SPRINGFIELD TECHNICAL COMMUNITY COLLEGE
ACADEMIC AFFAIRS

		Class/Lect. Hours:	Lab Hours:	Credits:	Dept.:
Course Number:	GAT-262	2	3	3	Graphic Com. & Photography

Course Title: Advanced Digital Imaging Techniques   Semester: Spring   Year: 2018

Course Description, Prerequisite, Corequisite:

An advanced digital imaging course focusing on digital imaging theory, the relationship of conventional film-based photographic techniques applied to the digital world, and digital image manipulation using Adobe Photoshop and Lightroom programs. This course will teach students how to professionally modify their digital images to address specific imaging problems, including distortion and perspective correction and control, Raw image processing, advanced defringing and retouching techniques, and advanced image compositing and stitching techniques. In addition, advanced image capture techniques shall be addressed through the theory and the digital application of Ansel Adams' Zone System. Students will be given a series of projects that will allow them to incorporate the learned techniques into their work.

Prerequisite: GAT-162 or with the permission of the instructor
Corequisite(s): GAT-262L

OBJECTIVES/COMPETENCIES

Course Objectives	Competencies
1. Students will demonstrate the understanding and application of advanced theoretical formulas (including Ansel Adams' Zone System) and techniques to greatly improve the quality of their digital photography techniques in terms of exposure, image processing, and viewing distances of printed images.	1. Students will learn the association of the dynamic range of analog and digital imaging and its relationship on image capture. 2. Students will learn the concept of visualization and how image capture is adjusted to that practice. 3. Students will learn how reflected and incident light affects the capture of images, and how and when each can be measured (metered). 4. Students will learn the properties of diffuse and specular light. 5. Students will learn how over and underexposure, as well as long exposures affect the captured image. 6. Students will learn the visual characteristics of the scale of zones in subject luminances, and demonstrate how to make a high quality image capture based upon those values. 7. Students will learn how viewing distances affect the required resolution of

digital images, and how to calculate the optimal viewing distances of any image.

2. Students will demonstrate the techniques to correct for image distortion and perspective problems, especially in architectural and product photography.

1. Demonstrate the use of the perspective transformation command in Photoshop to make an image's distorted vertical lines completely straight.
2. Demonstrate the proper use of Photoshop's Vanishing Point command to match the perspective of the surrounding image area.
3. Demonstrate the proper use of Photoshop's Lens Correction filter to fix lens flaws resulting in barrel distortion, pincushion distortion, vignetting, and chromatic aberration.
4. Demonstrate the proper use of camera angle and lenses to avoid distorting the vertical lines in an image.

3. Students will demonstrate how to make high quality selections using Adobe Photoshop software.

1. Demonstrate making advanced selections in Photoshop using pixel-based masking techniques.
2. Demonstrate making advanced selections in Photoshop using vector-based drawing techniques.
3. Demonstrate image editing techniques in Photoshop to blend in the composited image area with the existing background image.
4. Demonstrate the process of recording multiple images during the photography process, and the many specific techniques used to blend the images together in Photoshop (exposure correction and matching, color correction, perspective correction, image resizing, resolution matching, pixel edge blurring, and image retouching).

4. Students will demonstrate professional photographic and digital retouching techniques to improve an image that was captured under poor lighting.

1. Demonstrate how to use layer blending modes and tool blending modes to specifically target the over or underexposure of specific subject areas.
2. Demonstrate the use of layer masking techniques to isolate problem areas.
3. Demonstrate the process of reducing the image capture's problem areas.

5. Students will demonstrate professional photographic and digital retouching techniques to improve the appearance of a subject's face in a portrait.

1. Demonstrate how to touch up small defects on photographs using the healing brush tool in Photoshop.
2. Demonstrate how to touch up large defective areas on photographs using the patch tool in Photoshop.
3. Demonstrate how to use advanced image skin softening techniques specifically targeted to the subject's face, using complex masking, blending

	modes, and filters.
6. Students will demonstrate high-quality digital image compositing and stitching techniques to produce professional, seamless-looking results.	1. Learn the methodology necessary to capture multiple images that will be tiled (stitched together) to produce a hyperphoto image (multiple layer image with very high combined resolution). 2. Choose the proper lens focal length and camera angle to produce the series of images that will be tiled together. 3. Demonstrate the manual process of seamlessly combining images in the event that the images do not properly tile together through software techniques.
7. Students will demonstrate the process of using software interpolation to create upsampled images without losing image quality.	1. State the minimum resolution of a digital image needed to allow software interpolation programs to effectively function. 2. Determine the maximum amount of upsampling possible before the process becomes detectable. 3. Research and demonstrate the use of professional image software interpolation programs currently on the market.
8. Students will demonstrate digital imaging techniques to improve and augment their photographic skills.	1. After being presented with a variety of current topical demonstrations, many based on specific student questions, students will use their learned digital imaging skills to produce exceptional digital photographs. 2. Choose appropriate digital workflow contingent upon desired use of image. 3. Demonstrate the process of high dynamic range image capture and processing. 3. Demonstrate puppet warp, content aware techniques, depth of field extension and retraction, and other advanced Photoshop-based techniques. 4. Demonstrate the process of digital stereoscopic imaging.