CSIS-580: COMPUTER HARDWARE

Effective Term
Fall 2026

BOT Approval Date
05/15/2025

Discipline
CSIS - Computer Sci/Info Systems

Course Number
580

Course Title
Computer Hardware

Short Title
Computer Hardware

Credit Status (CB 04)
D - Credit - Degree applicable

Units

Lecture Units
4.00

Total Units
4.00

Hours

Lecture Contact Hours
64-72

Out of Class Hours Lecture
128-144

Total Contact Hours
64 - 72

Total Out of Class Hours
128 - 144

Total Student Learning Hours
192 - 216

Distance Education
Yes

Distance Education

Distance Education Type
Both Fully Online and Hybrid Online

Fully Online Delivery Requirements:
a. Students must be notified via the college schedule of classes and the syllabus for the class if proctored tests are required for this course
b. Any planned face-to-face meetings, such as an orientation or study session, must be optional

c. The MSJC curriculum committee requires the use of accessible, asynchronous discussion as a component of every fully online course

Are you using publisher content?

No

Regular Substantive Interaction

Instructor-to-student, student-to-student, and student-to-content contact shall be distributed in a manner that will ensure regular substantive interaction (RSI) is maintained not only weekly but also for the duration of the course. Instructor interactions should be equivalent in time, quality and consistency to the engagement students would receive in a face-to-face course—for example, through announcements, discussion participation, personalized feedback, video messages, or other instructional communications. Instructors are expected to be responsive to student inquiries within a 24-72 hour time frame excluding holidays. RSI will be maintained through a variety of methods: • Orientation - Students must be oriented to the online and face-to-face portions at the start of the course. • Announcements - Announcements using the course management system must be posted at least weekly to keep students current on course events, due dates, materials, etc. • Discussion Forums - Content-related discussion forums within the designated CMS will include appropriate instructor participation and will be initiated and maintained, with timely feedback provided. Instructors are required to monitor the discussions and related activities to provide guidance and direction. Open-ended discussion boards may be used to further learning and interaction. • MSJC Communication – Instructor will use MSJC-administered communication tools (such as email or the designated CMS communication tools) to regularly communicate with and provide ease of access to students. • Timely Feedback - Timely feedback on student work will be provided by the instructor, which may include comments and/or rubrics, within the Grades area of the designated CMS. • Scheduled Meetings – Hybrid and synchronous courses will meet at regularly scheduled times. ADA Compliance - All course interactions and content must be designed with accessibility in mind and meet ADA requirements.

Catalog Description

This course introduces the basics of computing hardware technologies and the tear-down and assembly of a computer system. The features and functions of all major computing system hardware components are covered along with techniques for their installation and configuration. Operating system fundamentals are studied, especially in relation to hardware configuration and troubleshooting.

Codes

TOP Code (CB 03)

0708.20* - *Computer Support

CIP Code

15.1203 - Computer Hardware Technology/Technician.

Repeatability Code

No

Grading Option

Letter grade OR P/NP

Minimum Qualifications

Minimum Qualifications	And/Or
Computer Information Systems	End

Learning Objectives

Learning Objectives

Learning Objective
1. Diagram the basic functions of a computing system.
2. Prepare a Plan for the set up and maintenance of computer hardware.
3. Validate systems concepts in the investigation, evaluation, and resolution of hardware problems.
4. Evaluate and assess computing and networking hardware and software problems using troubleshooting strategies and techniques.
5. Evaluate and assess workplace factors and use the appropriate safety and environmental procedures when working with hardware components.

6. Evaluate and recommend computing hardware products and services.
7. Demonstrate working effectively as a member of a team to accomplish common goals.
8. Analyze technical information, as well as listen effectively to, communicate orally with, and prepare memos, reports and documentation for a wide range of audiences.
9. Investigate and assess new sources of information and learning opportunities to stay abreast of emerging information and computing technologies.
10. Prepare a list of career paths related to the program of study, as well as any qualifications and/or professional certifications that may be associated with those careers.
11.Synthesize research findings to propose inclusive and non-gendered terminology alternatives for hardware connectors.
12.Evaluate critically the historical context and social implications of gendered language in IT and hardware discussions.

Learning Outcome Information

Course Learning Outcomes

Learning Outcome
1. The student will identify and document the motherboard specifications.
2. The student will identify and document the primary storage specifications.
3. The student will identify and document the memory specifications.
4. The student will install a second hard-drive on a workstation.
5. The student will set up dual monitors on a workstation
6. The student will configure a workstation for remote assistance.
7. The student will establish a remote assistance connection.

Content

Course Lecture Content

1. Course Intro
   a. Hardware Technician duties
   b. Industry needs
   c. Industry certification (CompTIA)
2. Hardware Components
   a. Input output devices
   b. Storage devices
   c. Processors
   d. Motherboard components
   e. Tech
   f. Environment
3. Job Roles and Responsibilities
   a. Customer service
   b. Interviewing guidelines
   c. Setting customer expectations
   d. On-site issues
   e. Remote (phone) issues
   f. Dealing with difficult customers
   g. Paperwork
4. Tracking Systems
   a. System
   b. Form Factors
   c. Towers and desktops
   d. Low-profile desktop
   e. Laptop
   f. Rack-mounted servers
5. Electricity

   a. Fundamentals
   b. AC / DC
   c. Hot neutral ground
   d. Common electronic components
   e. Power supplies
   f. Safety measures
   g. Tools and tool kits
   h. Troubleshooting the electrical system
6. Motherboards
   a. Motherboard types and features
   b. BIOS and the boot process
   c. Maintaining, installing, and configuring motherboards
7. Processors
   a. Types and characteristics of processors
   b. Cooling methods and devices
   c. Evaluating, selecting, and installing processors
   d. Troubleshooting
8. Memory
   a. Memory technologies
   b. Upgrading memory
   c. Troubleshooting memory
9. Storage Devices
   a. Hard drives (HDD, SSD, NVMe)
   b. Drive interface standards
   c. RAID configurations
   d. Removable storage devices
   e. Evaluating, selecting, and installing storage
   f. Troubleshooting storage devices
10. Power Supplies and Connectors
   a. Power supply types and efficiency ratings
   b. Connector types (Molex, SATA, PCIe, ATX)
   c. Voltage, wattage, and amperage requirements
   d. Replacing and troubleshooting power supplies
11. I/O Devices
   a. Types and characteristics of I/O devices
   b. I/O ports on the motherboard
   c. Expansion cards
   d. Evaluating, selecting, and installing I/O devices
   e. Using the device manager
   f. Troubleshooting I/O devices
12. Networking
   a. Networking technologies
   b. Local network hardware options
   c. Connecting a computer to a network
   d. Software features (Windows)
   e. Networking practices
   f. Connecting to the internet
   g. Setting up a SOHO network
   h. Tools and utilities for troubleshooting network problems
13. Operating Systems Fundamentals
   a. Windows OS features and versions
   b. MacOS and Linux fundamentals
   c. Installation and configuration of operating systems
   d. Command-line utilities
14. Security Best Practices

a. Common security threats and vulnerabilities
b. Best security practices for workstations
c. Data destruction and disposal methods

15. Troubleshooting Hardware
    a. Common hardware failure symptoms
    b. Diagnosing and repairing hardware components
16. Networking Troubleshooting
    a. Common networking problems
    b. Tools and techniques for network troubleshooting
17. Professionalism and Communication
    a. Customer service best practices
    b. Effective communication with end-users
18. Life-Long Learning and Certifications
    a. Web resources
    b. Relevant publications
    c. Continuing education and certifications
19. Mobile Devices
    a. Types and characteristics of mobile devices
    b. Mobile OS features
    c. Wireless connectivity (Wi-Fi, Bluetooth, NFC)
20. Virtualization and Cloud Computing
    a. Virtualization concepts
    b. Cloud computing models
    c. Configuring virtual machines
21. Inclusive Language in Hardware
    a. History of Gendered Terminology in Hardware
    b. Adopting Inclusive Terminology in Computer Hardware
    c. Implications of Language on Inclusivity in the Field

Methods of Instruction

Method

Discussion

Integration

Weekly discussion will be conducted as a means to compare and contrast workplace factors for the use of appropriate safety procedures; sources of information and learning opportunities within emerging information and computing technologies; Technical documentation for computer hardware issues.

DE Adaptations for MOI

Discussions will be conducted using the discussion tool within the Content Management System (CMS) , ensuring accessibility and engagement. Features include:

Asynchronous threaded discussions – Allows students to participate at their own pace.
Accessibility features – Supports screen readers, adjustable text size, and keyboard navigation to ensure inclusivity.
Embedded media responses – Students can engage using text, audio, or video responses within the discussion tool.
Small group discussions – Breakout discussion boards within the CMS will be used for deeper engagement in DEI topics and hardware troubleshooting strategies.

Method

Activity

Integration

Guided practice and demonstration will illustrate lecture principles and reading assignments with a focus on the evaluation of computing hardware and software products, ensuring that students gain both technical proficiency and a deeper understanding of inclusive industry practices. As part of this activity, students will analyze and assess hardware components while considering the historical use of gendered terminology in computing. Using insights on gender-inclusive USB standards, students will evaluate how

traditional terminology, such as "male" and "female" connectors, has been used in hardware discussions and explore the impact of adopting more inclusive alternatives.

DE Adaptations for MOI

Guided practice will be integrated into the CMS through:Interactive content modules – Step-by-step guided exercises within the CMS.
Closed-captioned instructional videos – Embedded multimedia content for hardware demonstrations.
Web-based interactive simulations – Hosted directly within the CMS, allowing students to apply skills in a virtual hardware troubleshooting environment.
Self-paced tutorials – Adaptive learning modules with built-in quizzes to reinforce troubleshooting techniques and hardware configurations.

Method

In-class Exercises

Integration

In class exercises will be given that allow students to have hands on practice to computer hardware concepts. Exercises will focus on the evaluation and recommendation of computing hardware and software products and services; Validation of systems concepts in the investigation, evaluation, and resolution of hardware problems; Assessment of computing and networking hardware problems using troubleshooting strategies and techniques.

DE Adaptations for MOI

In-class exercises will be adapted for online delivery using CMS-integrated tools:
Interactive assignments and problem-solving tasks – Submitted directly through CMS assignment submission tools.
Collaborative exercises – Students will work in shared CMS Wikis, group discussion boards, or collaborative documents to troubleshoot computing hardware problems.
Auto-graded quizzes – Used within the CMS for reinforcement of key concepts.
Hands-on documentation practice – Students will create troubleshooting guides and hardware setup documentation using CMS-based collaborative tools.

Method

Lecture

Integration

Lecture, with supporting visual materials (Slide presentation or multimedia) will introduce conceptual and practical skills such as the development of a plan for the setup and maintenance of computer hardware; The validation of systems concepts in the investigation, evaluation, and resolution of computer problems; The preparation of a list of career paths related to the program of study.

DE Adaptations for MOI

Lectures will be delivered asynchronously through the CMS to ensure accessibility:
Recorded lectures – Hosted within the CMS with closed captions and downloadable transcripts.
Slide-based presentations with narration – Embedded slides or PDF slides with instructor voice-over explanations.
Supplementary reading materials – Lecture notes and supplementary documents available for further study.
CMS-integrated journals and blogs – Students will reflect on lecture content using CMS journal or blog tools to deepen engagement.

Methods of Evaluation

Method

Class Participation

Integration

Discussion and guided practice will focus on:Workplace factors influencing appropriate safety proceduresSources of information and learning opportunities within emerging computing technologiesTechnical documentation for diagnosing and resolving computer hardware issues
Additionally, students will evaluate and debate the role of inclusive language in technical communication, analyze how terminology impacts workplace and learning environments, and collaborate to develop strategies that promote equitable dialogue in IT settings.

Evaluation Criteria:

Frequency of participation – Consistent engagement in discussions and guided practice activities
Relevance and insightfulness – Contributions demonstrate critical thinking and application of concepts
Interaction with peers – Meaningful responses that build on others' ideas, ask insightful questions, or introduce new perspectives
Engagement with DEI principles – Ability to recognize biased terminology and propose inclusive alternatives in technical communication
Real-world application – Connecting discussion topics to industry practices and workplace inclusivity

DE Adaptations for MOE

Discussions and guided practice will be evaluated based on engagement, depth of responses, and integration of DEI perspectives. Submissions will be made through the discussion tool in the CMS for asynchronous participation or through virtual sessions for synchronous discussions.

Discussion Participation:

Evaluated based on the depth of contributions, relevance to the topic, and peer engagement
Students will receive weekly feedback via CMS, focusing on the quality of their insights, response engagement, and alignment with DEI principles
Students may be required to respond to at least two classmates' posts, fostering inclusive dialogue
Guided Practice:

Evaluated based on active engagement, completion of interactive activities, and demonstration of learning
Feedback will emphasize reflection on inclusive technical documentation and awareness of biased terminology
Submissions will be made through CMS grading tools, where instructors will provide specific feedback on critical thinking, adaptability, and application of DEI strategies
Feedback Process:

Students will receive weekly individualized feedback via the CMS, addressing their participation, engagement level, and contributions to DEI-focused discussions
Feedback will encourage further exploration of inclusive terminology and practical applications of discussion topics
Instructors may facilitate peer-to-peer feedback sessions within the CMS to enhance collaborative learning
Students will submit their participation through the discussion tool in the course management system (CMS).

Method

Exams/Tests

Integration

Periodic exams will assess students' ability to:

Develop a plan for the setup and maintenance of computer hardware
Validate systems concepts in the investigation, evaluation, and resolution of computer hardware issues
Identify and analyze career paths related to the field of computer hardware and IT
Additionally, students will critically evaluate the impact of language in technical documentation and assess how inclusive terminology can shape professional environments. Exams will also encourage students to reflect on the role of DEI in industry hiring practices and accessibility in computing.

Evaluation Criteria:

Application of concepts – Demonstrates understanding through problem-solving and scenario-based reasoning
Analytical depth – Ability to justify responses with logic and industry-relevant examples
Integration of DEI principles – Recognition of language inclusivity and workplace diversity in computing discussions
Logical reasoning and argumentation – Presents well-structured explanations in short-answer responses
Use of industry terminology appropriately – Demonstrates an awareness of evolving, inclusive language in technical documentation

DE Adaptations for MOE

Exams will be conducted through the course management system (CMS) and will include multiple-choice, true/false, and short-answer questions. Students will submit their exams directly through the CMS.

Objective questions (multiple-choice, true/false) will provide immediate feedback upon submission
Short-answer questions will receive individualized feedback within 48 hours, focusing on:
The clarity and depth of reasoning in responses
The ability to connect theoretical concepts to real-world applications
Recognition of DEI considerations in computing hardware
Students may receive additional support or follow-up guidance via discussion forums or instructor office hours in the CMS

Method

Homework

Integration

Weekly assignments will allow students to apply theoretical concepts to real-world computing scenarios, focusing on:

Evaluating computing hardware and software products based on industry standards
Developing and interpreting system diagrams to illustrate the functions of a computing system
Assessing the role of inclusive language in technical documentation and professional communication
Additionally, students will analyze and propose improvements to hardware-related documentation that incorporate DEI principles, such as eliminating biased terminology and ensuring accessibility for diverse users.

Evaluation Criteria:

Depth of analysis – Assignments demonstrate critical evaluation of computing hardware concepts
Application of learning – Demonstrates the ability to translate knowledge into practical solutions
Integration of DEI principles – Examines inclusive language and accessibility considerations in technical documentation
Creativity and innovation – Demonstrates thoughtful problem-solving and alternative approaches
Clarity and organization – Presents ideas in a structured, professional manner

DE Adaptations for MOE

Assignments will be submitted through the assignments in the course management system (CMS).

Homework will be evaluated based on:

Analytical depth and practical application of computing concepts
Engagement with DEI topics, such as identifying biased terminology in IT documentation and proposing inclusive alternatives
Presentation of technical findings in a professional and organized manner
Students will receive detailed feedback through the CMS grading tool within one week of submission, focusing on:

Strengths in analysis and application
Areas for improvement and refinement
Suggestions for deeper engagement with DEI considerations
Depending on the task, students may also submit assignments through discussion boards, blogs, or wiki tools within the CMS, allowing for peer collaboration and feedback on inclusive language proposals in IT documentation.

Method

Projects

Integration

Student projects will be assigned to demonstrate the ability to evaluate and recommend computing hardware and software products and services, validate systems concepts in the investigation, evaluation, and resolution of hardware problems, and assess computing and networking hardware issues using troubleshooting strategies and techniques.

Additionally, students will analyze and critique the use of gendered terminology in hardware discussions, synthesize research findings to propose non-gendered alternatives, and formulate strategies for integrating inclusive language into IT documentation and professional practices.

Projects will be evaluated based on:

Following directions
Correctness and completeness
Proper documentation
The depth of analysis on DEI considerations in hardware terminology
The feasibility and creativity of proposed inclusive language solutions
The clarity and effectiveness of group collaboration and presentation of inclusive language guidelines.

DE Adaptations for MOE

Projects will be evaluated based on thoroughness, creativity, adherence to project guidelines, and the integration of diversity, equity, and inclusion (DEI) principles. Assignments will be submitted through the project submission tool in the CMS.

Students will receive comprehensive feedback through the CMS grading tool, including detailed comments on technical accuracy, inclusivity of proposed terminology, effectiveness of recommendations, and overall engagement with DEI objectives.
Feedback will be provided within two weeks of the submission deadline.
Depending on the project type, students may be required to present their work using CMS tools such as:
Discussion boards (for peer and instructor feedback on proposed language guidelines)
Video uploads (for recorded presentations explaining their proposed terminology and its impact)
Collaborative tools like blogs or wikis (for refining group-developed DEI guidelines for IT professionals)
Students will submit their completed projects through the project submission tool within the course management system (CMS).

Assignments

Assignment Type

Reading

In-class and/or outside of class

Outside of class

Formative or Summative

Formative

Assignment

Reading:
"New Gender-Inclusive USB Standards Rename Connectors to Dom and Sub" by CJ Hernandez
Background:
The use of terms like "male" and "female" to describe hardware connectors is common in IT and hardware discussions. However, such language may carry connotations that can be uncomfortable or exclusionary in both learning and professional environments. This assignment aims to critically examine the historical context and implications of using gendered terminology and explore potential alternatives. Students will analyze the role of inclusive language in fostering diversity, equity, and inclusion (DEI) within the technology sector.

Assignment Overview:
For this project, you will explore the historical background and implications of using gendered terms like "male" and "female" in hardware discussions, proposing alternatives that promote inclusivity. The assignment will involve research, reflection, and group collaboration to develop guidelines for inclusive terminology in the IT field.

Tasks:
Analysis of Gendered Language:
Investigate the historical origins of using "male" and "female" terms to describe hardware connectors and the potential implications for exclusion or discomfort.
Discuss how gendered language can perpetuate a non-inclusive environment in educational and professional settings.
Examine the broader impact of using such terms in technical discourse and the importance of language sensitivity.
Implications for Inclusion:
Analyze how the use of gendered terminology may affect perceptions of diversity and inclusivity within the IT industry.
Evaluate the potential benefits of adopting non-gendered language in technical discussions, considering how it can create a more welcoming environment for all professionals.
Reflect on any personal experiences where gendered language has influenced your own learning or professional interactions.
Proposed Alternatives:
Propose practical alternatives to "male" and "female" terminology for hardware connectors (e.g., "plug" and "socket" or "insert" and "receptacle").

Discuss the feasibility of implementing these alternatives within the IT industry, including potential challenges and anticipated benefits.
Provide guidelines for using inclusive language in IT documentation and hardware discussions.
Group Activity – Inclusive Language Guidelines:
In groups, develop a set of inclusive language guidelines specifically for IT professionals, focusing on hardware terminology.
Present your group's guidelines to the class, providing a rationale for the chosen alternatives and discussing how these changes support DEI objectives.

Grading and Feedback:
The evaluation will focus on the depth and accuracy of the analysis regarding the use of gendered language in hardware terminology and its implications for diversity and inclusion, as well as the quality of the written assignment, ensuring it is well-organized, comprehensive, and clearly communicates the research, reflections, and proposed solutions. For group presentations, the clarity, organization, and delivery of the guidelines will be assessed, along with the presenters' ability to support their rationale and respond to questions. Feedback will be objective and unbiased, recognizing and valuing the diverse perspectives and experiences students bring to the discussion. Grading and feedback will be provided by the final week of the course.

How assignment will be adapted in online format

This assignment will be conducted through an online discussion board. Students will submit their research, reflection, and proposed alternatives as initial posts, followed by responses to at least two classmates' submissions to encourage peer interaction. Group activities will be conducted via video conferencing, where students will collaboratively develop guidelines and present them in virtual breakout rooms. Feedback will be provided through the course management system (CMS) within one week of submission, focusing on the depth of analysis, the innovativeness of solutions, and the quality of writing and presentations.

Assignment Type

Writing

In-class and/or outside of class

In-class
Outside of class

Formative or Summative

Formative

Assignment

Assignment Overview:
You are an intern at a managed IT services company that provides hardware support and system upgrades for small businesses. One of their clients, a local accounting firm, has reported slow performance across multiple office computers. The client is unsure if the issue is due to outdated hardware or a software problem. Your task is to use the HWiNFO utility to gather detailed hardware information from one of the computers to help diagnose potential hardware-related issues. You will summarize your findings and provide recommendations for improving system performance.

Tasks:
PowerPoint Presentation on System Information:
Create a PowerPoint presentation (5-7 slides) summarizing the hardware information obtained using HWiNFO, including:
Motherboard model and manufacturer
CPU brand, frequency, and core count
Amount and type of system memory (RAM)
Video adapter model and memory size
For each component, explain how the information could help identify potential causes of the performance issues and suggest any hardware upgrades or replacements to improve the system's performance.
One-Page Report on Diagnostic Tools:
Write a one-page report discussing how HWiNFO can be used for diagnosing hardware problems. Include two scenarios where HWiNFO would be beneficial for troubleshooting, such as identifying outdated hardware or detecting insufficient memory for current software demands.
Mention one precaution to take when using diagnostic tools to ensure accurate results and avoid unnecessary hardware changes.

Grading and Feedback:
Evaluate the technical accuracy and completeness of the hardware information gathered using HWiNFO, ensuring that all required components are identified and correctly reported. Assess the quality of the PowerPoint presentation, focusing on its structure, clarity, and how well it explains the relevance of each hardware component to system performance. For the one-page report, evaluate the

comprehensiveness of the discussion on diagnostic tools and scenarios, as well as the clarity and organization of the content. Provide objective and constructive feedback, recognizing diverse levels of experience with hardware diagnostics and taking into account different approaches to problem-solving. Feedback will be given through the course management system within one week of submission.

How assignment will be adapted in online format

This course will integrate hands-on activities, interactive tutorials, and peer discussions within the online learning environment. You will access course materials and submit your PowerPoint presentation and one-page report electronically through the course management system (CMS). The presentation will be uploaded as a file, and the report will be submitted as a text entry or PDF. Virtual labs and discussion forums will support practical learning, while virtual communication tools will facilitate interactions and feedback. Instructors will provide feedback through the CMS within one week of submission, covering content accuracy and report quality. Virtual office hours will be available for additional support and clarification.

Assignment Type

Writing

In-class and/or outside of class

In-class
Outside of class

Formative or Summative

Summative

Assignment

Assignment
Complete a final project that demonstrates your understanding of troubleshooting memory problems and diagnosing potential issues in a computer system. The project will involve using memory testing tools and interpreting results in a real-world scenario where reliable memory function is essential to system performance.

Example Final Project:
Design and implement a troubleshooting procedure to diagnose memory issues for a medium-sized organization. The project should include:
Creating a bootable USB drive with MemTest86 and performing a memory test to detect any errors.
Testing system memory under various conditions, such as continuous testing for potential thermal intermittent issues.
Simulating memory-related problems, including diagnosing beep codes related to memory errors and resolving the issues.
Documenting the testing process, tools used, detected errors, and the steps taken to troubleshoot and fix any issues.

Grading and Feedback:
Evaluate the thoroughness and accuracy of the memory testing procedures and troubleshooting steps. Assess the quality of documentation, ensuring the project report is well-structured, explains the diagnostic choices, and provides a clear troubleshooting guide. If a presentation is required, evaluate clarity, confidence, and the ability to answer questions about the project. Timely and detailed feedback will be provided through the course management system within one week of the project submission.

How assignment will be adapted in online format

The final project will be submitted through the course management system, along with any supporting documentation and files. Instructors will provide feedback and guidance throughout the project development process. Students will receive a comprehensive evaluation of their final submission, with feedback addressing both technical configurations and documentation quality. Final feedback will be delivered through the CMS within one week of the project submission, ensuring students receive timely and detailed insights into their performance.

Course Materials

Textbooks

CompTIA A+ Guide to Information Technology Technical Support, Loose-leaf Version | 11th Edition(2025)
Jean Andrews/Joy Dark Shelton/Nicholas Pierce

Class Size Information

Class Size
35

Class Size Category
B - Facilitated learning 35

Diversity and Inclusion

Course Design and Materials: Course will incorporate diverse perspectives, authors, and examples that reflect a variety of cultures, identities, and lived experiences. Instructional materials will be reviewed regularly to ensure representation, inclusivity, and alignment with equity-minded practices across disciplines.

Inclusive Learning Environment: Instructors will establish classroom norms and policies that promote respect, civil discourse, and belonging in both online and face-to-face classes. Clear expectations for communication and engagement will support a learning space where all students feel valued and heard.

Accessible Instruction: Course content will be delivered using accessible design. Materials will follow accessibility guidelines within the CMS, including captioned media, readable document formats, and multiple means of engagement to support diverse learning.

Equitable Teaching Practices: Instructors will use transparent and grading criteria, varied assessment methods, and timely feedback to promote fairness and student success. Opportunities for revision, reflection, and multiple demonstrations of learning may be incorporated when appropriate to the discipline.

Culturally Responsive Pedagogies: Instructional strategies will encourage critical thinking about diverse perspectives and systems of power relevant to the course content. Faculty will foster opportunities for students to connect course material to real-world contexts.

Ongoing Reflection and Improvement: Faculty will engage in continuous professional development related to IDEAA principles and reflect on course practices using metacognition to identify opportunities for increased equity, inclusion, and accessibility.

Explain how diversity and inclusion(e.g., gender, culture/race, sexuality, etc.) is infused into the course.
Diversity and inclusion are central to our Computer Hardware course, ensuring that every student feels respected and valued while recognizing the impact of language, representation, and accessibility in technology. The course integrates inclusive teaching methods, diverse historical perspectives, and discussions on biases in hardware terminology and development, fostering a culture of awareness and respect. Students will critically examine the history of gendered terminology in hardware, the adoption of inclusive terminology in IT, and the broader implications of language on inclusivity in the field, aligning with the course objectives on Inclusive Language in Hardware.Inclusive Language in Hardware project will challenge students to investigate the historical context of terms like "male" and "female" in hardware discussions, assess their impact on inclusivity, and propose alternatives that promote a more equitable IT environment. Through research, reflection, and collaborative group work, students will develop inclusive language guidelines for IT professionals, ensuring that they understand how language shapes workplace culture and professional communication

Describe how assignments, instruction, evaluation, course content, and interactions are contextualized for diverse learners promoting an equitable course.
Course is structured to ensure that assignments, instruction, evaluation, course content, and interactions are accessible and equitable for diverse learners, promoting an inclusive and supportive learning environment. Assignments are designed to reflect real-world hardware challenges, incorporating diverse perspectives and problem-solving approaches. Students will engage in hands-on projects, such as evaluating and troubleshooting computing hardware, designing system diagrams, and performing hardware installations and repairs. These assignments emphasize technical proficiency while also ensuring that students analyze historical and contemporary practices in computer hardware development, including standardization and accessibility considerations. Case studies will highlight hardware innovations from diverse professionals and analyze the evolution of industry terminology, ensuring that students recognize the contributions of different groups in shaping modern computing.
Instruction will include guided practice, live demonstrations, and interactive discussions that allow students to apply their knowledge to real-world hardware scenarios. Step-by-step walkthroughs of component installations, hardware compatibility assessments, and diagnostic troubleshooting will provide structured learning experiences for students with varying levels of prior knowledge. Visual aids, instructional videos, and annotated diagrams will support multiple learning styles, while interactive labs and simulations will reinforce students' hands-on skills. Instructors will also integrate structured peer discussions, where students will critically evaluate hardware standards, terminology, and accessibility issues in the field.Evaluation methods will provide students with multiple ways to demonstrate their learning, ensuring that assessments measure both technical competencies and critical thinking skills. Exams will consist of practical hardware identification exercises, multiple-choice questions on system architecture, and troubleshooting case studies, allowing students to showcase their knowledge through various assessment formats. Project-based

assessments, such as hardware installation and configuration reports, will require students to document their processes, justify component choices, and reflect on real-world hardware integration challenges. Peer evaluations will also be incorporated, giving students an opportunity to review and provide constructive feedback on each other's system configurations and troubleshooting methodologies.Course content will be carefully curated to represent a broad spectrum of hardware applications and ensure that all students feel acknowledged and engaged. Historical case studies will highlight how different cultural and socioeconomic factors have influenced hardware development, and students will examine how standardized component naming conventions, accessibility in device design, and hardware ergonomics have evolved over time. Additionally, students will analyze hardware failure points and design flaws from a usability perspective, ensuring they understand the real-world implications of system compatibility, repairability, and sustainability.Interactions within the course will encourage collaboration and knowledge sharing, helping students develop both technical expertise and professional communication skills. Group discussions will explore emerging hardware trends, ethical considerations in technology standardization, and strategies for improving device accessibility. Team-based troubleshooting labs and repair simulations will provide opportunities for peer learning, real-time problem-solving, and hands-on experience with hardware diagnostics. Instructors will foster a supportive and structured learning environment by establishing clear guidelines for respectful communication, providing opportunities for anonymous feedback, and addressing any challenges students may face in the learning process. By combining technical rigor with inclusive instructional practices, this course ensures that all students—regardless of background or prior experience—are equipped with the skills and knowledge necessary for success in the field of computer hardware.

Interactions

Explain how the course will incorporate student-to-student interaction.

a. Collaborative Projects: Students will engage in group assignments throughout the course that encourage teamwork and problem-solving, fostering peer-to-peer interaction and a sense of camaraderie within the class. For example, as part of the "Projects" assignment type, groups will collaborate on diagnosing hardware issues for a fictional company's IT setup. This project will involve analyzing hardware components using tools like HWiNFO, proposing upgrades, and documenting findings. This aligns with the Methods of Instruction (MOI) for guided practice and in-class exercises by requiring active student engagement and collaboration. The projects will be evaluated based on the thoroughness of the diagnosis, documentation quality, and the effectiveness of proposed solutions, following the Methods of Evaluation (MOE) criteria for projects.
b. Interactive Classroom Sessions: Throughout live webinars and interactive lecture sessions, small-group activities will be integrated. These will include tasks such as troubleshooting simulated hardware issues, like identifying faulty RAM based on beep codes or system performance lags. Students will collaborate to discuss possible solutions, apply course concepts in real-time, and share insights. The MOI for in-class exercises is supported here by incorporating real-world problem-solving in a collaborative setting. Student participation, solution accuracy, and teamwork will be assessed as part of the MOE for in-class exercises, with feedback provid reasonable time through the CMS grading tool.
c. Online Discussion Platforms: The CMS will host a "Student Lounge" discussion board to facilitate informal peer interaction, where students can discuss course-related topics, such as the impact of inclusive language in hardware terminology (Assignment: "Reading and Analysis of Gendered Language"). Additionally, the CMS will support structured discussions by randomly grouping students for specific activities. Tools like Wikis, Blogs, and Journals will be employed for collaborative content creation, such as drafting inclusive language guidelines. This setup follows the MOI for discussion and guided practice by promoting collaboration, with MOE evaluations focusing on the depth of contributions and peer engagement. Feedback will be provided within one week via the CMS.

Explain how the course will incorporate instructor-to-student interaction.

a. Course Introduction Package: At the start of the course, students will receive a personalized welcome letter from the instructor, outlining the course's objectives, assignment expectations (e.g., the final project on memory troubleshooting), and available resources. An orientation video will accompany this to guide students through the course layout, submission guidelines, and CMS navigation, setting up a foundation for the MOI in lectures and guided practice.
b. Weekly Updates: The instructor will provide weekly announcements via the CMS to highlight key concepts, such as techniques for diagnosing system performance issues, and remind students of upcoming assignment deadlines, such as submitting the one-page report on diagnostic tools. These updates support the MOE for formative homework by keeping students on track with learning milestones.
c. Interactive Discussion Platforms: Dedicated discussion boards will allow for instructor-led interactions where students can ask questions or seek clarification on topics, like memory diagnostics and error troubleshooting (Assignment: "Writing on Memory Testing"). The instructor will actively participate in these discussions to provide guidance, aligning with the MOE for discussions by assessing student engagement and offering timely, constructive feedback.
d. Accessible Support Channels: The instructor will maintain regular virtual office hours and be available via email for personalized support on assignments, such as using MemTest86 for the final project. Recorded sessions will be provided for those who cannot attend live. This direct support channel aligns with the MOE for projects by allowing students to seek clarification on technical aspects and receive individual feedback to enhance their project outcomes.

Explain how the course will incorporate student-to-content interaction.

a. Interactive Lecture Sessions: Lectures will be delivered online through recorded videos and live webinars, incorporating interactive elements such as "test your knowledge" quizzes. For instance, students might answer multiple-choice questions on identifying hardware components or diagnosing a system's potential hardware limitations. These quizzes will provide immediate feedback, reinforcing content covered in lectures. The MOI for lectures and guided practice is met by actively engaging students in real-time learning while adhering to universal design principles for accessibility.

b. Educational Video Clips: Short video clips covering key diagnostic tools and techniques, such as using HWiNFO to assess system memory or diagnose potential motherboard issues, will be made available to complement the reading materials. Closed captions and transcripts will ensure accessibility for all students. These videos will support the "Homework" assignment type, where students will need to watch the clips before completing related tasks, such as a one-page report discussing how diagnostic tools can be used effectively.
c. Application Exercises and Practice Materials: Students will have access to practice exams, problem sets, and simulations designed to mimic real-world hardware troubleshooting scenarios. For example, exercises may involve analyzing a computer's hardware specs and recommending appropriate upgrades. These activities will be part of formative assessments, aligning with the MOE for homework by enabling students to apply their understanding and prepare for summative evaluations like exams and the final project.

Explain how the course will incorporate student-to-self interaction (metacognitive).

a. Reflective Self-Evaluation: Following major assignments, such as the hardware diagnostics project, students will submit a self-assessment that encourages them to reflect on their learning journey. They will evaluate their problem-solving approach, identify areas where they encountered difficulties, and suggest ways to improve their strategies for future tasks. This self-assessment aligns with formative MOE by fostering metacognitive skills and self-directed learning.
b. Diverse Problem-Solving Approaches: During hands-on activities, such as simulating memory errors and using different diagnostic tools to troubleshoot, students will document alternative methods they explored and reflect on the effectiveness of each. This approach helps students build adaptive problem-solving skills and supports the MOI for guided practice by promoting exploration and innovation in the learning process. Their reflection on these varied approaches will be assessed as part of the MOE for in-class exercises, emphasizing flexibility and growth in problem-solving capabilities.

Key: 1090