Introduction to AI Literacy Guidelines

A practical roadmap for developing AI competencies aligned with Virginia Tech's mission and values

Executive Summary

These Guidelines, based on the DEC AI Literacy Framework, provide our faculty, staff, and students with a structured approach to developing essential AI competencies. Whether you're an instructor considering AI's role in your classroom, a staff member seeking to improve workflows, or an administrator shaping policy, this document offers a clear path forward.

The guidelines organize AI literacy into five interconnected competency areas, each with three progressive levels. You don't need to master every area. The idea is to focus on what's relevant to your role and responsibilities.

Artificial intelligence is already transforming university operations. Consider these current realities at Virginia Tech: In the classroom, surveys show that over 80% of students regularly use AI tools like ChatGPT for coursework, but both faculty and students feel like they need more support (Digital Education Council, 2024). In research, AI-powered data analysis tools are becoming standard across disciplines, from engineering to humanities. In administration, departments are exploring AI for everything from admissions processing to student support services. The university is also evaluating investments in enterprise AI tools and support programs, with significant budget implications.

These changes aren't theoretical but are happening now. Without structured literacy development, we risk widening gaps between early adopters and those left behind, potentially compromising our ability to meet our goals.

By developing AI literacy systematically, Virginia Tech can ensure equitable access to AI benefits across our community while maintaining academic integrity as we embrace innovation. This systematic approach will prepare students for careers in an AI-transformed economy and advance research capabilities across all disciplines. Additionally, it allows us to improve operational efficiency while preserving the human-centered values that define our institution.

The AI Literacy Competency Framework

The Virginia Tech AI Literacy Guidelines organize essential competencies into five interconnected areas that work together to create comprehensive AI literacy. This framework builds on both the DEC AI Literacy Framework and Virginia Tech's Responsible AI Principles.

Five Interconnected Competency Areas

Understanding AI and Data

Grasp how AI systems work. The fundamental concepts that inform decision-making about when and how to use these tools.

Critical Thinking and Judgment

Develop appropriate skepticism and skills to question, verify, and validate AI outputs rather than accepting them uncritically.

Ethical and Responsible Use

Consider the broader implications of AI use, including bias, privacy, intellectual property, and environmental impact.

Human-Centricity, Emotional Intelligence, and Creativity

Strengthen uniquely human capabilities that become more valuable as AI handles routine tasks.

Domain Expertise

Apply AI effectively within your specific discipline or functional area.

Progressive Development Levels

Each competency area can be developed across three levels:

- **Level 1: Awareness** - Understanding what's happening with AI and its implications
- **Level 2: Application** - Using AI tools effectively and responsibly in your work
- **Level 3: Leadership** - Shaping how your department or unit approaches AI

Important: Not everyone needs to reach Level 3 in every area. Target the levels that align with your role and responsibilities.

	Level 1	Level 2	Level 3
Understanding AI and Data	AI and Data Awareness	AI and Data In Action	AI and Data Optimization
Critical Thinking and Judgment	Question AI Output	Evaluate AI Output	Challenge AI Output
Ethical and Responsible Use	Understand Risks	Apply Responsible Practices	Shape Responsible Practices
Human-Centricity, Emotional Intelligence, and Creativity	Awareness of Human-AI Interaction	AI as Collaborative Tool	Develop Human-Centered AI Practices
Domain Expertise	Applied AI Awareness	AI Application in Professional Contexts	Strategic AI Leadership

Based on Digital Education Council, DEC AI Literacy Framework, 2025

The guidelines organize each area into three levels, allowing you to start at your current comfort level and progress at your own pace:

- Level 1 focuses on awareness and understanding what is happening
- Level 2 moves to application and using AI tools effectively in your work
- Level 3 involves leadership and shaping how your department or unit approaches AI

It is important to note that individuals do not need to reach Level 3 in every area. A staff member might need practical skills (Level 2) in using AI tools for daily work while maintaining basic awareness (Level 1) of broader implications. A department head might need strategic understanding (Level 3) in governance and policy while having foundational knowledge (Level 1) of technical details.

Example Levels for Each Dimension

Understanding AI and Data

	Level 1 AI and Data Awareness	**Level 2** AI and Data in Action	**Level 3** AI and Data Optimization
Description	Individuals develop a basic understanding of AI concepts, how AI systems function, and the role of data in AI decision-making.	Individuals can select AI tools for real-world tasks, understand how AI models work, and assess the role of data in AI performance.	Individuals critically engage with AI systems, assess their technical capabilities, and strategically integrate AI into decision-making.
Examples of Competencies	Define AI and its key components (e.g. machine learning, automation). Identify common AI applications in daily life. Understand the basics of how AI processes data to generate output.	Explain how AI models process data and generate output. Identify factors affecting AI performance, such as data quality. Understand how to apply AI tools to automate or support professional tasks.	Compare different AI models and their applications for a variety of tasks. Integrate AI into workflows for enhanced efficiency. Communicate AI system capabilities and limitations to others.
Examples of Actions for Progression	Engage with foundational AI training materials, including introductory online courses or textbooks. Learn basic data concepts, such as structured vs. unstructured data, and how AI systems process information. Explore and experiment how AI systems use training data. Experiment with widely available AI tools (e.g. AI chatbots, translation tools, and recommendation systems) to observe how they function.	Conduct comparative analysis of different AI models to evaluate their accuracy and limitations. Use AI-driven analytics tools (e.g. machine learning models, AI-powered data visualization, or automated reporting tools) to extract insights from datasets. Learn about data management systems and how AI interacts with structured datasets. Work with datasets in AI applications, focusing on improving data quality for better AI performance.	Lead projects involving AI integration, ensuring effective use of data pipelines and model selection. Lead discussions or training sessions on AI integration, ensuring stakeholders understand AI strengths and limitations. Contribute to institutional or policy discussions on AI and data governance. Develop strategies for handling large datasets and improve AI performance for the institution.

Based on Digital Education Council, DEC AI Literacy Framework, 2025

Critical Thinking and Judgment

	Level 1 Question AI Output	**Level 2** Evaluating AI Output	**Level 3** Challenge AI Output
Description	Individuals can identify key evaluation criteria for AI output and understand that AI-generated content may contain biases or errors.	Individuals critically assess AI-generated content using established evaluation criteria and identify biases or inconsistencies.	Individuals demonstrate expertise in evaluating AI-generated output with rigorous methodologies, interrogating AI's reasoning processes, and assessing AI's impact on human cognition.
Examples of Competencies	Understand the importance of verifying AI-driven insights with human judgement. Understand basic evaluation criteria for AI-generated content, such as accuracy, consistency, and source reliability. Identify a number of inconsistencies or biases in AI-generated content.	Apply evaluation frameworks to assess the validity of AI-generated insights. Identify and articulate biases or inconsistencies in AI-generated output. Compare AI-generated information against multiple independent sources for verification.	Apply logical reasoning to understand how AI generates responses, analyze the strengths and weaknesses of different AI models and their output, and effectively build upon them. Effectively leverage AI capability to enhance critical thinking skills. Recognize and manage the nuanced impacts of AI in complex, high-stakes situations.
Examples of Actions for Progression	Study introductory materials on AI reliability and accuracy metrics. Compare AI-generated content with verified sources to identify discrepancies. Engage in case studies where AI-generated information led to errors or misinterpretation. Explore AI tools to assess their reliability and accuracy.	Develop structured evaluation rubrics for assessing AI-generated output in an academic or professional setting. Conduct comparative studies of different AI models to assess reliability across domains. Engage in interdisciplinary discussions on AI evaluation methodologies. Start applying AI assessment frameworks to real-world scenarios.	Conduct independent evaluation of AI tools, comparing their output across multiple sources for consistency and accuracy. Refine evaluation methodologies based on exposure to new AI advancements and emerging best practices. Publish assessments or research papers critically examining AI reliability in a specific domain. Apply advanced AI evaluation frameworks to real-world professional, research, or policy contexts.

Based on Digital Education Council, DEC AI Literacy Framework, 2025

Ethical and Responsible Use

	Level 1 Understand Risks	**Level 2** Apply Responsible Practices	**Level 3** Shape Responsible Practices
Description	Individuals understand fundamental AI ethics principles and can recognize potential risks, such as bias, misinformation, and discrimination.	Individuals apply ethical principles and frameworks to evaluate and mitigate risks associated with AI use in various professional and academic settings.	Individuals demonstrate expertise in evaluating, shaping, and advocating for ethical AI policies, governance frameworks, and institutional best practices.
Examples of Competencies	Define key AI ethics principles (e.g. fairness, transparency, accountability, privacy). Recognize how AI systems can perpetuate bias and inequality. Identify ethical concerns in AI-driven decision-making (e.g. hiring, surveillance, law enforcement).	Assess AI systems for compliance with ethical standards and legal frameworks. Identify and mitigate risks related to bias, discrimination, and data privacy in AI applications. Implement strategies to ensure fairness and accountability in AI decision-making.	Critically evaluate ethical implications of AI adoption at an institutional or societal level. Contribute to the development of AI governance frameworks and ethical AI policies. Provide guidance on ethical AI adoption in professional, academic, or policy environments.
Examples of Actions for Progression	Study introductory materials on AI ethics, including case studies of ethical failures in AI. Reflect on personal experiences using AI tools and consider ethical implications. Analyze a real-world case study where AI ethics were challenged, such as biased hiring algorithms or misinformation spread by AI. Engage in discussions on ethical dilemmas involving AI decision-making.	Conduct ethical impact assessments for AI applications in an organization or research setting. Engage in interdisciplinary discussions on responsible AI use across different sectors. Reflect on internal guidelines for the ethical implementation of AI in a professional or academic environment. Apply ethical AI principles in project development or policy analysis.	Draft or contribute to ethical AI guidelines within an organization, academic institution, or regulatory body. Publish research, reports, or policy papers analyzing ethical AI challenges and solutions. Conduct workshops or training sessions on ethical AI adoption. Collaborate with AI ethics advisory groups or contribute to national or international policy discussions.

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Human-Centricity, Emotional Intelligence, and Creativity

	Level 1 Awareness of Human-AI Interaction	**Level 2** AI as Collaboration Tool	**Level 3** Develop Human-Centered AI Practices
Description	Individuals have a foundational understanding of how AI affects human decision-making, communication, and emotional intelligence.	Individuals critically assess AI-generated content using established evaluation criteria and identify biases or inconsistencies. Individuals integrate human-centered skills into AI-assisted environments to promote responsible, ethical, and fair AI use.	Individuals advocate for human-centered AI approaches, ensuring AI remains a tool that complements rather than replaces human skills.
Examples of Competencies	Recognize how AI influences human behavior, decision-making, and interactions. Identify situations where AI may lack human sensitivity (e.g. AI-generated feedback, automated decision-making). Understand the importance of empathy and adaptability in AI-augmented environments.	Apply effective communication strategies and human-in-the-loop strategies when using AI tools in professional and educational settings. Identify opportunities to enhance human-centered skills and foster creative thinking with AI and propose strategies for continued development. Assess AI tools to ensure equal and fair access for all user groups.	Develop AI-driven workplace or education policies that safeguard human agency in decision-making. Establish guidelines for using AI in professional or educational environments that ensure AI complements, rather than replaces, human interaction and creativity. Conduct empirical studies or pilots testing the impact of AI in human-centered roles.
Examples of Actions for Progression	Observe how AI influences human interactions in customer service, education, or workplace settings. Reflect on personal experiences when using AI-powered communication tools (e.g. chatbots, virtual assistants). Engage in discussions on the limitations of AI in recognizing human emotions. Explore literature on the psychological and social impact of AI in human interactions.	Develop case studies on human-centered AI practices and their impact in different industries. Participate in collaborative projects where AI is integrated into human-driven decision-making. Explore frameworks for ensuring that AI tools respect social and cultural norms. Analyze the impact of AI on workforce skills and creativity and propose strategies for maintaining essential human abilities.	Lead research or policy development on the role of emotional intelligence in AI-driven work environments. Create training programs focused on balancing AI integration with human-centric skills. Engage with industry or academic stakeholders to define best practices for human-AI collaboration. Create reports or guides advocating for human-centered AI principles in education, governance, or business.

Based on Digital Education Council, DEC AI Literacy Framework, 2025

Domain Expertise

	Level 1 Applied AI Awareness	**Level 2** AI Application in Professional Contexts	**Level 3** Strategic AI Leadership
Description	Individuals develop a basic understanding of how AI is used in their specific field and can identify relevant AI tools and applications.	Individuals can effectively use AI tools to support tasks, optimize workflows, and improve decision-making within their discipline.	Individuals develop advanced expertise in AI applications within their discipline, ensuring AI is effectively integrated into strategic decision-making.
Examples of Competencies	Identify key AI applications relevant to a specific domain (e.g. AI in medicine, law, education, finance). Recognize how AI is transforming professional roles and industry standards. Understand the basic limitations of AI when applied in a particular field.	Select and apply AI tools that enhance efficiency and accuracy in a professional or academic setting. Assess the strengths and weaknesses of AI applications within specific processes or parts of the value chain. Integrate AI insights into professional decision-making while understanding AI's role as a complement to human expertise.	Evaluate and refine AI adoption strategies within the field, considering regulatory, ethical, and operational constraints. Lead the implementation of AI-driven innovations in a professional or academic context. Develop training materials or guidelines to enhance AI literacy among peers and colleagues in the field.
Examples of Actions for Progression	Explore and experiment with domain-specific AI tools. Participate in discussions or case studies related to AI applications in the field. Engage in introductory training sessions focused on AI for a specific sector.	Implement AI-powered solutions in professional workflows, assessing their impact on efficiency and accuracy. Compare multiple AI tools within the field to determine best-fit applications. Conduct small-scale research or pilot projects testing AI solutions in a specific professional setting.	Conduct industry-level assessments of AI adoption trends and their impact on professional practice. Publish findings on AI applications in a particular field through research, white papers, or industry reports. Participate in advisory or policy groups to influence AI adoption and governance at an institutional level.

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Alignment with Virginia Tech's Mission and Principles

These guidelines directly support Virginia Tech's Responsible AI Principles:

1. **Mission Alignment**: Ensuring AI furthers teaching, research, and outreach
2. **Innovation for Good**: Exploring AI boldly while managing risks
3. **Human-Centered Benefit**: AI extends rather than replaces human capabilities
4. **Responsible & Ethical Use**: Considering broad implications before deployment
5. **Fairness & Transparency**: Reducing bias and maintaining openness
6. **Human Judgment & Accountability**: Keeping humans in the loop
7. **Data Security & Privacy**: Protecting our community's information

By developing AI literacy, we embody our motto "*Ut Prosim*" (That I May Serve), ensuring technology serves humanity's best interests.

Moving Forward Together

These guidelines will continue to evolve as AI technology and our understanding of its implications develop.

Whether you are a faculty member considering how to address AI in your classroom, a staff member interested in using AI to improve your workflow, or an administrator considering policy implications, these guidelines provide a starting point for informed engagement with AI at Virginia Tech.

The goal is not to make everyone an AI expert but to ensure everyone in our community has the literacy needed to work effectively and ethically with AI technologies. Similar to how we expect basic digital literacy without expecting everyone to be a computer programmer, we are working toward a future where AI literacy is part of standard professional competencies at the university.

Sources

- Digital Education Council. (2024). *Digital Education Council Global AI Student Survey 2024: AI or Not AI: What Students Wan*t. https://www.digitaleducationcouncil.com/post/digital-education-council-global-ai-student-survey-2024
- Digital Education Council. (2025, March 3). *Digital Education Council AI Literacy Framework*. https://www.digitaleducationcouncil.com/post/digital-education-council-ai-literacy-framework