32058 - MM - Mathematical Methods

Coordinating unit: 230 - ETSETB - Barcelona School of Telecommunications Engineering
Teaching unit: 731 - OO - Department of Optics and Optometry
Academic year: 2015
Degree: MASTER'S DEGREE IN PHOTONICS (Syllabus 2009). (Teaching unit Optional)
ERASMUS MUNDUS MASTER'S DEGREE IN PHOTONICS ENGINEERING, NANOPHOTONICS AND BIOPHOTONICS (Syllabus 2010). (Teaching unit Optional)
DOCTORAL DEGREE IN PHOTONICS (Syllabus 2007). (Teaching unit Optional)
ECTS credits: 5
Teaching languages: English

Teaching staff
Coordinator: PEDRO TALAVERA SANCHEZ

Teaching methodology
Presencial teaching + activities

Learning objectives of the subject
Concepts and uses of special functions, solutions of differential eqs. Variational methods, perturbation theory, infinite dimensional vector space and tensors. Prior knowledge of algebra and analysis is assumed.
# Content

- **Vectors, matrices and coordinates**
  
  Degree competences to which the content contributes:

- **Complex functions**
  
  Degree competences to which the content contributes:

- **Linear differential eqs. of second order**
  
  Degree competences to which the content contributes:

- **Fourier Series**
  
  Degree competences to which the content contributes:

- **Laplace transformation**
  
  Degree competences to which the content contributes:

- **Theory of distribution**
  
  Degree competences to which the content contributes:

- **Fourier transforms**
  
  Degree competences to which the content contributes:

- **Partial differential eqs.**
  
  Degree competences to which the content contributes:

- **Special functions**
  
  Degree competences to which the content contributes:
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- **Infinite dimensional vector spaces**

  Degree competences to which the content contributes:

- **Green’s function**

  Degree competences to which the content contributes:

- **Variational methods**

  Degree competences to which the content contributes:

- **Perturbation methods**

  Degree competences to which the content contributes:

**Qualification system**

- Problems to be handled each chapter (40%)
- Exam (60%)

**Regulations for carrying out activities**

The usual in University teaching

**Bibliography**

**Basic:**

**Complementary:**