VNIVERSITAT ID VALÈNCIA

COURSE DATA

Data Subject	
Code	33122
Name	Mathematics I
Cycle	Grade
ECTS Credits	6.0
Academic year	2019 - 2020

Study (s)			
Degree	**Center**	**Acad. year**	**Period**
1109 - Degree in Biochemistry and Biomedical Sciences	Faculty of Biological Sciences	1	First term

Subject-matter		
Degree	**Subject-matter**	**Character**
1109 - Degree in Biochemistry and Biomedical Sciences	3 - Matemáticas	Basic Training

Coordination	
Name	**Department**
CARRERAS MARTINEZ, FRANCISCO	205 - Geometry and Topology

SUMMARY

The course "Mathematics I" fits into the basic science education every student of Biochemistry and Biomedical Sciences should acquire before fully entering into the issues specific of the degree.

The subject must, first, fill gaps in mathematical knowledge of many students, who have come to the University without studying mathematics in the second year of high school.

Consistently with this, the course begins with a preamble in which issues such as numbers and vector operations, elementary functions, graphs of functions and their interpretation,... are recalled.

On the other hand, basic math skills should be given for all experimental science: a) the differential and integral calculus necessary to see how math is involved in issues related to speed, slope, the determination of maximum and minimum measurement areas, ..., b) an introduction to differential equations, with more emphasis on the concept and the meaning of the solutions than on the methods of solution, firstly because this is what matters most for a user who is not going to be a professional mathematician and, secondly, because of time constraints, c) an introduction to the methods of numerical calculations, as most of the mathematical problems they will find have no exact solution and we must resort to these

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methods, using software for it.

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

There are no specified restrictions on enrollment with other subjects of the curriculum.

OUTCOMES

1101 - Degree in Biochemistry and Biomedical Sciences

- Capacidad de pensamiento lógico-matemático.

- Utilización del lenguaje matemático y estadístico.

- Aplicar conceptos matemáticos a casos prácticos de índole biológica.

- Distinguir las propiedades de los distintos tipos de funciones matemáticas básicas.

- Saber representar gráficamente funciones matemáticas básicas.

- Comprender el concepto de derivada y su uso para determinar los intervalos de crecimiento y decrecimiento de una función.

- Saber discutir la existencia o no de soluciones de un sistema de ecuaciones lineales y poder calcularlas.

- Comprender el concepto de integral de una función y su relación con el área comprendida bajo la misma.

- Saber calcular las soluciones de las ecuaciones diferenciales más sencillas.

LEARNING OUTCOMES

-Ability of mathematical thinking.
-Using mathematical language.
-Apply mathematical concepts to practical cases of biological nature.
-Learn basic mathematical functions graphically.
-Knowing to discuss the existence of solutions of a system of linear equations and to calculate them.
-Acquire minimum skills of differential and integral calculus
-Namely calculate the solutions of easy differential equations.

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DESCRIPTION OF CONTENTS

1. Mathematics I

A. - The Basics.

2. - Limits. Continuous functions.

3. - The derivative.

4. - Optimization.

5. - The integral for functions of one variable.

6. - The definite integral.

7. - Ordinary differential equations of first order.

8. - Some differential equations in biology and the environment.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	31,00	100
Computer classroom practice	26,00	100
Tutorials	3,00	100
Preparation of evaluation activities	16,00	0
Preparing lectures	26,00	0
Preparation of practical classes and problem	26,00	0
TOTAL	128,00	

TEACHING METHODOLOGY

Theoretical classes with non-mandatory attendance.

Practical classes and problem-solving learning concepts using a software in the computer classroom, with compulsory attendance.

Performance of works (based on practical classes) using the computer in order to resolve questions of all parts of the program. Spend regular checks at the seminars provided for this purpose to ensure they are working on the issue and to receive advice on embodiment thereof.

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EVALUATION

The evaluation will be implemented through:

- An objective test at the end of the semester, consisting of a test consisting essentially of practical questions. The grade in this exam will have 80% of the final grade. To perform this average weighting it is necessary to obtain a minimum score of 4 out of 10 in this test.
- Attendance at practical activities and tutorials is compulsory and a prerequisite to pass the course. (80% attendance to pass the course).
- They require the submission of all proposed work to each student, which will be graded. The weight of the grade in the course will be 20% of the final grade. To perform this average weighting it is necessary to obtain a minimum score of 4 out of 10 in the grade of these works.

REFERENCES

Basic

- J. Stewart: Cálculo : conceptos y contextos, Tercera Edición, International Thomson, México, 1983

  Claudia Neuhauser: "Matemáticas para Ciencias", Ed. Pearson/Prentice Hall, segunda edición, 2009.

  R.Larson, B.H. Edwards: Cálculo 1 Mc Graw Hill 2010.
  D.G. Zill, W.S. Wright: Cálculo de una variable Mc Graw Hill 2011.

Additional

- James Callahan, Kenneth Hoffman, David Cox, Donal OShea, Harriet Pollatsek, Lester Senechal : Calculus in Context . The Five College Calculus Project. http://math.smith.edu/Local/cicintro/cicintro.html

  K. Binmore, J. Davies, "Calculus, concepts and methods", Cambridge U. P.2001

  S. L. Salas, E. Hille."Calculus I y II", 1994, I Reverté, Barcelona

  S. T. Tan: Applied Calculus for the Managerial, Life, and Social Sciences, 5th Edition, Thomson Learning, Belmont 2002

  G.B. Thomas, R.L. Finney. "Cálculo con Geometría Analítica", 1987, Addison-Wesley Iberoamericana, Wilmington

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ADDENDUM COVID-19

This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council

English version is not available