

The course benefits participants interested in expanding their digitization capabilities through the integration of spectral imaging to understand whether this might be an additional useful tool for their institution and collections. Participants will gain skills to focus on best practice, standardized procedures, and effective digital spectral project planning, including:

- Understand and assess imaging systems and modalities to best meet the needs of specific collection materials.
- Integrate the priorities of scholars, curators, and researchers in digital projects.
- Manage large datasets and metadata.
- Assess benefits of spectral imaging in relation to specific research questions.

Intended Audience

Professionals who work on or are planning to work on collaborative, multidisciplinary projects that would benefit from spectral imaging. These include preservation professionals and scholars; scientists and engineers; digital specialists, database administrators; program managers and directors; archivists, curators, librarians, and researchers.

Fenella G. France, chief of the preservation research and testing division, Library of Congress, develops non-destructive imaging techniques for collections. Her focus is spectral imaging and processing techniques to increase links between scientific and scholarly data. She received her PhD from Otago University, New Zealand and has worked internationally on many heritage projects. She serves on a range of professional committees, collaborating with colleagues from academic, cultural, forensic, and federal institutions. She is currently Distinguished Presidential Fellow for CLIR.

Meghan Wilson is a preservation specialist in the preservation research and testing division at the Library of Congress with a degree from the Maryland Institute College of Art. She has worked extensively on multiple spectral imaging programs around the world and specializes in operation, training, quality control, and data management of this imaging technology.

ArchSC02: Scanner & Camera Imaging Performance: Ten Commandments

8:00 – 10:00 (2 hours)

Track: Image and Imaging Fidelity Instructors: Don Williams, Image Science Associates, and Peter Burns, Burns Digital Imaging

This is a no-nonsense course on simple and achievable tools/techniques to build a solid digital imaging foundation for the capture of resilient and versatile digital images. We have updated this course from a previous Top Ten Tips publication. These include realistic color management, predictable behavior of branded capture devices, and new methodologies for rapid capture imaging. Specific and practical examples of the use of ISO standards and institutional guidelines will be described. More specifically, we address how to meet FADGI and Metamorfoze guideline requirements. The elements of this course can be applied by digital image service providers, collection custodians, and device manufacturers.

Benefits

This course will enable the attendee to:

- Interpret and comply with customer imaging requirements.
- Establish accountability for imaging performance problems.
- Compare various levels of FADGI and Metamorfoze guidelines.
- Critically evaluate manufacturers' claims of resolution, color errors, and noise.

Intended Audience

Managers, engineers, and technicians responsible for evaluating and monitoring scanner and camera performance, and emerging guidelines. This includes manufacturers, service providers, and content custodians. A

working knowledge of digital scanner and camera operation and their common technologies will be assumed.

Don Williams is founder of Image Science Associates, a digital imaging consulting and software group. Their work focuses on quantitative performance metrics for digital capture of digital imaging devices, and imaging fidelity issues for the cultural heritage community. He has worked for a number of large cultural heritage institutes in practical implementation of image quality controls and is the prime architect for the GoldenThread image quality evaluation tools. He has taught short courses for many years and contributes to several imaging standards activities.

Peter Burns is a consultant working in digital image evaluation, system monitoring, and image processing. He has experience in several areas for digital imaging; digital photography, mobile imaging, and cultural heritage.

Revised for 2018!

ArchSC03: An Introduction to Digital Archiving

8:00 - 12:00 (4 hours)

Track: Asset / Life-Cycle Management Instructor: John Sarnowski, ResCarta Foundation

This is an introductory short course on the use of open/free software to create, validate, index, search, display, and maintain a digital archive of various materials including photographs, oral histories, newspapers, and books.

Learn how to take simple digital files and create a knowledge base of standardized archival digital objects complete with Library of Congress metadata. Learn how to build a collection and host it. Make your full text searchable oral histories to FADGI guidelines. Capture audio files with AudacityR, use digital cameras and scanners to create full-text searchable, harvestable archives with TomcatTM, ResCartaR and jOAI.

Bring your laptop for this hands-on session. Take the free and open source tools and knowledge with you to create a growing and sustainable archive.

Benefits:

This course enables the attendee to:

- Understand the types of equipment, software, and time required to convert analog objects to digital.
- Identify the various types of metadata and how they can be created.
- Understand the difference between a digital file and a digital object.
- Understand the use of OCR/AAT software and its limitations.
- Understand the setup and workings of a webserver.
- Quickly set up an OAI/PMH provider/harvester.
- Understand metadata resuse and how it effects discovery.
- List best practice formats for long term storage and reuse.

Intended Audience

This course is intended to be relevant to a wide audience, but will be particularly relevant to those cultural heritage professionals tasked with converting analog materials to digital.

John Sarnowski has more than 25 years' experience in building digital collections. He was responsible for creating millions of digital objects for learned societies, libraries, and major corporations as the director of imaging products at Northern Micrographics. Projects included "The Making of America", JSTOR, and Historic Pittsburgh. He is currently a director of the ResCarta Foundation.

Revised for 2018!

ArchSC04: Preservation Strategies for Computational Photography based Imaging: Reflectance Transformation Imaging (RTI) and 3D Photogrammetry 8:00 – 12:00 (4 hours)

Track: Digital Preservation

Instructors: Carla Schroer and Mark Mudge, Cultural Heritage Imaging

This short course provides lectures, demonstrations, discussion, and handson practice with software tools for creating and validating context and process metadata for photographic image sequences. The initial software is designed for RTI and Photogrammetry, though the approach has broader applicability.

These tools form the basis of the Digital Lab Notebook (DLN). The DLN serves the same function as a written scientist's lab notebook, enabling data inspection and reuse by others.

We begin with an overview of both RTI and photogrammetry, including basics of image capture and examples of each from cultural heritage subjects. Then there is an exploration into CHI's approach to metadata collection and image validation, including the hands-on use of new, open source software tools.

Participants are encouraged to bring their laptops for hands on demonstrations.

Benefits:

This course enables an attendee to:

- Gain a basic understanding of two computational photographic imaging techniques: Reflectance Transformation Imaging (RTI) and photogrammetry for 3D applications. We will discuss how they are used, what they can reveal, and what is involved in adopting them into a cultural heritage practice.
- Learn about the Digital Lab Notebook (DLN), how archiving and reuse requirements are driving modifications to its development, and how to use it in an RTI or photogrammetry practice.
- Learn about two specific software tools for collecting metadata about image sequences and validating image sequences, including plans for additional features and tools.
- Provide an opportunity for hands-on practice with the tools: DLN:Capture Context and DLN:Inspector using provided example data. (Participants will be able to download the software from the CHI website prior to the course – the free software runs on both Mac and Windows PCs)
- · Provide feedback on the tools for subsequent versions
- Provide input for additional tools for archiving image sets which are being planned

Intended Audience

Museum, library, historic site, archive, and other professionals with an interest in scientific computational photography and archival practices. There are no prerequisites. Anyone from novice to expert is welcome.

Carla Schroer is a co-founder and director of Cultural Heritage Imaging (CHI), a non-profit corporation that develops and implements imaging technologies for cultural heritage and scientific research. She leads the training programs at CHI, along with working on field capture projects with Reflectance Transformation Imaging and photogrammetry. She also leads CHI's software development activities. She spent 20 years in the commercial software industry, managing and directing a wide range of software development projects.

Mark Mudge is president and co-founder of Cultural Heritage Imaging. He has a BA in philosophy, worked as a professional bronze sculptor, and has worked in 3D imaging for 30 years. He is co-inventor, with Tom Malzbender, of the Highlight Reflectance Transformation Imaging technique. He has published 15 articles and book chapters on scientific imaging and cultural heritage material and long-term preservation. He serves on the International Council of Museums' Documentation Committee's CRMsig (CIDOC/CRM).

ArchSC05: Spectral Image Processing

10:15 – 12:15 (2 hours) Track: Advanced Imaging Instructors: Fenella France and Meghan Wilson, Library of Congress

Spectral imaging of cultural heritage materials captures volumes of data that add layers of information to the normal digitization capture process through a range of processing techniques that expand the capability to reveal hidden and preservation-related information about an artifact. Image processing of spectral data allows the detection of erased writing, annotations, and redactions to reveal author intent, identification of watermarks for provenance, rendering of non-visible elements like fingerprints, and the use of spectral curves to identify colorants, and answering critical research questions for scholars. Additionally, it can be used to track change over time during exhibitions or treatments, assisting in the preservation of collection items. Processing this data expands content knowledge of collections and answers questions about original sources.

This course examines the range of capabilities from processing spectral data and the cultural, societal, and provenance information contained within original sources that is not apparent without undertaking this type of data archeology. Course activities include hands-on processing examples to explain image data processing.

Course participants are required to bring their own laptop computers. Free software (and datasets) will be provided prior to the course to download onto personal computers.

Prerequisite: It is strongly recommended that participants complete "ArchSC01: Spectral Imaging—Spectral Data and Technical Aspects" prior to taking this processing course.

Benefits:

The course benefits participants interested in expanding their image processing capabilities through understanding and analyzing multiple layers of data and employing the range of spectral processing applications as a tool for their institution and collections including:

- Revealing and enhancing non-visible text and information through principle component analysis.
- Mapping spectral responses (Z-profile) to characterize inks, pigments, and colorants on a range of heritage substrates (paper, parchment, ceramics, textiles).
- Applying spectral curve analysis to track change over time and identify at-risk collection materials.

Intended Audience

Professionals who work on or are planning to work on collaborative, multidisciplinary digital projects that require spectral image processing. These include preservation professionals and scholars; scientists and engineers; digital specialists, database administrators; program managers and directors; archivists, curators, librarians, and researchers.

Fenella G. France, chief of the preservation research and testing division, Library of Congress, develops non-destructive imaging techniques for collections. Her focus is spectral imaging and processing techniques to increase links between scientific and scholarly data. She received her PhD from Otago University, New Zealand and has worked internationally on many heritage projects. She serves on a range of professional committees, collaborating with colleagues from academic, cultural, forensic, and federal institutions. She is currently Distinguished Presidential Fellow for CLIR.

Meghan Wilson is a preservation specialist in the preservation research and testing division at the Library of Congress with a degree from the Maryland Institute College of Art. She has worked extensively on multiple spectral imaging programs around the world and specializes in operation, training, quality control, and data management of this imaging technology.

Revised for 2018! ArchSC06: Quality Assurance Workflows for Digitization Projects

10:15 – 12:15 (2 hours) Track: Image and Imaging Fidelity Instructor: Martina Hoffmann, National Library of the Netherlands (KB)

This is a practical course on the set up to a successful quick reliable quality assurance workflow for (mass) digitization projects of cultural heritage. There will be a presentation on a successful implemented QA-workflow at the National Library to give a hands-on example on how to do it. Building on the pillars of the mix and match principle the basic ingredients we set up a quality workflow which is: Simple—Flexible—Efficient—Modular—Low cost—Fast. In this training you will get to know which modules are useful and how to build the workflow around them. Practical, real production examples will be discussed.

You are invited to prepare your own questions on the topic for the group to discuss.

Benefits:

This course will enable the attendee to:

- Understand the need for a suitable QA for digitization of cultural heritage.
- Identify key questions to start a successful QA workflow.
- · Define the basic ingredients for QA.
- Understand the principles of a modular QA-workflow.
- Implement the mix and match principle according to the given basic ingredients.

Intended Audience

Managers, program officers, project leaders, suppliers, and quality managers responsible for (mass) digitization programs. A basic knowledge of digitization projects will be assumed.

Martina Hoffmann is senior production manager of digitization at the National Library in the Netherlands for the archival section of Metamorfoze. She was operational manager quality control of digitized products in the National Archives in the Netherlands. She co-designed several quality assurance workflows for different mass digitization projects in the Netherlands. Starting with only image quality QA processes her main focus now are QA processes including several fields of expertise from metadata to long term preservation.

NEW for 2018!

ArchSC07: Color Measurement for Archiving

13:30 - 15:30 (2 hours)

Track: Image and Imaging Fidelity Instructor: David R. Wyble, Avian Rochester, LLC

This short course begins by defining the basic terms describing the instruments and quantities used in color measurement. The instrumentation, spectrophotometers and spectroradiometers, are introduced by describing the applications for each type of device. The devices include those making traditional spot-measurement as well as those designed to capture an entire image of color data (imaging colorimeters). To understand how accuracy is maintained, instrument calibration is described. Since most modern devices measure spectral data, the connection between measured spectral data and CIELAB colorimetry is described, along with various color difference metrics. While seemingly simple, the transformation from spectra to CIELAB comes with many implications that are explained. The overall goal is to understand the concepts, procedures, implications, and assumptions of proper color measurements.

Benefits:

This course enables the attendee to:

- Understand the details and procedures leading to proper color measurements.
- Understand the use, calibration, and applications for spot spectrophotometers and imaging- colorimeters.

- Understand the point of "hand-off" from spectral measurements to colorimetric calculations.
- Interpret measurement results, and the implications of the various parameters in CIELAB calculations.

Intended Audience

Anyone responsible for making or interpreting color measurements. A technical background is not required, although an understanding of basic scientific principles will be very helpful.

David R. Wyble is president and founder of Avian Rochester, LLC. Since 2011, Avian Rochester has been delivering color standards, traditional and custom measurements, and consulting services to the color industry. Prior to founding Avian Rochester, Wyble was a color scientist within the Munsell Color Science Laboratory at the Rochester Institute of Technology, and before that a member of research & technology staff at Xerox Corp. He holds a BS in computer science and a MS and PhD in color science from RIT and Chiba University, respectively.

NEW for 2018!

ArchSC08: Metadata and Workflows for DAMS: Building Blocks to Access

13:30 - 15:30 (2 hours)

Track: Asset / Life-Cycle Management Instructors: Stephanie Christensen and Isabel Meyer, The Smithsonian Institution

This course serves as an introduction to the framework for using metadata to build and extract information from an enterprise digital asset management system. It examines workflows and methods for acquiring metadata both outside of and within a digital asset management system. It focuses on how metadata serves as a building block towards building a robust DAMS incorporating various metadata needs and file formats. Aspects of constructing metadata to talk to other collection information systems as it is disseminated for access is reviewed.

Benefits:

This course enables the attendee to:

- Describe a range of metadata issues associated with collections digitization and digital asset management.
- Gain knowledge of how the Smithsonian's Digital Asset Management System metadata was developed and how it has evolved based on particular needs.
- Gain knowledge on metadata standards and methods based on file format.
- Apply methods to building sustainable, metadata-rich digital assets and digital descriptive records.
- Assess requirements for growing issues of accessibility and compatibility with other information systems.

Intended Audience:

Cultural heritage professionals who expect to manage digital assets, projects, or programs involving digitization and access.

Stephanie Christensen is an information technology still image specialist with the Smithsonian

Institution's Enterprise Digital Asset Management System. Prior she served as digital imaging manager at the National Anthropological Archives where she helped build the digitization program. She has worked at the Chicago Albumen Works, and has taught at a variety of higher educational institutions, including the George Washington University museum studies program. She is a member of the Federal Agencies Digitization Guidelines Initiative.

Isabel Meyer is the versatile project manager responsible for the Smithsonian Institution's Enterprise Digital Asset Management System. She joined the Smithsonian's Office of the chief information officer in 2003 with more than 20 years of proven leadership and in depth, diverse experience in the information and digital media technology industry. Her progressive work experience includes project and productivity management, system implementation, training, collaborative work groups, application development and test teams, digitization, metadata, and digital preservation standards.

NEW for 2018!

ArchSC09: Management of Multispectral and Advanced Image Data

13:30 – 17:45 (4 hours) Track: Advanced Imaging Instructor: Michael B. Toth, R.B. Toth Associates

This course introduces archive and cultural heritage professionals to best practices in advanced imaging and digitization program data management. It focuses on managing advanced imaging and digitization projects to create or develop digital data and products and integrate advanced technologies and data. This includes projects for collecting, processing, accessing, archiving, and collaborating with digital data from various systems.

Instruction supports archive and cultural heritage professionals as they manage successive stages of advanced imaging and digitization from initiation through production and operation, especially with changing technologies and data standards. It utilizes case studies of management techniques and processes that are applicable to digitization and data curation programs of varied cost and complexity in a range of institutions.

Benefits:

This short course provides project leaders, managers, and others working or intending to work with advanced imaging, digitization, and curation projects with:

- A broad introduction to the resources, tools, and capabilities for effective planning, developing, and managing an advanced imaging program to achieve the needed data product.
- Methods to ensure the data products meet the program requirements with effective planning, management, and implementation across all phases of the program.
- Best practices for planning and managing the large amounts of data and metadata created by multispectral and advanced imaging technologies, including:
 - A solid management plan and schedule;
 - · An effective structure for task development;
 - Requirements and resources tracking and reporting.
- Guidance and techniques for tracking program data progress.
- Methods, tools, and standards for long-term digital data and metadata preservation, including some high-return, low-effort best practices that can be used in various projects.
- Basic concepts and planning methods used for management and process improvement.

Intended Audience

Cultural heritage, archive, digitization, and curation personnel responsible for success in capturing advanced images and creating data products will benefit from the basic concepts and best practices of this course. It is equally applicable to all project team members, not necessarily only data administrators or managers. There are no prerequisites except a desire to use effective program and data management best practices. Participants also develop increased understanding that can help them tap multidisciplinary support from the scientific, engineering, and information technology communities.

Michael B. Toth, president of R.B. Toth Associates and University College of London Honorary Research Associate, has led advanced digitization projects to provide data and metadata for global access. With more than 30 years of experience managing advanced imaging programs, integrating systems and planning, Toth has led teams of scientists, scholars, and technical experts help institutions make more data widely available. He has supported projects ranging from the Library of Congress, Duke and Penn Universities, to Abu Dhabi, Uppsala, and the Vatican.

NEW for 2018!

ArchSC10: Digital Audiovisual File Formats: Identification, Validation, Specification Verification

13:30 – 17:45 (4 hours) Track: Digital Preservation Instructors: Ashley Blewer, consultant, and Julia Kim, Library of Congress

Digital audiovisual files are large, complex, and difficult to manage. This course will cover resources and software for born-digital and digitized audiovisual quality control, and provide an understanding of their role in workflows. It will combine lecture, demonstration, workshops, and group discussion. All attendees will be encouraged to participate regardless of background.

The instructors will introduce the audience to the unique characteristics and challenges in digital audiovisual preservation. Topics will also include file formats and types, standards, validation, and technical specifications. This will also include tools such as FFmpeg, QCTools, Medialnfo, and MediaConch. The final third of the course will focus on larger-scale considerations, with an emphasis on workflow management, prioritization guidelines, file format normalization, storage specifications, management of timeframes, and internal advocacy.

Benefits:

This course enables the attendee to gain skills in the digital audiovisual preservation problem domain, including:

- · Identifying file composition: How are video files made?
- Identifying and manipulating file format and codec complexities: How are audiovisual files structured? How can you discriminate among the many possible options? What are downstream workflow implications?
- Distinguishing file validation nuances: How to tell what part of a file is the problem. What are some potential solutions?

Intended Audience

Professionals who work on or are planning to work with audiovisual materials in the context of large-scale digitization and preservation efforts. These include preservation professionals; digital specialists; database administrators; program managers and directors; archivists, curators, librarians, and researchers.

Ashley Blewer is an audiovisual archivist, technologist, and enthusiast. She works as an independent web developer and digital archives consultant. Her previous experience includes New York Public Library, in the private sector as an integrations engineer and at the University of South Carolina (USC) Moving Image Research Collections as a cataloging manager. She holds a MLIS (Archives) and BA (Graphic Design) from USC and is a graduate of the Flatiron School's Web Immersive program. She is an active contributor to MediaConch and QCTools.

Julia Kim is the digital assets specialist at the American Folklife Center at the Library of Congress, where she creates and manages multi-format borndigital and digitized workflows of more than 200 TB of collection content annually. She holds an MA from the New York University Moving Image Archiving and Preservation Program, and is an alumna of the National Digital Stewardship Residency Program and XFR Collective, an audio-visual nonprofit. She has a background in time-based media, digital forensics, and complex media.

NEW for 2018!

ArchSC11: Introduction to Color Management for Cultural Image Capture

15:45 – 17:45 (2 hours)

Track: Image and Imaging Fidelity

Instructors: Don Williams, Image Science Associates, and Peter Burns, Burns Digital Imaging

This course provides an introduction to color management for cultural heritage image capture. We start with the elements of human color vision that are behind all practical color imaging systems. A brief discussion of how current imaging technology for cameras and scanners is chosen to facilitate the capture of object colors follows. Specifics of the common image transformations from RGB camera signals to standard human vision colorimetry are then explained. We address color-difference measures based on the CIELAB color space and how ICC color profiles are used.

This presentation is intended to complement another short course, *Color Measurement for Archiving*, taught by David Wyble.

Benefits:

This course will enable the attendee to:

- Comprehend colorimetry, color spaces, and color differences.
- Understand the often confusion terminology of color management.
- Compare and contrast (visual) colorimetry and camera color capture.
- Interpret customer color imaging requirements.
- Describe ICC color profiles and their use.
- Compare levels of FADGI and Metamorfoze CIELAB color tolerance.

Intended Audience

Managers, engineers, and technicians responsible for evaluating and monitoring scanner and camera performance and emerging guidelines. This includes manufacturers, service providers, and content custodians. Some knowledge of digital scanner and camera operation technologies will be assumed, but not color science.

Don Williams is founder of Image Science Associates, a digital imaging consulting and software group. Their work focuses on quantitative performance metrics for digital capture of digital imaging devices and imaging fidelity issues for the cultural heritage community. He has worked for a number of large cultural heritage institutes in practical implementation of image quality controls and is the prime architect for the GoldenThread image quality evaluation tools. He has taught short courses for many years and contributes to several imaging standards activities.

Peter Burns is a consultant working in digital image evaluation, system monitoring, and image processing. He has experience in several areas for digital imaging; digital photography, mobile imaging, and cultural heritage.

NEW for 2018!

ArchSC12: Unlocking the Power of (Linked) Metadata

15:45 – 17:45 (2 hours) Track: Asset / Life-Cycle Management

Instructor: Martijn van der Kaaij, Heron Information Management LLP

So far, the huge potential contained in metadata for cultural heritage has only been unlocked to a limited extent. This course highlights the use of metadata standards in all life stages of a digital resource. It addresses metadata in relation to automated workflows for (large) data sets. Case studies include the 'ingest' processes of a European Archive, the development of APIs (e.g. within IIIF), and the automated application of ontologies. Finally, challenges for the near future are addressed: the cultural heritage (meta) data must be taken into the semantic web. The course explores which viable approaches and tools are available for documenting, visualizing, and disseminating the semantic relations between images, objects, places, people, documentation, and narratives.

Benefits:

This course enables the attendee to:

- Identify the role of metadata in the production, storage, and dissemination of cultural heritage data.
- Comprehend the automated application of metadata in workflows and quality control.
- Gain insight in metadata-driven storage, dissemination, and visualization of cultural heritage data and will be able to apply these insights in the workplace.

Intended Audience

Program managers and information specialists who are responsible for or interested in processing large data sets. IT specialists, digital architects, and others involved in the development of digital repositories. Archivists, librarians, and program managers interested in linked data for cultural heritage.

Martijn van der Kaaij is a founding partner of Heron Information Management LLP. As part of his master's in history, he studied the application of ICT to the arts and humanities, which developed into an enduring fascination. He has 20 years of experience delivering training on metadata, process management, and work flows. For Heron, he also provides consultancy on these subjects and develops software for quality control in automated workflows.

sc03

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Harassment includes offensive verbal comments related to gender, sexual orientation, etc., as well as deliberate intimidation; stalking; harassing photography, recording, or postings; sustained disruption of talks or other events; inappropriate physical contact; and unwelcome sexual attention. Please note that the use of sexual language and/or imagery is never appropriate, including within conference talks, online exchanges, or the awarding of prizes. Participants asked to stop any harassing behavior are expected to comply immediately.

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