly from sugar. The recipe is low in protein and fiber, making it a high-sugar, low-nutrient treat.

Cost Efficiency:

- **Ingredients:** The recipe uses simple and inexpensive ingredients: butter, marshmallows, and crispy rice cereal. These are widely available and affordable.

Time Consumption:

- **Preparation:** The recipe is quick, taking about 15 minutes in total, including 10 minutes of prep and 5 minutes of cooking.

Overall, this recipe is cost-efficient and quick to make, but it's not particularly healthy due to its high sugar content and low nutritional value.

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**STUDENTS USE AI
TO EVALUATE THEIR
OWN LEARNING**

Here are three multiple-choice questions on the Mediterranean diet:

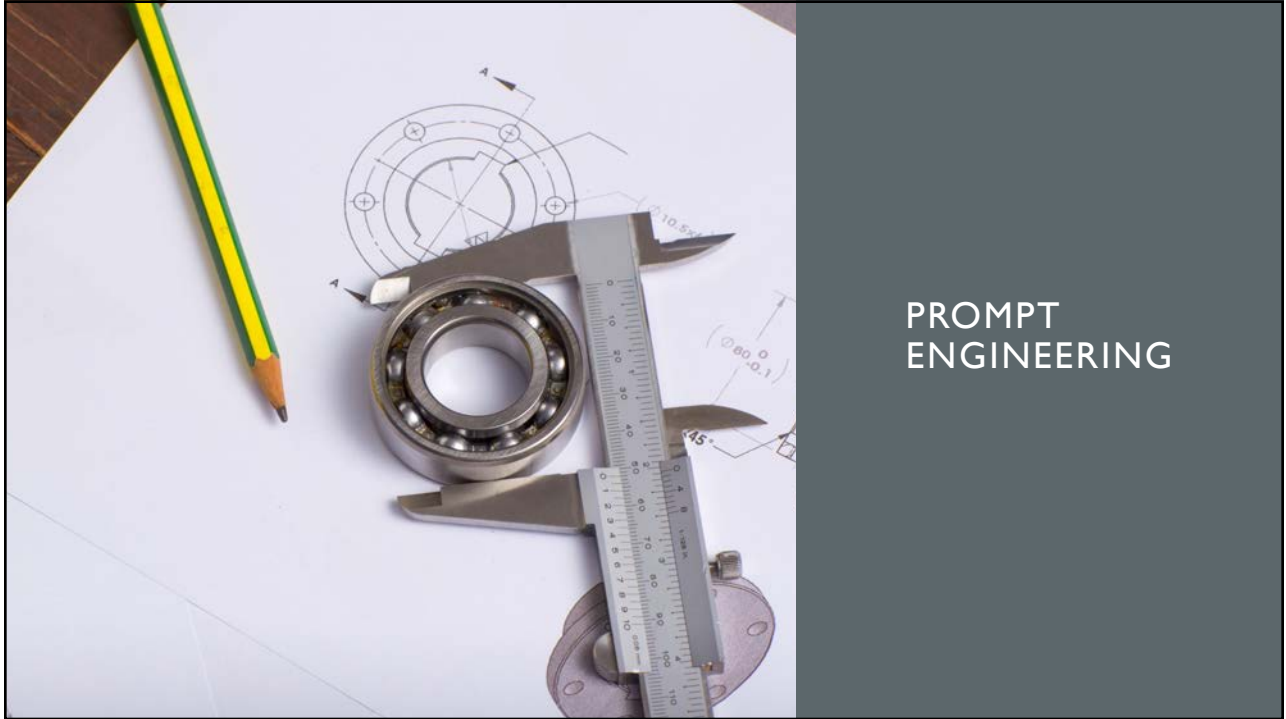
1. Which of the following foods is a core component of the Mediterranean diet that contributes to its heart health benefits?
 - A) Red meat and butter
 - B) Whole grains, fruits, vegetables, and healthy fats
 - C) Sugary snacks and soda
 - D) Fast food and processed cheese

(Correct answer: B) Whole grains, fruits, vegetables, and healthy fats
2. In the Mediterranean diet, the practice of eating meals together with family and friends is believed to:
 - A) Encourage overeating and unhealthy weight gain
 - B) Promote social connections, reduce stress, and enhance the enjoyment of food
 - C) Have no effect on health outcomes or dietary habits
 - D) Be irrelevant to the diet's health benefits

(Correct answer: B) Promote social connections, reduce stress, and enhance the enjoyment of food
3. Which of the following best describes the primary difference between the Mediterranean diet and a typical Western diet?
 - A) The Mediterranean diet is high in refined sugars and fats, while the Western diet is not.
 - B) The Mediterranean diet emphasizes plant-based foods and healthy fats, while the Western diet often includes more processed foods and saturated fats.
 - C) Both diets encourage frequent consumption of sugary beverages.
 - D) The Western diet is predominantly vegetarian, unlike the Mediterranean diet.

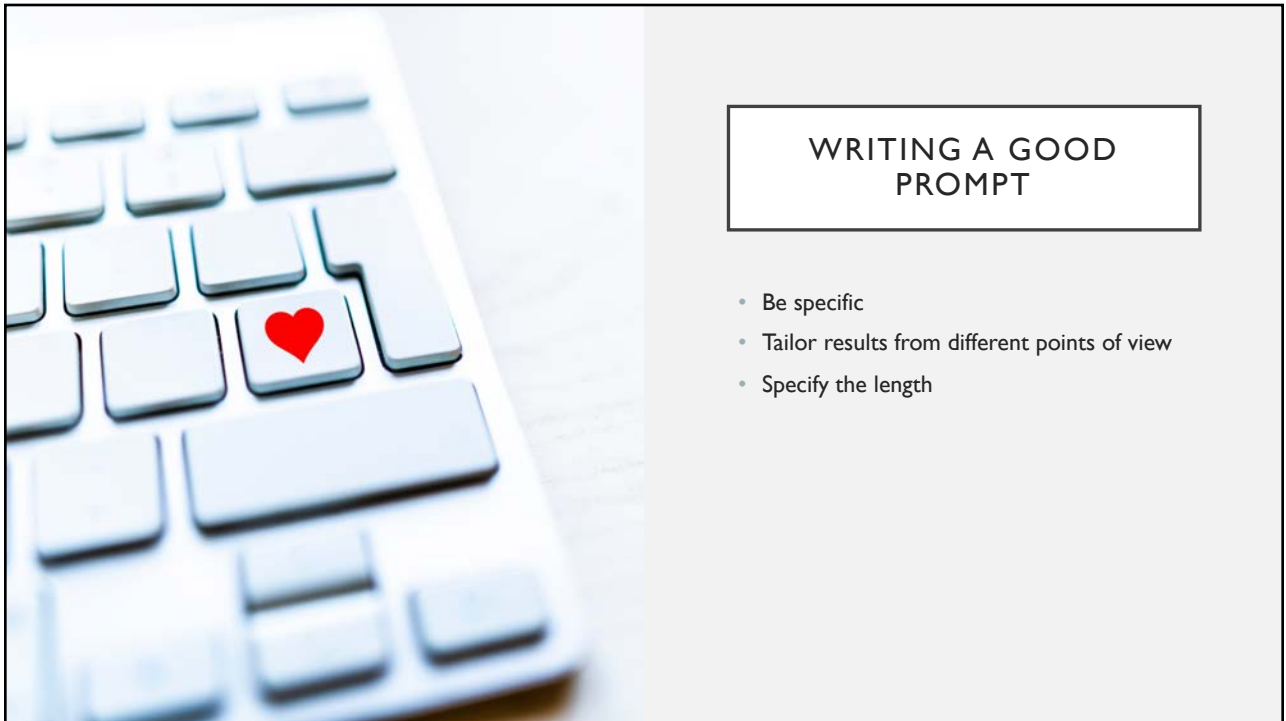
(Correct answer: B) The Mediterranean diet emphasizes plant-based foods and healthy fats, while the Western diet often includes more processed foods and saturated fats.

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PROMPT ENGINEERING

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WRITING A GOOD PROMPT

- Be specific
- Tailor results from different points of view
- Specify the length

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WRITING A GOOD PROMPT

- Request formatting
- Provide example
- Be nice
- Tell the AI it is important to you
- **Revise, revise, revise**



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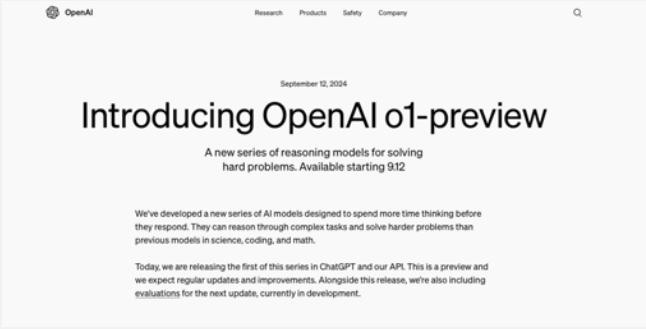
DALL-E 3

WRITING A GOOD PROMPT

- Use the 'right' AI program for the job
 - General use
 - Creating visuals
 - Writing
 - Summarizing information
 - Transcribing

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ALWAYS EVOLVING

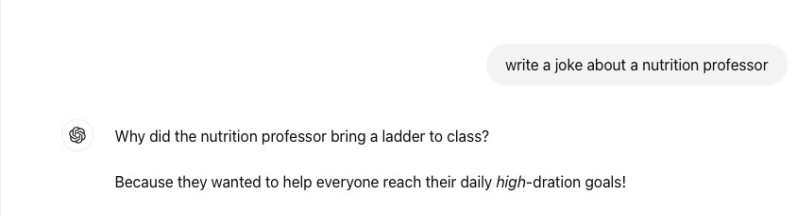


The screenshot shows the OpenAI website header with navigation links for Research, Products, Safety, and Company. The main heading is "Introducing OpenAI o1-preview" dated September 12, 2024. The sub-heading reads "A new series of reasoning models for solving hard problems. Available starting 9/12". The body text describes the models as being designed to spend more time thinking before responding, capable of solving harder problems in science, coding, and math. It also mentions the release of the first model in the series in ChatGPT and the API, noting that it is a preview and will be updated regularly.

<https://openai.com/index/introducing-openai-o1-preview/>, accessed 9/13/2024

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LET'S TRY IT




The screenshot shows a chat interface with a user prompt: "write a joke about a nutrition professor". The AI response is: "Why did the nutrition professor bring a ladder to class? Because they wanted to help everyone reach their daily high-dration goals!".

ChatGPT. (2024). OpenAI. Retrieved September 11, 2024, from <https://chat.openai.com>

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write another joke about a nutrition professor that is very sarcastic


 Why did the nutrition professor assign a 20-page paper on kale?

Because apparently, *someone* thought learning about vitamins could still be fun after college.

ChatGPT. (2024). OpenAI. Retrieved September 11, 2024, from <https://chat.openai.com>

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Write this joke as a story I could tell my class

 So, I have to tell you guys about this nutrition professor I had back in the day. You know the type—super enthusiastic about every single vegetable, like they have a secret life of solving world problems or something.

Anyway, one day, the professor announces a big assignment. And I'm thinking, "Okay, maybe it'll be a quick report, a presentation, nothing too bad." Oh no. The assignment? A 20-page paper. On what, you ask? Kale. Yup, kale.

Now, I'm sitting there like, "Twenty pages? On kale? I didn't even know there were 20 words to say about kale!" But the professor is up there, all excited, talking about how kale is so *fascinating* and we're going to have the time of our lives exploring its many wonders.

Because, you know, apparently, *someone* thought learning about vitamins would still be fun after college.

Long story short: I'm an expert on kale now... but let's just say my excitement levels? Yeah, they never quite reached kale's nutrient density!

ChatGPT. (2024). OpenAI. Retrieved September 11, 2024, from <https://chat.openai.com>

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OK thanks, can you shorten this to two paragraphs?

Let me tell you about this nutrition professor I had. One day, they announced a big assignment, and I'm thinking it'll be something quick—maybe a report or a presentation. But no, it's a 20-page paper. On what, you ask? Kale. That's right, twenty pages on kale. I didn't even know there were 20 words to say about kale, but the professor was beyond excited, talking about how kale is so *fascinating* and we'd have the time of our lives writing it.

Because, you know, *someone* clearly thought learning about vitamins would still be fun after college. Long story short: I'm basically a kale expert now... but my excitement never quite reached kale's nutrient density!

ChatGPT. (2024). OpenAI. Retrieved September 11, 2024, from <https://chat.openai.com>


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can you create a picture to go with this story



ChatGPT. (2024). OpenAI. Retrieved September 11, 2024, from <https://chat.openai.com>


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CAUTIONS ABOUT USING AI

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QUALITY CONTROL



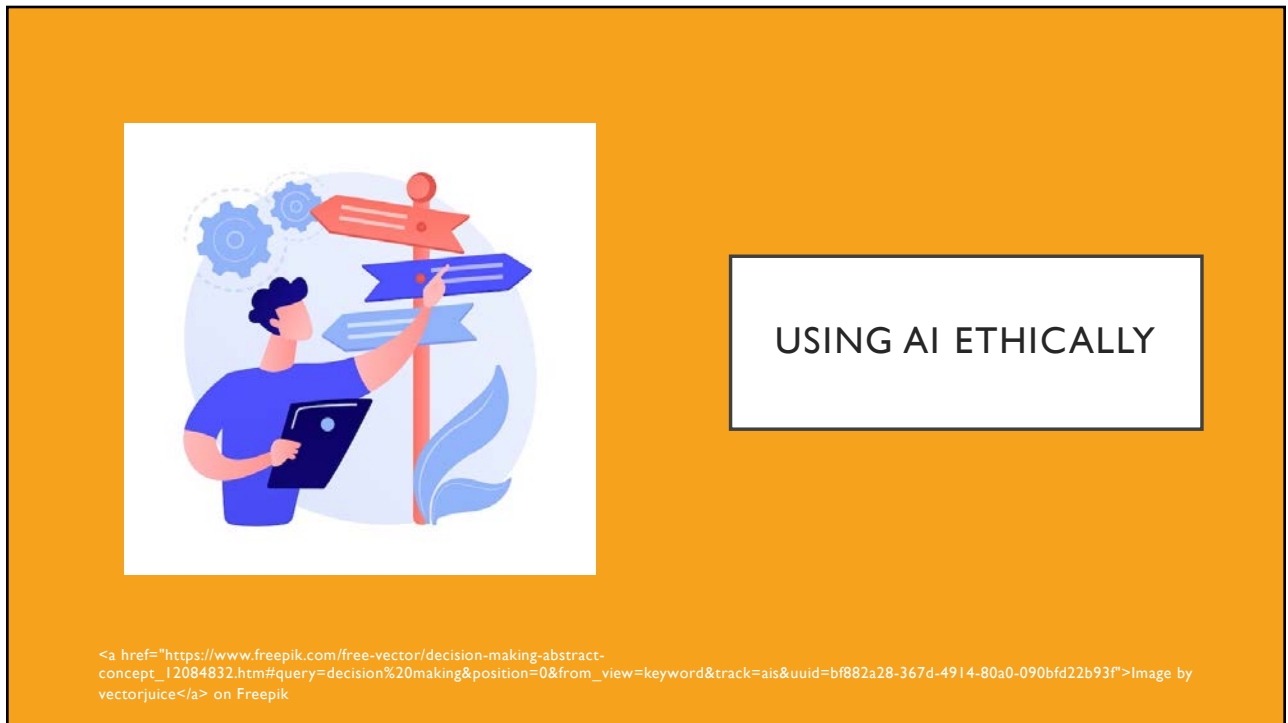
- Generated content may not always be correct or comprehensive.

[This Photo](#) by Unknown Author is licensed under [CC BY-NC-ND](#).

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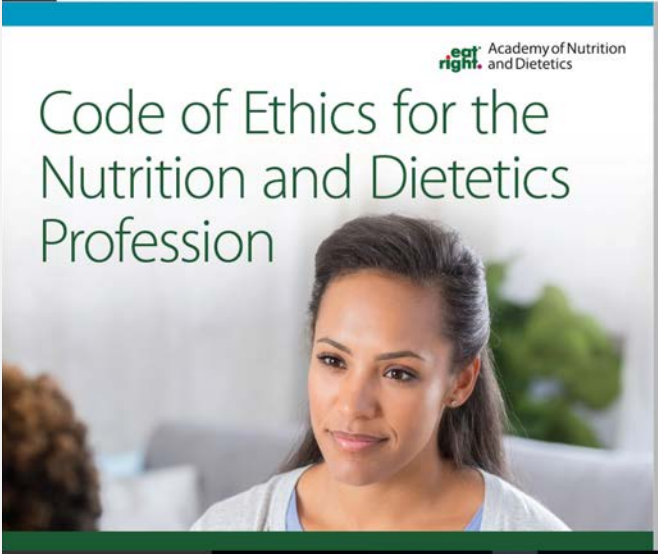
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CODE OF ETHICS – U.S.

<https://www.eatrightpro.org/practice/code-of-ethics/what-is-the-code-of-ethics>



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A preamble, 4 principles and 32 standards comprise the code

- NON-MALEFICENCE**
- AUTONOMY**
- BENEFICENCE**
- JUSTICE**

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NON-MALEFICENCE – DO NO HARM

First




Do No Harm

<https://iecourse.wordpress.com/2017/04/04/non-maleficence-first-do-no-harm/>

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**NON-MALEFICENCE – EXAMPLES IN
DIETETICS PRACTICE (COMPETENCE)**

		
SCOPE-OF-PRACTICE	EVIDENCE BASED PRACTICE	DEMONSTRATE KNOWLEDGE OF NUTRITION, FOOD BEHAVIOR

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AUTONOMY

Allowing a client/patient to make the best decision for themselves
– No Paternalism!

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**AUTONOMY
- EXAMPLES
IN
DIETETICS
PRACTICE
(INTEGRITY)**

- Disclose conflicts of interest
- Code accurately for services provided
- Maintain and appropriately use credentials
- Protect personal health information

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**BENEFICENCE -
EXAMPLES IN
DIETETICS
PRACTICE
(PROFESSIONALISM)**

- Civility in communications
- Contribute to the professional advancement of others
- Uphold professional boundaries
- Provide accurate performance evaluations



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**JUSTICE -
EXAMPLES IN
DIETETICS
PRACTICE
(SOCIAL
RESPONSIBILITY)**

- Collaborate to reduce health disparities
- Engage in services that benefit the community
- Promote fairness and objectivity



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LET'S APPLY THE CODE OF ETHICS

Scenario 1: You are a graduate student and member of the Academy of Nutrition and Dietetics. You have a journal article review assignment that is due tomorrow. Because of a time crunch you decide to a) use AI to create the outline, b) summarize the article, c) answer the required questions and d) turn it in as your own work.

Look at the code of ethics to see which standards relate to this case. Do you consider any of the steps (a, b, c, d) ethical? Under what circumstances?

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LET'S APPLY THE CODE OF ETHICS

Scenario 2: You are a clinical nutrition manager in a hospital that is struggling to find enough dietitians to fill 3 open positions. You have been talking with other managers in the hospital about how AI could help workforce shortages. You are planning on having AI: a) do initial screenings, b) create partial chart notes with pertinent info from the EMR that the RD can complete, and c) create tube feeding orders/recommendations based on the hospital guidelines.

Look at the code of ethics to see which standards relate to this case. Do you consider any of the ways this manager wants to use AI (a, b, c) ethical? Which standards of the Code of Ethics relate to this case?

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LET'S APPLY THE CODE OF ETHICS

Activities with Students/Interns

- When having students use AI in class activities/assignments have them work in small groups to discuss if/how they are ethical using the Code of Ethics
- Have groups choose one of the Code of Ethics or some of the Principles to brainstorm ways that using AI might or might not be ethical (creating their own scenarios)

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RESOURCES

- What Are Large Language Models: <https://youtu.be/iR2O2GPbB0E?si=BQUv7ypahCjrLLS5>
- The Art of the Prompt: <https://news.microsoft.com/source/features/ai/the-art-of-the-prompt-how-to-get-the-best-out-of-generative-ai/?OCID=lock2>
- Subscribe to Future Tools for weekly AI updates: <https://futuretools.beehiiv.com/subscribe>
- National Institute on Artificial Intelligence in Society: <https://www.csus.edu/center/ai-in-society/resources.html>
- Enroll in the Course Hero AI Academy – earn certificate in teaching with AI: <https://education.coursehero.com/ai-academy/page/4124251/enroll-today>
- Teaching with AI @ AUBURN (CANVAS COURSE): <https://biggio.auburn.edu/programs/artificial-intelligence/teaching-with-ai-auburn>

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