Universidad de Alcalá

TEACHING GUIDE

PROMPTS FOR GENERATIVE AI

TRANSVERSAL COURSE
100344

Universidad de Alcalá

Academic Year 2026 / 2027

2nd Semester

Approved by the EPS School Board on June 15th, 2026

TEACHING GUIDE

Course Name:	**Prompts for Generative AI**
Code:	**100344**
Degree in:	**All**
Departament:	**Signal Theory and Communications**
Area:	**Signal Theory**
Type:	**Transversal**
ECTS Credits:	**6**
Year and semester:	**2nd Semester**
Teachers:	**Pilar Martín Martín**
Tutoring shedule:	**To be determined on the first class**
Language:	**English**

1. COURSE SUMMARY

This course aims to train students in the design and effective use of prompts to interact with Large Language Models (LLMs), optimizing results in tasks related to text generation, analysis, automation, and creativity, as well as integrating these tools into real-world workflows through talkbox-style interfaces.
The main topics covered in the course include:
Understanding the fundamentals of Large Language Models (LLMs) and prompt usage.
Learning how to design and use effective prompts in tools such as ChatGPT.
Gaining hands-on experience in prompt engineering and generative Artificial Intelligence (AI) tools.
Exploring how prompting can support learning, work, creativity, and problem-solving.
Encouraging critical thinking and the responsible use of AI.

Target Audience:
Students from all disciplines, including those without prior technical experience, who are interested in generative AI, communication, creativity, education, or technology

2. SKILLS

The competencies, knowledge, skills, and abilities acquired in this course aim to enable students to understand and work with the combination of factors involved in next-generation intelligent systems.
The course not only seeks to provide students with scientific, technological, regulatory, and economic knowledge useful for their professional development, but also to develop skills such as autonomous learning, initiative, and teamwork.

2.1. Basic, generic or cross-curricular skills

This course contributes to acquiring the following generic and cross-curricular skills proposed by UAH for its degrees:
TRU1 – Analytical and synthesis skills
TRU2 – Oral and written communication
TRU3 – Information management skills
TRU4 – Autonomous learning
TRU5 – Teamwork

2.2. Learning Outcomes

After succeeding in this course, the students will have the:

RA1 – Explain the basic functioning of large language models (LLMs), their main components, and their applications in different fields.
RA2 – Design effective prompts using different techniques adapted to various objectives and contexts.
RA3 – Use different AI interfaces and adapt prompts to the characteristics and limitations of each tool.
RA4 – Apply prompting techniques to solve practical problems in different areas (automation, education, text analysis, creativity).
RA5 – Analyze and evaluate AI-generated responses, considering criteria such as accuracy, relevance, bias, and hallucinations.
RA6 – Refine and optimize prompts through iteration techniques, token analysis, and model comparison to improve the quality of generated outputs.

3. CONTENTS

Content Blocks	Total number of hours
Block 1 — Introduction to Generative AI Generative AI vs. traditional AI What is an LLM Foundation models Use cases Laboratory: LLM exploration	• 4+2 hours
Block 2 — AI Platforms ChatGPT, Gemini, Copilot Open-source vs proprietary models APIs and playground environments Privacy and GDPR Laboratory: Using ChatGPT Using Copilot and Gemini	• 3+5 hours

Block 3 — Fundamentals of Prompt Engineering What is a prompt Prompt components Prompt structure Context and roles Laboratory: Designing effective prompts	• 4+6 hours
Block 4 — Prompt Engineering Techniques Zero-shot prompting Few-shot prompting Chain-of-thought prompting Role prompting Iterative prompting Laboratory: Prompt optimization	• 4+8 hours
Block 5 — Advanced Techniques and Development Advanced prompting Frameworks: LangChain, Flowise Hugging Face Retrieval-Augmented Generation (RAG) Laboratory: Building a RAG system Development with Flowise	• 5+9 hours
Block 6 — Applications and Risks Content generation Image generation Midjourney Risks (prompt injection, biases) Laboratory: Applied project	• 4+4 hours

4. TEACHING-LEARNING METHODOLOGIES. FORMATIVE ACTIVITIES.

4.1. Credit Distribution

Number of on-site hours: 58 hours	28 hours in large group 30 hours in small group
Number of hours of student work:	92 hours
Total hours:	150 hours

4.2. Methodological strategies, teaching materials and resources

The training activities designed to implement the teaching–learning process are as follows

Theoretical Lectures: The theoretical classes will consist of presentations by the instructor of the course contents, which will be discussed in class with the students based on selected bibliographic material or the instructor's own experience. During these sessions, students will acquire the specific competencies associated with the course.

Individual or Group Assignments: Students will carry out individual or group work, including presentations to the whole class followed by discussion and debate, allowing students to compare and contrast their ideas. The instructor will propose readings, analysis, and the development of specific topics. Practical sessions (in small groups) will include the presentation of the results obtained.

Practical Sessions: Practical classes will be conducted in the laboratory, where the instructor will provide students with a practice guide. Each student will have access to a workstation equipped with a computer, appropriate software, and the necessary hardware to complete the proposed activities. For each practice session, students must submit an electronic report describing the work carried out and the solutions proposed to solve the assigned problem. The submission deadline will be established by the instructor at the beginning of the session.

Individual and Group Tutorials: During both individual and group tutorial sessions, the instructor will address questions either individually or collectively. Students will have the opportunity for more personalized interaction, allowing them to discuss topics that may not be feasible to address in a larger group setting. Tutorials may be requested via institutional email or arranged in person.

5. ASSESSMENT: Procedures, evaluation, and grading criteria

Assessment must be based on the principles of continuous evaluation, in accordance with the Learning Assessment Regulations (Normativa de Evaluación de los Aprendizajes, NEA, Article 3). However, in compliance with the regulations of the University of Alcalá, students are offered an alternative final assessment process.

According to the Learning Assessment Regulations (Article 10), students will have a fifteen-day period from the beginning of the course to submit a written request to the Director of the Polytechnic School indicating their intention to opt for the non-continuous assessment model, stating the reasons they consider appropriate.

The evaluation of the learning process of students who do not submit such a request, or whose request is denied, will by default follow the continuous assessment model.

Students have two opportunities to pass the course, one in the ordinary examination session and another in the extraordinary examination session.

The teaching–learning methodology and assessment process will be adapted when necessary, following the guidance of the Diversity Support Unit, in order to implement appropriate curricular adaptations for students with specific needs.

EVALUATION CRITERIA

CE1 – Understanding of key concepts related to LLMs and prompting
CE2 – Effective design and use of prompts in different contexts

CE3 – Critical analysis of AI-generated outputs
CE4 – Active participation in laboratory sessions and workshops
CE5 – Final applied project

ORDINARY CALL

Continuous evaluation

Continuous assessment consists of three deliverables (EL) and partial test exams (TCL) associated with each deliverable.

Students will pass the course if:

- They complete the three EL + TCL assessments, and
- Their weighted final grade is ≥ 5/10, including the final test.

The number of EL and TCL activities may vary each academic year. However, no single EL + TCL can exceed 40% of the final grade.

Students will be considered Not Presented if they submit none of the EL activities and do not attend the TCL tests.

In the ordinary call through continuous evaluation, the relationship between the criteria, instruments and qualification is as follows:

Skill	Learning outcome	Grading criteria	Grading tool	Contribution to the final mark
TRU1 - TR5	RA1, RA2	CE1, CE3	EL1+TCL1	30%
TRU1 - TR5	RA3, RA4	CE2, CE4	EL2+TCL2	30%
TRU1 - TR5	RA5, RA6	CE3,CE5	EL3+TCL3	40%

Final assessment

Students who opt for the final evaluation model will obtain 100% of the grade through a final examination (PEF).

The exam will assess the integrated knowledge of the entire course.

Students pass if they obtain ≥ 5/10.

Students who do not attend the exam will be considered Not Presented.

In the ordinary call, for students not covered by the continuous assessment system, the relationship between the criteria, instruments and qualification is as follows.

Skill	Learning outcome	Grading criteria	Grading tool	Contribution to the final mark

TRU1 - TRU5	RA1- RA6	CE1 - CE5	PEF	100%

EXTRAORDINARY CALL

Students who do not pass the ordinary call (be it continuous or final assessment) will have the right to an extraordinary call consisting of a test of the same characteristics as that carried out by the students evaluated through the final test in the ordinary call, from which it will be obtained 100% of the rating.

In the extraordinary call, the relationship between the criteria, instruments and rating is:

Skill	Learning outcome	Grading criteria	Grading tool	Contribution to the final mark
TRU1 - TRU5	RA1- RA6	CE1 - CE5	PEF	100%

6. BIBLIOGRAPHY

- Due to the innovative nature of this course and the breadth of its contents, the basic bibliography will be the one specifically generated throughout the development of the course.

- In addition, for the study and analysis of current topics, the documentation provided by the teacher will be used, based on scientific journal articles, newspaper publications, current reports, and relevant websites.

Disclosure Note

During the evaluation tests, the guidelines set out in the Regulations establishing the Rules of Coexistence of the University of Alcalá must be followed, as well as the possible implications of the irregularities committed during said tests, including the consequences for committing academic fraud according to the Regulation of Disciplinary Regime of the Students of the University of Alcalá.