

Career & Technical Education | Information Technology

Multimedia and Image Management

Subject Code: 145105

Outcome & Competency Descriptions

Course Description:

Students will apply principles of image creation, management procedures, and multimedia techniques as they create, revise, optimize, and export graphics for video, print, and web publishing. The course will address issues related to web-based publishing, social media, and security. Students will use current commercial and open-source languages, programs, and applications.

Strand 1. Business Operations/21st Century Skills

Learners apply principles of economics, business management, marketing, and employability in an entrepreneur, manager, and employee role to the leadership, planning, developing, and analyzing of business enterprises related to the career field.

Outcome: 1.1. Employability Skills

Develop career awareness and employability skills (e.g., face-to-face, online) needed for gaining and maintaining employment in diverse business settings.

Competencies

- 1.1.6. Explain the importance of work ethic, accountability and, responsibility and demonstrate associated behaviors in fulfilling personal, community, and workplace roles.
- 1.1.7. Apply problem-solving and critical-thinking skills to work-related issues when making decisions and formulating solutions.
- 1.1.9. Give and receive constructive feedback to improve work habits.

Outcome: 1.2. Leadership and Communications

Process, maintain, evaluate, and disseminate information in a business. Develop leadership and team building to promote collaboration.

Competencies

- 1.2.1. Extract relevant, valid information from materials and cite sources of information.
- 1.2.2. Deliver formal and informal presentations.
- 1.2.4. Use negotiation and conflict-resolution skills to reach solutions.
- 1.2.5. Communicate information (e.g., directions, ideas, vision, workplace expectations) for an intended audience and purpose.
- 1.2.7. Use problem-solving and consensus-building techniques to draw conclusions and determine next steps.

- 1.2.9. Identify advantages and disadvantages involving digital and/or electronic communications (e.g., common content for large audience, control of tone, speed, cost, lack of non-verbal cues, potential for forwarding information, longevity).

Outcome: 1.3. Business Ethics and Law

Analyze how professional, ethical, and legal behavior contributes to continuous improvement in organizational performance and regulatory compliance.

Competencies

- 1.3.7. Identify the labor laws that affect employment and the consequences of noncompliance for both employee and employer (e.g., harassment, labor, employment, employment interview, testing, minor labor laws, Americans with Disabilities Act, Fair Labor Standards Acts, Equal Employment Opportunity Commission [EEOC]).
- 1.3.8. Verify compliance with computer and intellectual property laws and regulations.
- 1.3.9. Identify potential conflicts of interest (e.g., personal gain, project bidding) between personal, organizational and professional ethical standards.

Outcome: 1.7. Entrepreneurship / Entrepreneurs

Analyze the environment in which a business operates, and the economic factors and opportunities associated with self-employment.

Competencies

- 1.7.13. Protect intellectual property and knowledge (e.g., copyright, patent, trademark, trade secrets, processes).

Outcome: 1.12. Cyber Hygiene

Apply digital information security principles to keep information secure.

Competencies

- 1.12.1. Identify the purpose and practices of Cyber Hygiene.
- 1.12.2. Differentiate between appropriate and inappropriate information.
- 1.12.3. Interpret security policies through job specific training and training updates.
- 1.12.4. Apply secure password behavior.
- 1.12.5. Apply physical and virtual situational awareness (e.g., clean desk policies, shoulder surfing, social engineering, tailgating).

Strand 2. IT Fundamentals

Learners apply fundamental principles of IT, including the history of IT and its impact on society, common industry terms, systems theory, information storage and retrieval, database management, and computer hardware, software, and peripheral device configuration and installation. This base of knowledge and skills may be applied across the career field.

Outcome: 2.7 Applications and Architecture

Explain the fundamentals of delivering information and applications using web architecture.

Competencies

- 2.7.1. Describe methods of securely transmitting data.
- 2.7.2. Describe ways to present data (e.g., responsive web design, mobile applications, desktop applications, web applications).
- 2.7.3. Differentiate between a client and a server.
- 2.7.4. Identify how the use of different browsers and devices effects the function of a webpage (e.g., Americans with Disabilities Act [ADA], text-to-speech, screen reader, mobile vs. desktop).
- 2.7.5. Explain the relationship between data transmission volumes, bandwidth, and latency.
- 2.7.6. Describe the characteristics and use of browser plug-ins.
- 2.7.7. Compare the advantages and disadvantages of running an in-house server or using a service provider.
- 2.7.8. Describe the difference between static and dynamic sites and the reasons for using each.

Outcome: 2.9. Project Concept Proposal

Develop a project concept proposal.

Competencies

- 2.9.1. Identify the scope and purpose of branding.
- 2.9.2. Determine the scope and purpose of the project.
- 2.9.3. Determine the target audience, client needs, expected outcomes, objectives, and budget.
- 2.9.4. Develop a conceptual model and design brief for the project.
- 2.9.5. Develop a timeline, a communication plan, a task breakdown, costs (e.g., equipment, labor), deliverables, and responsibilities for completion.
- 2.9.6. Develop and present a comprehensive proposal to stakeholders.

Outcome: 2.10. Equipment

Select, prepare, operate, and maintain equipment.

Competencies

- 2.10.4. Identify software application requirements.
- 2.10.5. Prepare and operate equipment per project design specifications.
- 2.10.7. Backup, restore, test, archive, and manage data.
- 2.10.8. Prepare equipment for storage or decommissioning.
- 2.10.9. Perform routine maintenance per manufacturer specifications.

Outcome: 2.14. Artificial Intelligence

Understand and apply prescribed methods of using Artificial Intelligence.

Competencies

- 2.14.1. Describe how machine learning and neural networks operate differently than standard decision trees.
- 2.14.3. Write and revise a prompt to generate the desired response from an AI.
- 2.14.4. Evaluate the result of an AI query on a variety of parameters (e.g. validity, relevance, authenticity, potential bias and hallucinations).

Strand 7. Digital Media

Learners apply principles of digital media to produce interactive media; develop and produce multimedia applications; integrate typography into media; create 3D models and 2D and 3D animation; and create digital video, audio, and photographs.

Outcome: 7.1. Interactive Media

Describe and explain interactive media and interactive media production.

Competencies

- 7.1.1. Identify the types and uses of interactive media environments (e.g., web-based, kiosks, games, mobile devices, video, print).
- 7.1.2. Describe the components of interactive media.
- 7.1.3. Identify the major characteristics of interactive media presentations.
- 7.1.4. Identify important historical developments and future trends in interactive media.
- 7.1.5. Identify the major interactive media genres.
- 7.1.6. Perform critical review of interactive media products in different genres.
- 7.1.7. Identify the intellectual property rights, responsibilities, and controls related to interactive media.
- 7.1.8. Analyze the social and cultural implications of interactive media.
- 7.1.9. Identify major applications for interactive media (e.g., sales and marketing, interactive advertising, education, online learning, corporate training, corporate communications, news, entertainment).
- 7.1.10. Identify specific uses for interactive media in potential markets.

Outcome: 7.2. Multimedia Tools

Develop navigational structures, scripts, storyboards, and flowcharts for multimedia applications.

Competencies

- 7.2.1. Develop navigational structures, wireframes, and flowcharts for multimedia applications.
- 7.2.2. Construct and place navigational units.
- 7.2.3. Build in interactive elements.
- 7.2.4. Determine uses and needs for site maps, multimedia scripts, storyboards, and flowcharts.
- 7.2.5. Make preliminary sketches showing placement of images and text on screen.
- 7.2.6. Place buttons and navigational graphics.
- 7.2.7. Select colors based on color theory and psychology.

- 7.2.8. Describe music, video, and special effects to be used.
- 7.2.9. Provide a sample layout to stakeholders for review.
- 7.2.10. Select and create visual design elements appropriate for the intended audience and use.
- 7.2.11. Develop client personas and narratives for intended project outcomes.

Outcome: 7.3. Production

Produce interactive media.

Competencies

- 7.3.1. Select the media elements to be used (e.g., sound, video, graphics, text, animation).
- 7.3.2. Generate text for multi-image presentations (e.g., title graphics, charts, graphs).
- 7.3.3. Incorporate graphics (e.g., digital, hand-drawn, photographic).
- 7.3.4. Incorporate computer animation.
- 7.3.5. Prepare and integrate photographic images and special effects with graphic images.
- 7.3.6. Incorporate video footage.
- 7.3.7. Edit video footage.
- 7.3.8. Record and/or acquire soundtracks (e.g., narrative, voiceover, sound effects, music).
- 7.3.9. Integrate sound with visuals.
- 7.3.10. Produce, test, debug, and archive a final product.
- 7.3.11. Apply accessibility guidelines to the selection and production of interactive media.

Outcome: 7.4. Graphics

Construct and manipulate digital graphics.

Competencies

- 7.4.1. Select and manipulate color profiles (e.g., Red Green Blue [RGB], Cyan Magenta Yellow Key [CMYK], Pantone) for appropriate uses.
- 7.4.2. Select color, shape, size, and texture of objects.
- 7.4.3. Create or acquire graphics.
- 7.4.4. Manipulate and layer objects.
- 7.4.5. Differentiate between vector and raster images.
- 7.4.6. Select graphic software applications based on budget, technical capabilities and hardware specifications to meet intended project outcome.
- 7.4.7. Optimize and export graphics files for intended use.
- 7.4.8. Manipulate graphic objects.
- 7.4.9. Compress and decompress graphic files.
- 7.4.10. Describe and select color profiles (e.g., Red Green Blue [RGB], Cyan Magenta Yellow Key [CMYK], Pantone).

Outcome: 7.5. Typography

Integrate typography in media.

Competencies

- 7.5.1. Identify typographic measurements (e.g., picas, points, pixels, ems).
- 7.5.2. Mix families of type within a project.
- 7.5.3. Select appropriate kerning, leading, tracking, and other related formatting.
- 7.5.4. Identify appropriate typefaces (e.g., serif, sans serif, Web Safe, screen, print).
- 7.5.5. Prepare a type style guide.

Outcome: 7.6. Animation

Create 2D and 3D animation.

Competencies

- 7.6.1. Develop a plan and storyboard for an animation.
- 7.6.2. create and import 2D assets and environments).
- 7.6.3. Create key frames and apply tweens and paths.
- 7.6.4. Create special effects and virtual navigation.
- 7.6.6. Render and export animations.
- 7.6.7. Create and import virtual assets and environments.

Outcome: 7.7. Video

Create a video production.

Competencies

- 7.7.1. Identify equipment and other production needs (e.g. drone, stop action, Digital Single Lens Reflex (DSLR), mirrorless, compact, and 360 cameras).
- 7.7.2. Analyze the script and storyboard to develop a production schedule.
- 7.7.3. Set up audio, lighting, and scenery for the shoot.
- 7.7.4. Select a video recording format and shoot the video.
- 7.7.5. Select a linear or nonlinear editing system and edit the video.
- 7.7.6. Add transitions (e.g., dissolves, wipes, cuts), titles, special effects, and digital effects.
- 7.7.7. Add a soundtrack, narration, and/or voiceover.
- 7.7.8. Export video to the desired medium.

Outcome: 7.8. Audio

Create an audio production.

Competencies

- 7.8.1. Evaluate performance needs and technical resources.
- 7.8.2. Identify sound requirements based on script analysis.
- 7.8.3. Design score appropriate to production and post-production needs.
- 7.8.4. Determine microphone and speaker placement.
- 7.8.5. Select and incorporate Foley mechanical and electrical sound effects.
- 7.8.6. Set up and operate audio-for-video recording devices.
- 7.8.7. Set up and operate a time code system for audio-video synchronization.

7.8.8. Perform audio mixing.

Outcome: 7.9. Photographs
Create photographs.

Competencies

- 7.9.1. Select and set up lighting needed (e.g., electronic flash units, reflectors, bounce, spot, daylight).
- 7.9.2. Select appropriate camera or device.
- 7.9.3. Select and attach lenses (e.g., wide-angle, telephoto, zoom) and filters (e.g., color-compensating, polarizing, special effects).
- 7.9.4. Determine composition, formal qualities, scale, and use of space.
- 7.9.5. Use International Standards Organization (ISO), shutter speed, aperture, and white balance settings to shoot manual photographs.
- 7.9.6. Edit photographs (e.g., color corrections, cropping, enhancements).
- 7.9.7. Identify differences between film photographs and digital images.