International Society for Technology in Education

ISTE SEAL OF ALIGNMENT REVIEW FINDINGS REPORT

Microsoft

Microsoft Fundamentals Courses

July 2021

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ABOUT

ABOUT ISTE

The International Society for Technology in Education (ISTE) is the premier nonprofit membership organization serving educators and education leaders. ISTE is committed to empowering connected learners in a connected world and serves more than 100,000 education stakeholders throughout the world.

As the creator and steward of the definitive education technology standards, our mission is to empower learners to nourish in a connected world by cultivating a passionate professional learning community, linking educators and partners, leveraging knowledge and expertise, advocating for strategic policies, and continually improving learning and teaching.

ISTE SEAL OF ALIGNMENT

Resources and products designed with the ISTE Standards in mind are choosing to demonstrate their commitment to support critical digital age learning skills and knowledge. Regardless of a solution's intended grade level, purpose or content area, by addressing the ISTE Standards and earning a Seal of Alignment, a solution is shown to consciously, purposefully and meaningfully support best practices for digital age teaching and learning.

ISTE considers a solution aligned to the ISTE Standards only after an extensive review conducted by trained ISTE Seal of Alignment reviewers, and it has been determined to meet all critical elements of a particular standard indicator in accordance with specific review criteria.

By earning a Seal of Alignment, ISTE verifies that this product:

- Promotes critical technology skills
- Supports the use of technology in appropriate ways
- Contributes to the pedagogically robust use of technology for teaching and learning
- Aligns to the ISTE Standards in specific ways as described in the review finding report

RESOURCE DESCRIPTION

WHAT IS MICROSOFT FUNDAMENTALS?

The resources reviewed consist of eight teacher-led courses and eight self-guided courses designed to prepare students to learn to use the Azure platform and a number of its services and as a learning pathway for the Microsoft Fundamentals Certification examinations. The courses within this curriculum have been primarily designed to prepare participants for the Microsoft Fundamentals exam. The courses are offered in a portfolio of participant resources along with the certification exams. Although the courses are not required to earn certification, they are highly recommended by Microsoft for exam preparation.

The teacher-led courses are designed to be offered in classroom environments but incorporate the same student-facing online materials on the Microsoft Learn website that are used in the self-guided courses. Educators facilitating the teacher-led courses have access to supplemental materials that the students in the self-guided courses do not.

The eight Fundamentals courses reviewed included:

1. AZ-900: Microsoft Fundamentals
2. AI-900: Microsoft Azure AI Fundamentals
3. DP-900: Microsoft Azure Data Fundamentals
4. SC-900: Microsoft Security, Compliance, and Identity Fundamentals
5. PL-900: Microsoft Power Platform Fundamentals
6. MB-910: Microsoft Dynamics 365 Fundamentals Customer Engagement Apps (CRM)
7. MB-920: Microsoft Dynamics 365 Fundamentals Finance and Operations Apps (ERP)
8. MS-900: Microsoft 365 Fundamentals

HOW IS MICROSOFT FUNDAMENTALS IMPLEMENTED?

The materials for the teacher-led courses are made available via authorized accounts on the Microsoft website. The self-guided course materials are available free on the Microsoft Learn website. Anyone wanting to prepare for the Fundamentals Certification exams can do so using these free materials.

According to the teacher-led course introductions:

> "The course is designed to enable higher education instructors to deliver a complete module from the Microsoft Official Course during 1-2 class meetings and then direct students to complete the aligned online learning on Microsoft Learn.

> The course materials available from Microsoft Learn for Educators are optimized for higher education instructors or instructors that teach in similar education settings (for example, early college programs in secondary schools, workforce training programs, and adult education, or continuing education programs)."

The core materials used by students in both teacher-led and self-guided courses vary significantly in length and complexity. Courses range from 5 to 7 modules in length and each module is estimated to take 60 to 105 minutes to complete. These core, student-facing materials include a variety of self-assessments that are primarily knowledge-based.

In the teacher-led courses these built-in assessments are supplemented by additional knowledge-based assessments and in some courses by more performance based assessments, though the kind and number differ by course. Some include in-depth learning opportunities and assessments such as in-depth labs with hands-on activities.

ISTE SEAL OF ALIGNMENT REVIEW

Product: Microsoft Fundamentals courses
Organization: Microsoft
Date of Award: July 2021

REVIEW METHODOLOGY

ISTE Seal of Alignment reviews are conducted by a panel of education and instructional experts. Reviewers use data collected both separately and collectively to determine how a solution addresses specific elements described in each of the indicators of the ISTE Standards. Special instruments are used by reviewers to collect data on potential alignment across all resource materials. Alignment is determined based on the extent to which all or some of specific elements are addressed within the materials. Reviewers conduct regular calibrations to assure the validity and reliability of the results and final review findings are combined for an overall score for alignment on each individual indicator.

During the review process for *Microsoft Fundamentals*, reviewers:

- Collected data on when and how each activity addressed specific skills and knowledge described in the ISTE Standards for Standards at either a foundational or applied level
- Compiled findings to determine overall alignment across all ISTE Student standards and indicators.
- Used aggregate findings to form the basis of the overall alignment results.

SCOPE OF REVIEW

The eight courses in the Fundamentals curriculum were reviewed for alignment against the ISTE Standards for Students. ISTE reviewers examined both the learning materials for the self-guided student courses and the additional support materials for the teachers of in class courses related to this curriculum.

Student materials included files titled “Course Orientation, Student Guides, Learning Activity Resources, Lesson Answer Keys, Cornerstone and Capstone Student Guides.” Educator materials included files titled “Course Orientation, Teaching Guides, Lesson Plans, Educator Presentations, Learning Activity Solution Files, Cornerstone and Capstone Resources”, and a course evaluation form.

The alignment chart below applies to both teacher-led and self-guided courses. While the teacher-led courses are richer and deeper because of the supplemental materials available to both teacher and student, the alignment itself is not any more extensive for that.

REVIEW FINDINGS

The ISTE Standards can be aligned at the following levels:

- Foundational - Resources and activities aligned at the *foundational* level primarily focus on skills and knowledge that facilitate skill acquisition to eventually meet ISTE Standard indicators.
- Applied – Resources and activities aligned at the *applied* level primarily focus on practical, real-world, and/or relevant opportunities to practice the skills and knowledge learned in the curriculum.

Microsoft Fundamentals was found to align to the ISTE Standards for Students in the following areas:

ISTE STANDARDS FOR STUDENTS

	Standard 1 Empowered Learner	Standard 2 Digital Citizen	Standard 3 Knowledge Constructor	Standard 4 Collaborator	Standard 5 Innovative Designer	Standard 6 Computational Thinker	Standard 7 Creative Communicator
Indicator A							
Indicator B							
Indicator C							
Indicator D							

Foundational resources and activities focus primarily on knowledge that facilitates skills acquisition to eventually meet ISTE Standards indicators.

Applied resources and activities focus primarily on practical, real-world and/or relevant opportunities to practice the skills and knowledge learned in the curriculum.

Microsoft Fundamentals was found to address the ISTE Standards for Students in the following ways:

ISTE STANDARD	FOUNDATIONAL FINDING STATEMENT	APPLIED FINDING STATEMENT
1. Empowered Learner. Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences.		
1.a. Articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.	Numerous use case studies and business scenarios illustrate basic concepts of goal setting and many activities demonstrate the way technology can be used to achieve them. Development environments in particular, like DevOps and Power Platform, provide tools designed to improve a variety of personal and business outcomes.	
1.b. Build networks and customize their learning environments in ways that support the learning process.	The suite of courses focuses on a wide array of cloud-based tools that can be configured to customize working spaces in the platform. Students learn how to identify, access, and customize a variety of services and tools in the Azure Platform for a particular user, work group or set of goals.	
1.c. Use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.	Azure's cloud-based tools are designed to be used collaboratively so groups can share information and seek feedback from others. Students also learn to access and use specific applications such as Microsoft Teams, Streams, Yammer and Sharepoint to promote and support information sharing and exchange.	

1.d. Understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies.	The courses introduce students to a wide array of current and emerging cloud technologies and provide step-by-step practice in understanding, accessing, configuring and using them. The formative assessments in the courses help students learn to choose appropriate tools and transfer knowledge to optimize use of the platform.	Successful participation in the courses with their many use-case examples, scenarios and hands-on activities demonstrate that students can not only "learn to use technology," but "use technology to learn" with current and emerging technologies.
2. Digital Citizen. Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.		
2.a. Cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world.		
2.b. Engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices.		
2.c. Demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.		
2.d. Manage their personal data to maintain digital privacy and security and are aware of data-collection technology used to track their navigation online.	The Security, Compliance and Identity Fundamentals course provides an in-depth introduction to the many concepts and applications of these topics in the Azure environment. These important issues are reinforced in other courses such as Data Fundamentals and AI Fundamentals as they apply to specific tools and solutions.	

3. Knowledge Constructor. Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.		
3.a. Plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.		
3.b. Evaluate the accuracy, perspective, credibility and relevance of information, media, data or other resources.		
3.c. Curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.	In the Azure Fundamentals and Data Fundamentals courses, students learn basic concepts and also how to use the basic services of Azure cloud computing to create and manage databases and perform data analytics to pursue problem solutions. Data control systems such as Common Data Services and other interconnected tools and services enable students to learn to curate data collections and use them to create reports to support business decision making.	
3.d. Build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.	In the AI Fundamentals course students learn how to solve real world problems using services and tools such as machine learning, computer vision, conversational language applications and others. This kind of exploration and problem solving runs throughout the courses.	
4. Innovative Designer. Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.		

4.a. Know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.	Throughout the courses, students practice accessing, configuring and using modeling, simulation and programming tools and services as they apply to real world design and problem solving projects. Business scenarios are used to promote and support student learning and thinking in a real world context.	
4.b. Select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.	The Azure platform offers an extensive and diverse toolkit of services and the courses lead students through the process of understanding and selecting applications and configurations to solve business problems. The Power Platform provides examples of design tasks that involve considerations of constraints and risks.	
4.c. Develop, test and refine prototypes as part of a cyclical design process.	Students learn to use a number of development and automation environments such as DevOps and Power Automate to support refinement and cyclical design.	
4.d. Exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.		
5. Computational Thinker. Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.		
5.a. Formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.	Students learn the basic concepts of problem definition and problem solving through the many examples of real world application of AI, Database, programming and other Azure services and tools to define, represent and solve problems	

	using technology-based algorithmic methods.	
5.b. Collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.	The Data Fundamentals course provides examples of how to identify relevant data and perform relational, non-relational and big data analytics and represent them in a variety of formats, models and simulations.	
5.c. Break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.	Students learn to use Azure database services and tools along with AI services such as visualization and language processing to support the decomposition of problems and modeling of solutions to solve business problems.	
5.d. Understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.	The Power Platform course introduces students to a suite of tools accompanied by use case studies that illustrate how to automate business and other tasks by conceptualizing the steps and using Power Apps and Automation to test and implement solutions.	
6. Creative Communicator. Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.		
6.a. Choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.	Throughout the courses, students are presented with use case scenarios that illustrate how to choose from the wide array of possible services and tools appropriate for a particular problem or situation. In the Azure Fundamentals course, students engage in activities designed to help them choose the most effective tools for particular problems.	

6.b. Create original works or responsibly repurpose or remix digital resources into new creations.	Most of the tools and services that students learn to access and use including programming environments, AI services and database tools are presented to students in the context of a concrete problem to solve and a concrete product to create. The labs that accompany the teacher-led courses are designed to enable students to practice creating both original and remixed digital resources.	
6.c. Communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.	A wide range of AI, database and Power Platform services provide students with the tools to communicate complex ideas via visualizations, models and simulations.	
6.d. Publish or present content that customizes the message and medium for their intended audiences.	A wide range of AI, database and Power Platform services provide students with the tools to create visualizations, models and simulations and customize them for publication on websites and other platforms designed for specific audiences.	
7. Global Collaborator. Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.		
7.a. Use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning.	The virtual networking services in the Azure cloud environment are designed and used to connect with others for team-based collaboration or communication. Microsoft Teams and Sharepoint are familiar examples of those collaboration tools.	

7.b. Use collaborative technologies to work with others, including peers, experts or community members, to examine issues and problems from multiple viewpoints.	The virtual networking services in the Azure cloud environment are designed and used to connect with others for team-based collaboration or communication. Microsoft Teams is a familiar example of those tools.	
7.c. Contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.	Virtually all the cloud-based tools in the Azure platform provide an avenue for collaboration and teamwork by virtue of their easy accessibility via the cloud. Students learn to use a number of cloud-based tools designed specifically to promote and support team work, including the Microsoft Teams, Streams, Yammer and Sharepoint.	
7.d. Explore local and global issues and use collaborative technologies to work with others to investigate solutions.	The management features of Azure services and tools make it possible for them to be made available either globally or locally according to need. The examples, use cases, and business scenarios illustrate the ways in which these technologies can be used to explore problems collaboratively.	

CONCLUSION

Microsoft's Fundamentals suite of courses provide a comprehensive view of the current and emerging landscape of cloud computing. While courses are created in order to provide preparation for Microsoft-issued certification exams, there is something provided for all learners. The 365 courses offer a view for beginning students. The business-oriented courses provide a view of the practical aspects of using these new applications and services. The AI, Database and Power Platform courses take a deep dive into the highly technical features for those who want to take advantage of powerful technologies that are now available to all.

For educators, the support materials that accompany the teacher-led versions of the courses provide a ready-made path to incorporating them into many different environments. Given the technical complexity and depth of some of the courses, it is not surprising that they are "optimized for higher education instructors or instructors that teach in similar education settings." However, the extensive array of step-by-step activities and labs that break complex tasks into manageable steps will appeal to many students who would like to explore the Azure environment in a way that makes the powerful tools more interesting and approachable.

The extensive alignment of the courses with the ISTE Standards for Students are a reminder that business oriented technologies and workplace certification courses can also be highly educational to a wide audience. The courses have been designed and presented in an easy to navigate, highly professional manner. Users are provided with a clear, stepwise approach to all the materials that will make them appealing and useful to audiences of many different levels. These courses will help educators integrate the standards into their environments by addressing an area of increasing interest and importance to students and the public alike.