

MEDICAL ROBOTICS

GRADES 8–12

This document lists the Wisconsin learning standards addressed by Medical Robotics, True Robotics' grades 8–12 robotics curriculum. Standards are grouped by subject and grade level, with codes and wording as published by the Wisconsin Department of Public Instruction.

8

SCIENCE

5

CS

13

TOTAL STANDARDS

SCIENCE

8 STANDARDS

Based on the Wisconsin state standards

GRADE	CODE	STANDARD
8	SCI.LS1.A.m	All living things are made up of cells. In organisms, cells work together to form tissues and organs that are specialized for particular body functions.
8	SCI.PS2.A.m	Motion and changes in motion can be qualitatively described using concepts of speed, velocity, and acceleration (including speeding up, slowing down, and/or changing direction). The role of the mass of an object must be qualitatively accounted for in any change of motion due to the application of a force (Newton's first and second law). For any pair of interacting objects, the force exerted by the first object on the second object is equal in strength to the force that the second object exerts on the first, but in the opposite direction (Newton's third law).
8	SCI.ETS1.B.m	A solution needs to be tested and then modified on the basis of the test results in order to improve it. There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem. Sometimes parts of different solutions can be combined to create a solution that is better than any of its predecessors. Models of all kinds are important for testing solutions.
8	SCI.ETS1.C.m	Although one design may not perform the best across all tests, identifying the characteristics of the design that performed the best in each test can provide useful information for the redesign process – That is, some of those characteristics may be incorporated into the new design. The iterative process of testing the most promising solutions and modifying what is proposed on the basis of the test results leads to greater refinement and ultimately to an optimal solution.
9–12	SCI.LS1.A.h	Systems of specialized cells within organisms help perform essential functions of life. Any one system in an organism is made up of numerous parts. Feedback mechanisms maintain an organism's internal conditions within certain limits and mediate behaviors.

GRADE	CODE	STANDARD
9–12	SCI.ETS1.A.h	Criteria and constraints also include satisfying any requirements set by society, such as taking issues of risk mitigation into account, and they should be quantified to the extent possible and stated in such a way that one can tell if a given design meets them. Humanity faces major global challenges today, such as the need for supplies of clean water and food or for energy sources that minimize pollution, which can be addressed through engineering. These global challenges also may have manifestations in local communities.
9–12	SCI.ETS1.C.h	Criteria may need to be broken down into simpler ones that can be approached systematically, and decisions about the priority of certain criteria over others (trade-offs) may be needed.
9–12	SCI.ETS1.B.h	When evaluating solutions, it is important to take into account a range of constraints, including cost, safety, reliability, and aesthetics, and to consider social, cultural, and environmental impacts. Both physical models and computers can be used in various ways to aid in the engineering design process. Computers are useful for a variety of purposes, such as running simulations to test different ways of solving a problem or to see which one is most efficient or economical. They are also useful in making a persuasive presentation to a client about how a given design will meet his or her needs.

COMPUTER SCIENCE

5 STANDARDS

Based on the Wisconsin state standards

GRADE	CODE	STANDARD
8	ALG.1.a.m.1	Represent algorithms visually using structured formats such as flowcharts, pseudocode, or block-based tools to solve computational problems.
8	PRO.2.b.m.1	Use appropriate data types and variables to store, update, and manage data in programs.
8	ALG.1.c.m.1	Write algorithm steps using sequence, iteration, and selection to solve a task involving at least one data element.
9–12	ALG.3.b.1.h	Improve algorithms by organizing repeated actions or steps into functions, modules, or reusable parts.
9–12	CSS.4.b.h.3	Evaluate how responsible and harmful uses of computing affect people and communities socially and economically. Use real-world examples to consider different perspectives and consequences.

SOURCES & NOTES

- The official science and computer science standards for Wisconsin, as published by the Wisconsin Department of Public Instruction.
- Codes and standard wording are reproduced from the official standards documents. Clarification statements, examples and assessment boundaries are omitted.
- Grade shows the grade level at which True Robotics lessons address each standard. A range (for example K–2) marks a standard written for a grade band.
- Standards text remains the property of its publisher and is reproduced here for alignment reference only.
- A lesson-level crosswalk is available on request at info@truerobotics.org.