



## IDENTIFYING DATA

### (\*)Matemáticas: Cálculo I

|                     |  |                 |      |            |
|---------------------|--|-----------------|------|------------|
| Subject             | (*)Matemáticas:<br>Cálculo I   |                 |      |            |
| Code                | V12G350V01104  |                 |      |            |
| Study programme     | Grado en<br>Ingeniería en<br>Química Industrial  |                 |      |            |
| Descriptors         | ECTS Credits   | Choose          | Year | Quadmester |
|                     | 6  | Basic education | 1st  | 1st        |
| Teaching language   | Spanish<br>Galician  |                 |      |            |
| Department          |  |                 |      |            |
| Coordinator         | Martínez Martínez, Antonio   |                 |      |            |
| Lecturers           | Bajo Palacio, Ignacio<br>Busto Ulloa, Saray<br>Díaz de Bustamante, Jaime<br>Estévez Martínez, Emilio<br>Martínez Martínez, Antonio<br>Martínez Torres, Javier<br>Meniño Cotón, Carlos<br>Prieto Gómez, Cristina Magdalena<br>Rodal Vila, Jaime Alberto<br>Vidal Vázquez, Ricardo |                 |      |            |
| E-mail              | antonmar@uvigo.es  |                 |      |            |
| Web                 | <a href="http://moovi.uvigo.gal/">http://moovi.uvigo.gal/</a>  |                 |      |            |
| General description | (*)O obxectivo desta materia é que o estudante adquira o dominio das técnicas básicas de cálculo diferencial nunha e en varias variables e de cálculo integral nunha variable que son necesarias para outras materias que debe cursar na titulación.                             |                 |      |            |

## Skills

|      |   |
|------|---|
| Code |   |
| B3   | CG3 Knowledge in basic and technological subjects that will enable students to learn new methods and theories, and provide them the versatility to adapt to new situations.   |
| B4   | CG4 Ability to solve problems with initiative, decision making, creativity, critical thinking and the ability to communicate and transmit knowledge and skills in the field of industrial engineering specializing in Industrial Chemistry.   |
| C1   | CE1 Ability to solve mathematical problems that may arise in engineering. Ability to apply knowledge about: linear algebra, geometry, differential geometry, differential and integral calculus, differential equations and partial differential equations, numerical methods, numerical algorithms, statistics and optimization. |
| D1   | CT1 Analysis and synthesis.   |
| D2   | CT2 Problems resolution.  |
| D6   | CT6 Application of computer science in the field of study.  |
| D9   | CT9 Apply knowledge.  |
| D14  | CT14 Creativity.  |
| D16  | CT16 Critical thinking.   |

## Learning outcomes

| Expected results from this subject | Training and Learning Results |    |     |
|------------------------------------|-------------------------------|----|-----|
| (*)                                | B3                            | C1 | D1  |
| (*)                                | B3                            | C1 | D1  |
| (*)                                | B3                            | C1 | D2  |
|                                    | B4                            |    | D9  |
|                                    |                               |    | D14 |
|                                    |                               |    | D16 |

|     |          |    |                              |
|-----|----------|----|------------------------------|
| (*) | B3<br>B4 | C1 | D1<br>D2<br>D9<br>D14<br>D16 |
| (*) | B4       | C1 | D2<br>D6<br>D9<br>D16        |

### Contents

| Topic   |   |
|---|---|
| (*)   | (*)   |
| (*)Cálculo diferencial de funcións dunha e varias variables | (*)Cálculo diferencial de funcións reais dunha variable real<br>Cálculo diferencial de funcións de varias variables reais |
| (*)Cálculo integral de funcións dunha variable              | (*)A integral de Riemann. Cálculo de primitivas.<br>Integrais impropias.<br>Aplicacións da integral.                      |

### Planning

|                                 | Class hours | Hours outside the classroom | Total hours |
|---------------------------------|-------------|-----------------------------|-------------|
| Problem solving                 | 20.5        | 30                          | 50.5        |
| Laboratory practical            | 12.5        | 5                           | 17.5        |
| Lecturing                       | 32          | 39                          | 71          |
| Problem and/or exercise solving | 3           | 3                           | 6           |
| Essay questions exam            | 2           | 3                           | 5           |

\*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

### Methodologies

|                      | Description   |
|----------------------|---|
| Problem solving      | (*)O profesor resolverá problemas e exercicios tipo e o alumno terá que resolver exercicios similares.                    |
| Laboratory practical | (*)Empregaranse ferramentas informáticas para resolver exercicios e aplicar os coñecementos obtidos nas clases de teoría. |
| Lecturing            | (*)O profesor exporá nas clases teóricas os contidos da materia.  |

### Personalized assistance

| Methodologies        | Description |
|----------------------|-------------|
| Problem solving      |             |
| Laboratory practical |             |

### Assessment

|                                 | Description  | Qualification | Training and Learning Results |    |                                    |
|---------------------------------|--|---------------|-------------------------------|----|------------------------------------|
| Problem and/or exercise solving | (*)Realizaranse probas escritas e/ou traballos.                      | 40            | B3<br>B4                      | C1 | D1<br>D2<br>D6<br>D9<br>D14<br>D16 |
| Essay questions exam            | (*)Farase un exame final sobre os contidos da totalidade da materia. | 60            | B3<br>B4                      | C1 | D1<br>D2<br>D9                     |

### Other comments on the Evaluation

The \*avaliación\* continuous \*levará\* to cape envelope the previously exposed criteria. Those students that no receive \*A\* \*avaliación\* continuous \*será\* evaluated with a final examination envelope the contents of the totality of the subject, that \*suporá\* 100% of the note.

The \*avaliación\* of the students in second announcement \*consistirá\* in one examination envelope the contents of the totality of the subject, that \*suporá\* 100% of the note.

Commitment \*A\*ico:

"\*Esp\*rase That the present student a behaviour \*A\*ico suitable. In case to detect a behaviour no \*A\*ico (copy, \*plaxio, \*utilizaci\*n of devices \*electr\*nicos unlicensed, and others) will consider that the student no \*re\*ne the necessary requirements to surpass the subject. In this case to \*cualificaci\*n global in the present course \*acad\*cat \*ser\* of \*suspensio (0.0)."

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### Sources of information

#### Basic Bibliography

Burgos, J., **Cálculo Infinitesimal de una variable**, 2ª, McGraw-Hill, 2007

Burgos, J., **Cálculo Infinitesimal de varias variables**, 2ª, McGraw-Hill, 2008

Galindo Soto, F. y otros, **Guía práctica de Cálculo Infinitesimal en una variable**, 1ª, Thomson, 2003

Galindo Soto, F. y otros, **Guía práctica de Cálculo Infinitesimal en varias variables**, 1ª, Thomson, 2005

Larson, R. y otros, **Cálculo 1**, 9ª, McGraw-Hill, 2010

Larson, R. y otros, **Cálculo 2**, 9ª, McGraw-Hill, 2010

Stewart, J., **Cálculo de una variable. Trascendentes tempranas**, 7ª, Thomson Learning, 2014

#### Complementary Bibliography

García, A. y otros, **Cálculo I**, 3ª, CLAGSA, 2007

García, A. y otros, **Cálculo II**, 2ª, CLAGSA, 2006

Rogawski, J., **Cálculo. Una variable**, 2ª, Reverte, 2012

Rogawski, J., **Cálculo. Varias variables**, 2ª, Reverte, 2012

Tomeo Perucha, V. y otros, **Cálculo en una variable**, 1ª, Garceta, 2011

Tomeo Perucha, V. y otros, **Cálculo en varias variables**, 1ª, Garceta, 2011

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### Recommendations

#### Subjects that continue the syllabus

Mathematics: Calculus 2 and differential equations/V12G330V01204

#### Subjects that are recommended to be taken simultaneously

Mathematics: Algebra and statistics/V12G330V01103