BALANCING THE LIBERAL ARTS AND ARTIFICIAL INTELLIGENCE

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ABSTRACT

Emerging Technologies in Intelligence and Security is a required upper-level course in the Cyber Threat Intelligence undergraduate major at Coastal Carolina University. The course develops the technical and analytic skills necessary to navigate vulnerabilities, particularly those posed by malicious actors in cyberspace. It provides a contextual foundation by enhancing students' understanding of the broader societal factors that drive technological change. The course also teaches a conceptual-level understanding of contemporary technologies, especially artificial intelligence. It leverages the challenges and opportunities inherent in higher education technologies.

Keywords**: *critical thinking, artificial intelligence (AI), literacy, large language models, prompt engineering*

The *Emerging Technologies in Intelligence and Security* (INTEL 351) course is a core requirement in the new Cyber Threat Intelligence (CTI) Bachelor of Arts at Coastal Carolina University. The primary objective of the course is to help students understand the broader forces that have shaped technological change in the security and intelligence sectors (Coastal Carolina University, 2025). It develops student knowledge of contemporary technologies related to cyber threat intelligence, such as quantum computing, cellular communications, and artificial intelligence (AI). The course provides a rudimentary understanding of how these technologies developed and their connections to this field of study. The ability to explain how these technologies function and integrate with cyber phenomena is important for the major program, as it employs an interdisciplinary approach to developing students' technical and analytical skills necessary to defend information networks against malicious actors (Coastal Carolina University, 2025).

Students use of AI tools, particularly large language models (LLMs) such as ChatGPT, poses a challenge for this course and for traditional higher education. Recent studies find that approximately 90 percent of students use generative AI tools for their studies (Freeman, 2025; Copyleaks, 2025). As both the quantity and quality of AI-related tools expand, it is necessary to consider how they can be integrated into the classroom. The *Emerging Technologies in Intelligence and Security* course strikes a balance between AI use and the traditional objectives of liberal arts education. Beyond traditional instruction on AI, the course uses AI in select activities to enhance student learning. It also mitigates the threat from AI to the development of critical thinking skills by moving all writing assignments back into the classroom. In this way, students have the opportunity to practice critical thinking and communication skills in a setting

where they cannot avail themselves of this innovative technology. As AI becomes increasingly pervasive among current students and a professional skill valued by future employers, finding ways to achieve this balance is essential.

THE INTELLIGENCE AND SECURITY STUDIES PROGRAM

Coastal Carolina University (CCU) is a public liberal arts institution that aims to develop students who are knowledgeable in their chosen fields and productive, responsible citizens with a global perspective. For the 2025–2026 academic year, it offers more than 80 degree-bearing programs that serve 11,661 graduate and undergraduate students. This represents a growth of 300 students over the previous academic year and the third consecutive year-over-year increase in the student population (Jones, 2025). Located in Conway, South Carolina (South Atlantic Census Region), the school was founded in 1954 as a satellite campus of the University of South Carolina. The Southern Association of Colleges and Schools accredits it.

Established in 2021, the Department of Intelligence and Security Studies reflects this growth in the student population. Building on an undergraduate major in Intelligence and National Security Studies, which has been housed in the Department of Politics since 2012, the department has eight full-time faculty members teaching nearly 400 students. The department's focus is on preparing students for entry-level positions in security-related career fields that involve research and analysis. In line with this objective, the department established a new undergraduate major in Cyber Threat Intelligence (CTI) in 2024. The CTI major uses an interdisciplinary approach to equip students with the technical and analytical skills to evaluate information system vulnerabilities and the malicious actors that seek to exploit them (Coastal Carolina University, 2025). The key objective of the major, beyond subject-matter expertise, is to develop students who can analyze and forecast the drivers of change in this area and communicate effectively across the worlds of technology and policy. Several new courses were explicitly created to advance these objectives. These include a capstone course in *Cyber Threat Intelligence* (INTEL 410), a cybersecurity policy course, and the *Emerging Technologies* course. The major admitted its first class of first-year students in the Fall of 2025 and currently has 51 students enrolled.

EMERGING TECHNOLOGIES IN INTELLIGENCE AND SECURITY

The *Emerging Technologies in Intelligence and Security* course aims to educate students about the impact of technological innovation on intelligence and security policy. The key rationale for including this course in the major is that technological change is constant, and understanding the ideas, theories, and concepts that have driven it in the past is essential for professionals in the field. The course develops students' critical thinking skills by evaluating the benefits and problems of such technologies, as well as analyzing the impact of past government efforts to integrate and innovate. Lastly, the course aims to develop students' basic conceptual understanding of contemporary technologies, especially AI.

Understanding the Basics of AI

The course focuses on the nature of artificial intelligence and its productive application. Basic literacy on how artificial intelligence systems are created and operate is the essential starting point. Students often have a limited understanding of the basic elements of the technologies they use in their daily lives. For instance, many people do not understand that AI encompasses more than just ChatGPT. Regarding the operation of LLMs, there is a particular need to address how these models "know" what they know.

LLMs essentially work by identifying patterns in word usage across large volumes of training data they review before activation. They do not recall information as a person traditionally does, and what they produce is largely dependent on the specific training data that they were supplied. Understanding this is key to addressing issues such as AI model bias. It can also help students understand how an LLM might produce content that is incorrect or even incoherent, what is commonly known as "hallucination" (MIT Management, n.d.). This knowledge can help students be more discriminating consumers and find ways to mitigate these challenges. Additionally, exploring newer innovations, such as reasoning models, helps students understand that different LLMs have distinct strengths and weaknesses. Another critical area of AI literacy is to address how students can influence this process. The concept of prompt engineering involves providing an LLM with detailed instructions on factors such as role, context, and format to achieve the desired output (Amazon Web Services, n.d.). While there is a wide variety of frameworks for prompt engineering, all center on the idea that to achieve better results from an LLM, the user must specify preferred context, processes, and outcomes. In essence, the more guidance given in the instructions, the greater the likelihood of a productive result from the LLM.

Effective Use of AI

Prompt engineering is a critical skill set for students to develop in this domain. Anyone with access to the internet can utilize AI, but that does not necessarily mean they can use it well. Beyond knowing that such inputs are possible, students need the opportunity to practice prompt engineering to improve their ability to yield valuable results. For instance, providing instructions to the LLM regarding the role, format, and task, without providing any comparable examples of the desired output, is commonly referred to as "zero-shot" prompting (Syed & Gadesha, n.d.). However, if students provide exemplars in their instructions to the LLM—described as "few-shot" prompting—the likelihood of useful results grows significantly. This class offers sessions for students to practice using AI tools and hone their skills.

Evolving Nature of AI

Due to the rapidly evolving nature of this new tool, the class needs substantial opportunities for student-faculty dialogue about AI utilization. On the one hand, students are likely aware of tools or approaches that the professor has not yet seen. The rapid progress in the capabilities of foundation models, as well as the growing array of applications based on them, makes it nearly

impossible for the faculty member to serve as the "expert" in all cases. Learning about users' experiences with the latest tools and applications increases students' and faculty's awareness. At the same time, getting the students to share their approaches provides an opportunity for the teacher to "stress test" their suggestions by highlighting both the benefits and problems (or logical inconsistencies) of student suggestions, modeling critical thinking skills.

Critical Thinking

While helping students become more aware of the problems and potential of artificial intelligence, the course should also emphasize a core element of a university education: critical thinking skills. Responding to a prompt that included user role and desired output length, ChatGPT defined critical thinking as "the disciplined process of actively and skillfully analyzing, evaluating, and synthesizing information to form reasoned judgments, make informed decisions, and solve problems effectively" (OpenAI, 2025). This aligns well with the intent of this class: to help students understand how modern technologies are shaped and evolve, as well as their broader societal impact. There will always be a "next new thing" in technology. With that in mind, reinforcing students' critical thinking skills in areas such as source evaluation, problem solving, and forecasting is a key component of this class, just as it would be in upper-level undergraduate courses. Even within the realm of artificial intelligence, questions regarding whether we are currently in an AI bubble, the geopolitical implications of the competition to build increasingly capable models, and how these advanced models will impact future employment are the types of questions that a liberal arts education was designed to address (Todd, 2024; Christman, 2025).

The act of asking ChatGPT to define critical thinking is itself a possible classroom exercise to reinforce students' familiarity with artificial intelligence. For instance, if the prompt that was used in the last paragraph is used three times, the LLM will provide three different (albeit similar) responses. So, perhaps the prompt can be augmented by asking for a specific source, such as the work of Richard Paul and Michael Scriven. Now it provides a new definition of the term "critical thinking"—"the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action"—but this one is credited to an accepted source (Foundation for Critical Thinking, n.d.). However, even now, it is necessary to verify the definition to ensure the LLM did not "hallucinate" it. Hence, even basic elements of a class are opportunities to model good critical thinking skills in the application of artificial intelligence skills.

Effective Communication

Developing students' abilities to communicate their views effectively is another liberal arts objective that remains an important part of this course. Writing and presentation skills reinforce critical thinking, as students must reflect on their reasoning before sharing their views with others. The act of writing prompts students to reflect, think, analyze, and reason (Mintz, 2021).

From here, focus shifts to how this knowledge can be transmitted. In the future, students are likely to be explaining technologically complex concepts to a lay audience trying to understand AI. The role of "translator" will require not only an understanding of the technology but also an ability to communicate effectively and modulate ideas to reach a given audience.

AI can be used to support critical thinking and communications-related educational goals. For instance, this class uses a multi-step assignment for its major paper project: a case study analysis of the evolution of a past technological breakthrough. The first step is a writing assignment in which students analyze and assess the key drivers of technological development, such as the airplane. After the assignment has been graded, students submit their work to an LLM with a prompt (designed by the class) to critique their argument. Students then bring this critique to class, initiating a discussion of the feedback provided by the LLM.

STUDENT ASSESSMENT

The course assesses students' understanding of the overall course objectives through a traditional mix of subject–matter–level assessments, as well as writing and briefing assignments that require students to apply this knowledge toward higher-order goals, such as analysis and evaluation. Subject-matter assessments and oral briefings are administered in class. The use of out-of-class writing assignments is where the rise of AI can complicate assessment. Students' use of LLMs to create or significantly influence their substantive work undermines not only the development of critical thinking skills but also the validity of the grading process. This is compounded by growing concerns about the efficacy of AI detection software, as well as new AI tools designed to evade it (Coldwell, 2025).

This course addresses this issue by moving all writing assignments back into the classroom. The long-term implications of this approach are many. For instance, confining student writing assignments to in-class periods limits the length of assignments or requires longer assignments to be broken into smaller elements. While student handwriting speed is highly variable, it can be an obstacle to achieving educational objectives (Connelly et al., 2005). Indeed, TCTEC Innovation (2024) found that the average ability for a 50-minute writing period is approximately 650 words. This may incentivize faculty members to seek class schedules that consolidate class time, thereby providing longer time slots to accommodate more intensive writing assignments. For instance, a traditional Tuesday/Thursday schedule for a 3-semester-hour course would allow for a 75-minute assignment, whereas a typical Monday/Wednesday/Friday class would have a 50-minute time slot. Another issue with in-class writing assignments is deciphering students' handwriting, a growing problem as instruction in writing skills in K-12 schools has declined in recent decades.

PERSISTENT ADAPTATION

Given the dynamic nature of the major, the topics in this specific course, and the advancing capabilities of artificial intelligence, the necessary balance between this new technology and traditional liberal arts objectives is likely to require frequent calibration. While this course is

intended to highlight key drivers of technological change, the specific contemporary technologies that are included are likely to evolve. For instance, as telecommunications technologies improve, the course will likely shift from discussions of cellular-based communications to satellite-based communications. Additionally, as the accessibility and expansion of artificial intelligence tools continue to grow, pedagogical approaches will also need to be adjusted. For example, as LLM models grow in the amount of content users can provide in their prompts, the approach to effective prompt engineering will likely evolve as well.

CONCLUSION

The *Emerging Technologies in Intelligence and Security* course helps students understand the broader forces shaping technological change. The course provides important insights into the current state of the field with a focus on the challenges and opportunities of AI technologies, particularly large language models. Large language models, appropriately used, enhance knowledge acquisition and critical thinking consistent with traditional liberal arts higher education.

Moreover, this article highlights the challenges that large language models pose to traditional out-of-class writing assignments. To overcome this challenge, the vast majority of writing assignments were completed in class. Many of the assignments included class and instructor monitoring of prompt engineering and analysis of large language model outputs. The author found that the process facilitated critical thinking.

This article explored how to improve students' abilities with this new tool and how to integrate it to support goals related to critical thinking and communication skills. *Emerging Technologies in Intelligence and Security* employed AI technologies to educate students and prepare them for the future. The course employs the technology in class activities to improve student learning in the subject and enhance AI literacy and competency. This article highlights the challenges that AI poses to a standard method of assessment in higher education, the out-of-class writing assignment. To mitigate this problem, this course moves all writing assignments to an in-class setting. It is by no means a perfect solution, but balancing competing objectives rarely is.

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