COSI / Colour in Science & Industry /
Erasmus Mundus
Joint Master Degree

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COURSE MODULE ï APPLIED COLOUR SCIENCE

COURSE CODE	COSI ACS
COURSE LEVEL	Master
ECTS CREDITS	5
COURSE INSTRUCTOR/S	Prof. Alain Trémeau (UJM) with the assistance of guest lectrurer(s)
EDUCATION PERIOD	SEMESTER 1
EXPECTED PRIOR-KNOWLEDGE	Use of Matlab
LANGUAGE OF INSTRUCTION	English

AIM

This course introduces basics and fundamental principles of colour science, it is focused on applied science as well as technical applications. It covers topics such as: light, vision and photometry; colour vision and colour specification systems; CIE standard colorimetric systems; uniform colour spaces, measurement and calculation of colorimetric values, metamerism and colour matching, chromatic adaptation and colour appearance; colour rendering. To develop their practical and analytical skills, students have to work on practical tasks and on industrial study cases. For practical works students use MATLAB and specific softwares, as well as different measurement systems and equipments.

TEACHING ACTIVITIES

This course is based on flip-teaching, exchanges and discussions between students and instructor, lectures, exercises and practical sessions activities, as well as homework.

COURSE OUTLINE

(topic 1)	Light, Vision, Radiometry and Photometry
(topic 2)	Colour Vision and Colour Specification Systems
(*topic 3*)	CIE Standard Colorimetric System and Uniform Colour Spaces
(*topic 4*)	Measurement and Calculation of Colorimetric Values
(*topic 5*)	Metamerism, Colour Matching, Colour Rendering
(*topic 6*)	Chromatic Adaptation and Colour Appearance

PRACTICAL ACTIVITIES

Practical works (laboratory sessions and industrial study cases) in order to implement concepts introduced in the lectures, to practice on real applications and to train students.

LEARNING OUTCOMES[1]

Å *Knowledge* and *Comprehension* of the fundamentals, principles, applications, limits, relationships, of all concepts and topics covered by this course;
Å *Application, Analysis, Synthesis* and *Evaluation* skills of the main concepts and topics covered by this course;
ÅAbility to apply/implement concepts and principles introduced in the lectures on practical tasks and on industrial study cases;
ÅAbility to self-learn, to understand some problems and to suggest/find solutions to solve these problems.

FORM/S OF ASSESSMENT

Written exam (25%), Practical works (50%), Acquired skills (25%)

ASSESSMENT CRITERION

Written exam and Practical works

Excellent - outstanding performance	A
Very Good - above the average standard but with some errors	B
Good - generally sound work with a number of notable errors	C
Satisfactory - fair but with significant shortcomings	D
Sufficient - performance meets the minimum criteria	E
Fail - some more work required before the credit can be awarded	FX
Fail - considerable further work is required	F

[1] The meaning of *keywords* in italic used to define Learning Outcomes are detailed in Annex.

Detail of criteria used to assess acquired skills :
ÅActivities and questionnaires giving evidence of knowing (5%)
ÅActivities and questionnaires giving evidence of comprehension/understanding (5%)
ÅActivities and questionnaires giving evidence of analysis (5%)
ÅActivities and questionnaires giving evidence of synthesis (5%)
ÅActivities and questionnaires giving evidence of evaluation (5%)

Excellent	A
Very Good - above the average standard	B
Good - generally sound well	C
Satisfactory - but with significant shortcomings	D
Sufficient - performance meets the minimum criteria	E
Fail - some more work required	FX
Fail - considerable further work is required	F

The evaluation of informal learning outcomes will be based on questionnaires and laboratory notebook (self-evaluation, learning diary).

LITERATURE AND STUDY MATERIALS

ÅColorimetry. Fundamentals and Applications by Ohta and Robertson
ÅPrinciples of Color Technology by Billmeyer, Saltzman and Berns
ÅComputational Colour Science Using MATLAB by Stephen Westland, Caterina Ripamonti, Vien Cheung
ÅCIE reports, technical reports and scientific papers provided by the course instructor
ÅTutorials, lectures and notes provided by the course instructor

CONTACT DETAILS

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