Mason Core Rubric for Evaluating Student Work in IT and Computing Courses

This rubric was developed by a team of faculty experts to evaluate student work for the Mason Core learning outcomes in IT and Computing. For more information about the learning outcomes and approved courses, see: https://masoncore.gmu.edu/information-technology-1/

How to use this rubric: This rubric was designed to evaluate student performance on five learning outcomes, with four increasingly sophisticated performance descriptors for each outcome, potentially spanning student development from introductory to advanced (senior level) performance. This rubric can be used with many types of student work from courses approved for the Mason Core IT and Computing category. Most student work will not show evidence of all outcomes; in this case, an additional category for "no evidence" should be made available.

Student Learning Outcomes	Level of Performance			
	Capstone	**Advanced Milestone**	**Emerging Milestone**	**Benchmark**
Students will understand the principles of digital information storage and exchange	Applies principles of digital storage and transfer to solve problems in digital information storage, sharing, and retrieval (e.g. design a database or an information retrieval system using a cloud-based platform)	Explains how computers effectively store information and data in a digital format, and how that information can be retrieved; identifies common problems with data storage and retrieval and the roles computer hardware and software play in creating or addressing these problems	Explains terms and concepts associated with digital information storage and exchange; identifies common technologies for storing and sharing data (e.g. databases or cloud services)	Identifies terms and concepts associated with digital information storage and exchange (e.g. binary and bit logic, hierarchical structures, number systems, text and image encoding, simple communication protocols, query formats, etc.)
Students will understand basic issues of computer security, and privacy and be aware of related ethical concerns.	Demonstrates sophisticated understanding of issues governing computer security, privacy and ethics; can analyze situations and propose appropriate solutions for responsible uses of information technology and electronic resources	Offers complex discussion of issues related to acceptable and responsible use of information and communication technology; evaluates strategies that demonstrate ethical, legal, and socially responsible uses of information technology and electronic resources	Discusses issues related to acceptable and responsible use of information and communication technology; analyzes the consequences of unethical use (e.g. hacking, spamming, consumer fraud, malware, viruses, etc.) of information and computer technology and identifies methods for addressing these risks	Identifies and discusses terms and concepts associated with safe use of the information and communication technology (e.g. password, multi-factor authentication, firewall, spam, security, fair use, acceptable use); identifies examples of ethical and unethical behaviors

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	Capstone	Advanced Milestone	Emerging Milestone	Benchmark
Students will become critical consumers of digital information; they will be capable of selecting and evaluating appropriate, relevant, and trustworthy sources of information.[1]	Builds contextual justification for the use of a particular information source, taking into account factors such as credibility, reliability, currency, and information purpose; analyzes own and others' assumptions	Fully appraises information sources on a variety of criteria; considers multiple factors such as currency, author credibility, bias, perspective, and intended purpose of information source	Shows distinction between sources and their relevancy to the research project; evaluates sources based on authority and bias, but evaluation may be inconsistent	Selects sources with elementary critical evaluation (such as whether source has a PhD)
Students can use appropriate information and computing technologies to organize and analyze information and use it to guide decision-making.	Evaluates multiple technologies appropriate to the project and organizes the information so that it is well-defined, consistent, complete, and easily examined and analyzed; uses technology to conduct a full or advanced analysis of the data and make recommendations for its use	Evaluates and chooses information technology appropriate to the project, and uses that technology to organize the information so that it is defined, consistent, complete; uses technology to conduct an analysis of the data and make recommendations for its use	Uses information technology to organize information so that it is defined, mostly consistent and complete, and able to be analyzed	Uses information technology to organize information so that it can be examined or reviewed
Students will be able to choose and apply appropriate algorithmic[2] methods to solve a problem.[3]	Creates a logical, efficient, and well-described sequence of steps or instructions to solve a problem or achieve a goal	Creates a logical sequence of steps that are well-described, and solve a problem or achieve a goal, though the steps may inefficient	Creates a logical sequence of steps that solve a problem, but the steps are poorly described	Uses a preselected sequence of steps (algorithm) to solve a problem

[1] Thanks to Champlain College, Technology & Information Literacy Developmental Rubric (December 2014), retrieved from https://www.slideshare.net/acarbery/info-lit-developmental-rubric

[2] **Algorithmic Thinking:** Essentially, breaking a problem into a concise set of steps to conceptualize a solution. Using an algorithmic method asks the thinker to create a series of ordered steps to solve a problem or achieve a goal.

[3] Thanks to the University of Delaware, Computational Thinking Rubric, retrieved from https://cpb-us-w2.wpmucdn.com/sites.udel.edu/dist/4/8672/files/2018/12/Computational-Thinking-Rubric-2ktkkgv.pdf

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Disciplinary Applications Outcome

The final outcome was developed by faculty to test its application in courses that teach information technology principles, methods, software, or scholarly communication in a disciplinary context and application; for instance, courses in digital humanities or art and design. As part of this assessment rubric, the outcome is meant to offer a different lens for thinking about how students learn to use information technology as a tool of inquiry and communication in their creative and scholarly work.

Student Learning Outcome	Level of Performance			
	Capstone	**Advanced Milestone**	**Emerging Milestone**	**Benchmark**
Students will be able to use digital resources, methods and software, or forms of communication relevant to the scholarly or creative work of their discipline.	Students should be able to do one or more of the following: effectively choose from, combine, and critique digital resources common to the discipline; master frequently used software that enables disciplinary methods according to disciplinary standards; effectively communicate or collaborate using information technology common to the discipline for tasks that require mastery.	Students should be able to do one or more of the following: effectively choose from and combine digital resources common to the discipline; correctly use software that enables advanced disciplinary methods for a range of tasks; communicate or collaborate using information technology common to the discipline for advanced tasks.	Students should be able to do one or more of the following: effectively choose from digital resources common to the discipline; use software that enables disciplinary methods for tasks of intermediate difficulty; communicate or collaborate using information technology common to the discipline for intermedia tasks.	Students should be able to do one or more of the following: use a resource common to the discipline; perform basic tasks in frequently used software that enables disciplinary methods; communicate or collaborate in basic ways using information technology common to the discipline.