Course guides
804043 - GCSI-M - Colour Management and Printing Systems

Unit in charge: Image Processing and Multimedia Technology Centre
Teaching unit: 804 - CITM - Image Processing and Multimedia Technology Centre.
Degree: BACHELOR’S DEGREE IN MULTIMEDIA STUDIES (Syllabus 2009). (Compulsory subject).
Academic year: 2021 ECTS Credits: 6.0 Languages: Catalan

Coordinating lecturer: Martínez Navarro, Beatriz

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
4. Apply the fundamental concepts related to colour preservation procedures in the digital workflow.
5. Generate and embed colour profiles according to standardised procedures for each workflow.
6. Use procedures to transfer digital images to physical media by printing.
7. Establish appropriate printing protocols for specific images and/or instruments.

Transversal:
1. SELF-DIRECTED LEARNING. Detecting gaps in one's knowledge and overcoming them through critical self-appraisal. Choosing the best path for broadening one's knowledge.
2. EFFICIENT ORAL AND WRITTEN COMMUNICATION. Communicating verbally and in writing about learning outcomes, thought-building and decision-making. Taking part in debates about issues related to the own field of specialization.
3. EFFECTIVE USE OF INFORMATION RESOURCES. Managing the acquisition, structure, analysis and display of information from the own field of specialization. Taking a critical stance with regard to the results obtained.

TEACHING METHODOLOGY

Classes are divided, in general, into 3 types.
1. Realization, explanation and discussion of the exercises during the previous session and resolution of doubts about them.
2. Exhibition activity directed by the teacher to introduce new knowledge (topics).
3. Explanation of next year and the supplementary materials.

LEARNING OBJECTIVES OF THE SUBJECT

1. Solve, through specific procedures, problems of color management and image printing.
2. Solve image processing problems based on image applications.
3. Carry out the tasks assigned from the basic guidelines given by teachers, deciding the time to be used for each task, including personal contributions and expanding the sources of information indicated.
4. Use strategies to prepare and conduct oral presentations and write texts and documents with consistent content, adequate structure and style and a good spelling and grammar level.
5. After identifying the different parts of an academic document and organizing the bibliographic references, designing and executing a good advanced search strategy with specialized information resources, selecting the relevant information taking into account criteria of relevance and quality.
STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self study</td>
<td>90,0</td>
<td>60.00</td>
</tr>
<tr>
<td>Hours medium group</td>
<td>60,0</td>
<td>40.00</td>
</tr>
</tbody>
</table>

**Total learning time:** 150 h

CONTENTS

**Unit 1. Color perception**

**Description:**
1. Color definition.
2. The visible light spectrum.
3. Lighting and color.
4. Light and object.
5. The human vision system.

**Full-or-part-time:** 25h  
Theory classes: 7h  
Self study: 18h

**Unit 2. Colometry: Color characteristics**

**Description:**
1. Spectral and non-spectral colors.
2. Spectral intensity distribution curves.

**Full-or-part-time:** 10h  
Theory classes: 4h  
Self study: 6h

**Unit 3. Colometry: Color description systems**

**Description:**
1. Synthesis of tristimulus values: RGB, CMY.
2. Perceptual trivariance: hue, luminosity, saturation.
3. The color system of Munsell.
4. CIE: standard observer and tristimulus values.
5. XyY-CIE system.
6. CIE-L*a*b* system.
7. Calculation of color differences.
8. Color measurement systems.

**Full-or-part-time:** 10h  
Theory classes: 4h  
Self study: 6h
# Unit 4. Color reproduction in image reproduction devices

**Description:**
1. Cameras and scanners: RGB sensors.
2. Monitors: types and characteristics.
3. Printing systems.

**Full-or-part-time:** 10h
- Theory classes: 4h
- Self study: 6h

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# Unit 5. ICC Profiles

**Description:**
1. Elements of Color Management: PCS, ICC, ICM.
2. Types of ICC profiles.
5. Application of ICC profiles.

**Full-or-part-time:** 10h
- Theory classes: 4h
- Self study: 6h

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# Unit 6. Color spaces

**Description:**
1. What are the color spaces.
2. Most used color spaces.
3. Application of color spaces.

**Full-or-part-time:** 10h
- Theory classes: 4h
- Self study: 6h

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# Unit 7. Color management with image edition and processing software

**Description:**
1. Color adjustments.
2. Assign profiles.
3. Convert into profiles.
4. Test settings.

**Full-or-part-time:** 20h
- Theory classes: 8h
- Self study: 12h
## Unit 8. Color Management in RAW images

**Description:**
1. Characteristics of the RAW format.
2. Adobe Camera RAW application: image editing.
3. Calibrate the color in Adobe RAW Camera.
4. Other applications to calibrate the color in RAW.

**Full-or-part-time:** 10h  
Theory classes: 4h  
Self study : 6h

## Unit 9. Color management in Video and Cinema

**Description:**
1. Difference between video and cinema  
2. Specificities of color management in the audiovisual field  
3. Workflows with Color Management in audiovisual productions  
4. Color Management with DaVinci Resolve

**Full-or-part-time:** 5h  
Theory classes: 2h  
Self study : 3h

## Unit 10. Preparation of images for output

**Description:**
2. Image for web.  
3. Image for RGB printing.  
4. Image for CMYK printing.  
5. Communication with the printer.  
6. Creation of pdf files.  
7. Color Management with InDesign.

**Full-or-part-time:** 10h  
Theory classes: 4h  
Self study : 6h

## Unit 11. Printing systems: concepts about the printing process

**Description:**
1. Continuous tone and halftone.  
2. Resolution and linearity.  
3. Print pattern.  
4. Parameters to assess print quality.  
5. Inks  
6. Types of support: paper.

**Full-or-part-time:** 10h  
Theory classes: 4h  
Self study : 6h
Unit 12. Printing systems

Description:
1. Photochemical printing.
2. Laser printing.
3. Inkjet.
4. Sublimation printing.
5. Graphic Arts
6. Graphic arts.

Full-or-part-time: 10h
Theory classes: 4h
Self study: 6h

ACTIVITIES

(ENG) CASOS PRÀCTICS: EXPERIÈNCIES SOBRE PERCEPCIÓ DEL COLOR

(ENG) PRÀCTICA P01: REPRODUCCIÓN DEL COLOR

Full-or-part-time: 5h
Practical classes: 2h
Self study: 3h

(ENG) PRÀCTICA P02: GESTIÓ DE COLOR EN PHOTOSHOP

Full-or-part-time: 5h
Practical classes: 2h
Self study: 3h

name english

Description:
The exercise consists of applying and analyzing the different color management flows offered by DaVinci Resolve.

Full-or-part-time: 5h
Practical classes: 2h
Self study: 3h

FINAL PROJECT - PART 1: COLOR MANAGEMENT IN RAW IMAGE AQUISITION

Description:
The exercise involves applying different color management tools and processes in image capture. From here use objective measurement systems in order to assess the level of accuracy in color reproduction.

Full-or-part-time: 6h
Practical classes: 2h
Self study: 4h
**FINAL PROJECT - PART 2: IMAGE OPTIMIZATION AND PREPARATION FOR OUTPUT**

**Description:**
The exercise consists of photographing a document to reproduce a facsimile. It will be processed with color management and optimized for different outputs.

**Full-or-part-time:** 5h
Practical classes: 2h
Self study: 3h

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**FINAL PROJECT - PART 3: PRINTING**

**Description:**
The exercise consists of printing the document reproduced in part 2 of the project, trying to obtain a reproduction of the color as faithful as possible.

**Full-or-part-time:** 12h
Practical classes: 4h
Self study: 8h

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**GRADING SYSTEM**

Exercises (40%). Practical exercises, problems and software testing problems.

Exams. There will be two midterm exams (15% each) and a final exam (20%)

Participation and attitude (10%)

The assessment of student participation / a in the training activities of matter, and learning attitude, will be evaluated by monitoring their interventions in class, questions, autonomous resolution of the issues raised in practical exercises, etc. This assessment corresponds to 10% of the final grade.

Reassessment. Students who have not passed the subject by continuous assessment have the option to be submitted to the reassessment. To be eligible you need to have presented the process of continuous assessment.

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**EXAMINATION RULES.**

Practice exercises
The practice exercises are carried out following the instructions given in the corresponding Practice Sheet document and the indications that have been given in this part of the corresponding class. Internships will not be accepted after the deadline established in the practice sheet and in the delivery system through the Virtual Campus, unless it is for duly justified reasons.

Exams and final tests
The exams will be carried out in the classroom with computers by electronic document that the student must complete. The questions and problems proposed in the exams refer to both the theoretical content of the subject and the exercises solved in the different practices. Apart from each question or problem, the contribution in points appears in the total mark of the exam.

The revisions and / or claims regarding the exams will be made exclusively on the dates and times established in the Academic Calendar.
BIBLIOGRAPHY

Basic:

Complementary: