



Technology and its Integration into
Mathematics Education
Málaga, 6th – 10th July 2010

Integrating a new Derive 6 Video User Guide into Virtual Teaching



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Objectives

- Integrate a new Video User Guide into Virtual Teaching
- Encourage students to work with Derive software
- Improve teaching methods
- Help students cope with the incremental homework overload after the implementation of the new Bologna academic syllabus for 2010-11



BACKGROUND



Subject

- Name of virtual subject: “*Fundamentos básicos de variable compleja desde el punto de vista de un programa de cálculo simbólico*”
- Teachers of subject:
 - José Luis Galán García
 - Pedro Rodríguez Cielos
 - Yolanda Padilla Domínguez

Objectives of the subject

- Orientated to any student of any degree
- Compensate the lack of complex variable knowledge in some engineering degrees
- Acquire skills in the realization of basic operations with complex numbers
- Manage with the main functions of complex variables
- Understand the concepts of differentiation and integration of complex functions
- Understand the Residues Theorem and its application to the integration in the Real Domain
- Give the student the chance to understand the use of symbolic computation in the study of complex variable

Syllabus

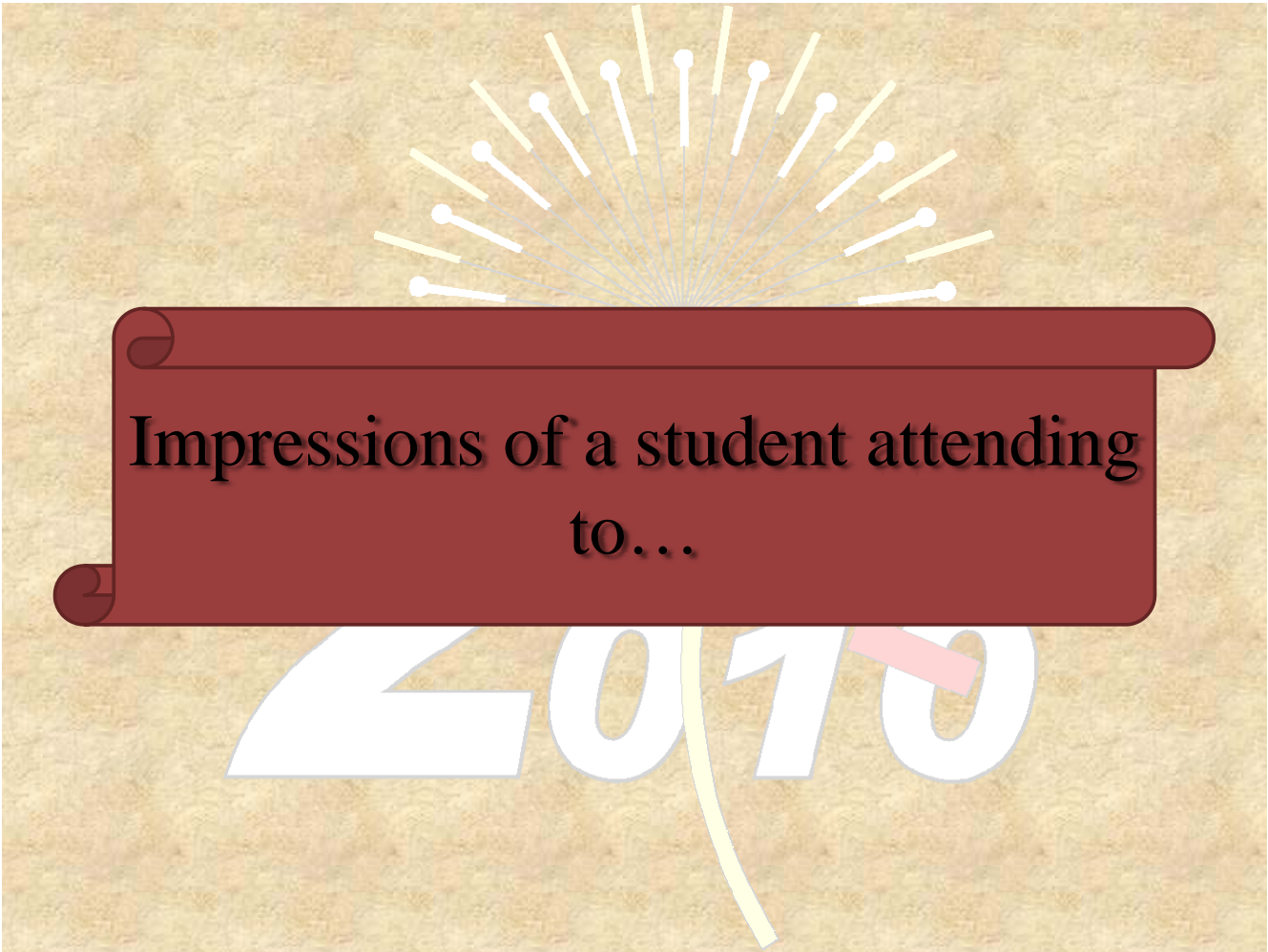
- Basic definitions. Fundamental operations with complex numbers
- Graphic representation of complex numbers. Different ways of representing complex numbers. De Moivre's Formula
- Nth root of a complex number. Curves and regions in the complex plane
- Complex variable functions
- Differentiation of complex variable functions
- Integration of complex variable functions
- The Residues Theorem
- The application of the Residues Theorem in the integration of Real variable functions

Methodology

- Acquire the basic concepts of each topic by reading a short introduction
- Review of sample exercises
- Application of the knowledge acquired solving exercises
- Optional end of course work

Evaluation

- Access to the subject's platform (contents, activities, links...)
- Realization of self-evaluation questionnaires
- Realization of proposed exercises
- Realization of computer practical's proposals
- Realization of an optional end of course work
- Participation in forums and chats of the subject



Impressions of a student attending to...

... the syllabus

- It covers the basic aspects of complex variable
- Provides the student with the sufficient knowledge of complex variable
- Allows the students of Telecommunications Engineering to apply the knowledge obtained in their specific complex variable subject to symbolic computation

...the methodology

- A short introduction to each topic maintains the student awake in the subject
- Having solved problems allows the student to see how to solve the proposed exercises
- Solving problems allows the student to know if they've acquired the knowledge

...the evaluation

- The access to platforms, forums and chats encourages the pupil to participate in the subject and take an active role in it
- Self-evaluation questionnaires encourages personal work
- Realization of computer practicals allows the student to apply the computational knowledge acquired during the subject

My optional end of course work

Derive 6 Video User Guide

Why a video user guide?

- The majority of students have never seen Derive before
- Videos make the user guide entertaining
- Videos allows the user to stop, repeat, rewind...and makes it interactive
- Observing the steps to follow makes it easier when you start working with Derive

How has it been integrated into the subject?

- The video user guide has been allocated on the internet
- Students have been using it over the course of the subject and giving their impressions
- A first version has been done in Spanish, although it is thought to be translated into English for a wider range of users



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www.matap.uma.es/profesor/jl_galan/Derive/VideoTutorial/



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