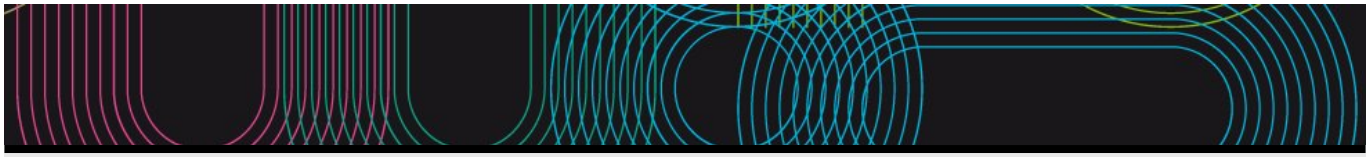

| IDENTIFYING DATA | | | | |
|---|---|---|---|---|
| **Chemistry: Chemistry** | | | | |
| Subject | Chemistry: Chemistry | | | |
| Code | P03G370V01204 | | | |
| Study programme | Grado en Ingeniería Forestal | | | |
| Descriptors | ECTS Credits | Choose | Year | Quadmester |
| | 9 | Basic education | 1st | 2nd |
| Teaching language | | | | |
| Department | | | | |
| Coordinator | Cancela Carral, María Ángeles | | | |
| Lecturers | Cancela Carral, María Ángeles<br>Sánchez Bermúdez, Ángel Manuel | | | |
| E-mail | chiqui@uvigo.es | | | |
| Web | http://faitic.uvigo.es/ | | | |
| General description | (*)Esta materia pretende repasar e homoxenizar os conceptos básicos de química con fin de que sirvan de base para outras materias. | | | |

| Training and Learning Results | |
|---|---|
| Code | |
| B1 | Ability to understand the biological, chemical, physical, mathematical and representation systems necessary for the development of professional activity, as well as to identify the different biotic and physical elements of the forest environment and renewable natural resources susceptible to protection, conservation and exploitations in the forest area. |
| C7 | Basic knowledge of general chemistry, organic and inorganic chemistry and its applications in engineering. |
| D4 | Sustainability and environmental commitment |
| D7 | Skill in the use of IT tools and ICTs. |
| D8 | Ability to solve problems, critical reasoning and decision making |
| D9 | Teamwork skills, skills in interpersonal relationships and leadership. |
| D10 | Autonomous Learning |

| Expected results from this subject | |
|---|---|
| Expected results from this subject | Training and Learning Results |

| | | | |
|---|---|---|---|
| 1R. 2018 Knowledge and understanding of the mathematicians and other inherent basic sciences to the his speciality in engineering, it a level that allow them purchase the rest of the competitions of the qualifications. | B1 | C7 | D4<br>D7<br>D8 |
| 3R. 2018 Be conscious of the multidisciplinary context of the engineering. | | | D9 |
| 4R. 2018 Capacity to #analyze products, processes and complex systems in the his field of study; choose and apply analytical methods, of calculation and experimental *relevantes of form *relevante and interpret correctly the results of these analyses. | | | D10 |
| 5R. 2018 Capacity to identify, formulate and resolve problems of engineering in the his speciality; choose and apply analytical methods, of calculation and experiments properly established; Recognize the importance of the social restrictions, of health and security, environmental, economic and industrial. | | | |
| 6R. 2018 Capacity to project, design and develop complex products (pieces, component, products finished, etc.), processes and systems of the his speciality, that fulfil the requirements established, including the knowledge of the social aspects, of health and environmental security, economic and industrial; as well as select and apply methods of appropriate project. | | | |
| 7R. 2018 Capacity of the project using any knowledges advanced of the his speciality in engineering. | | | |
| 8R. 2018 Capacity to realize bibliographic researches, consult and use databases and other sources of information with discretion, to realize @simulación and analysis with the objective to realize investigations on technical subjects of the his speciality. | | | |
| 9R. 2018 Capacity to consult and apply codes of good practices and security of the his speciality. | | | |
| 10R. 2018 Capacity and capacity to project and realize experimental investigations, interpret results and obtain conclusions in the his field of study. | | | |
| 12R. 2018 practical Competition to resolve complex problems, realize complex projects of engineering and realize specific investigations stop his speciality. | | | |
| 13R. 2018 Knowledge of the application of materials, teams and tools, technological processes and of engineering and his limitations within the scope of the his speciality. | | | |
| 19R. 2018 Capacity to communicate of effective way information, ideas, problems and solutions in the field of the engineering and with the society in general. | | | |
| 21R. 2018 Capacity to recognize the need of a continuous training and realize this activity of independent way during his professional life. | | | |
| 22R. 2018 Capacity to be to the day of the scientific and technological news. | | | |

## Contents

| Topic | |
|---|---|
| 1. Fundamental concepts. | Atoms. Periodic table. Molecules. Mixes. Units of concentration. Chemical reactions and stoichiometry. |
| 2.- Atomic structure and chemical link. | Quantum mechanical description. Periodic properties. Covalent link. Geometry and hybridisation. Polarity. Ionic link and metallic Link. Intermolecular strengths |
| 3. Gases, solids and liquids. Ideal gas, real gas. Liquid state and solid state. | Ideal gas, real gas. Liquid state and solid state. |
| 4. Thermodynamics and Thermochemical | Energy. Enthalpy. Calorimetry. Free energy and spontaneity. |
| 5.- Chemical balances | Balance Gaseous chemical, acid- Base, solubility, balance redox. |
| 6.- Kinetical chemical | Speed of reaction and kinetical equation |
| 7.- Basic concepts of organic chemistry. | Functional groups, isomerism. Reactions and intervals. Mechanisms of reaction |
| 8.- Basic principles of inorganic chemistry | Metallurgy and chemistry of metals |
| 9.- Chemical industrial. | Ways of operation. Processes and basic operations. Diagrams of flow. |
| 10.- Exploitation Of the biomass. Biorefinery | Bioenergy utilization: biopetroleum, biogas, biodiesel and bioethanol<br>Use alimentary: vitamins, mineral and feed.<br>Harnessing Like biomaterials: bioplastics and biopolymers |

## Planning

| | Class hours | Hours outside the classroom | Total hours |
|---|---|---|---|
| Laboratory practical | 14 | 22 | 36 |
| Seminars | 2 | 4 | 6 |
| Presentation | 1 | 3 | 4 |
| Problem solving | 16 | 54 | 70 |
| Lecturing | 45 | 62 | 107 |

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

## Methodologies

| | Description |
|---|---|

| | |
|---|---|
| Laboratory practical | Sessions of laboratory of two hours in groups of two students, of where will explain the appearances applied of the part of the theoretical contents. Each *prácticatiene incorporated a series of questions that have to be delivered before the realisation of the following practical. |
| Seminars | Group tutoring of compulsory assistance, in where the students explain the work realised on a number reduced of exercises proposed previously. |
| Presentation | Each student will have to realise an oral presentation and written of any of the practices realised in the laboratory. |
| Problem solving | They will explain and resolve their problems in groups reduced of students.. The students will have to resolve a small number of exercises for each one of the chapters that They will have to deliver to the teacher. |
| Lecturing | Classes in the classroom to numerous groups, in where they explain the corresponding contents to each subject. |

## Personalized assistance

| Methodologies | Description |
|---|---|
| Laboratory practical | they are resolution of real cases. |
| Seminars | In the course, there are nine seminars. The first part of the seminar will be made in classroom and the second part will be made at home. |
| Presentation | It is mandatory to present the project in classroom. |
| Problem solving | It is compulsory to do and deliver the exercises posed in the bulletins of problems. |

## Assessment

| | Description | Qualification | Training and Learning Results |
|---|---|---|---|
| Laboratory practical | It will evaluate the behaviour in the laboratory, as well as the works presented on the practices. | 30 | |
| Seminars | They will make different seminars along the course. The student will have obligation to assist and deliver some problems of each seminar to teacher. | 20 | |
| Problem solving | It will make a final exam of problems to check the knowledges purchased | 25 | |
| Lecturing | They will evaluate the classes of theory with exams type test each two chapters. At the end of the course there will be a global exam of total theory. | 25 | |

## Other comments on the Evaluation

the matter will be pass if you pass each activities that it constitute, so that it can not approve activities independently. The final note will be the sum of each one of the parts.

The official dates can be found in the official table of the Forest Engineering School and web http://forestales.uvigo.es/gl/

## Sources of information

### Basic Bibliography

BROWN, T.L. y otros, **Química: la Ciencia Central**, 7ª, Prentice-Hall, 1998
CHANG, RAYMOND, **Química**, 6ª, McGraw-Hill, 1995
PETRUCCI, HARWOOD, **Química General**, 8ª, Prentice Hall, 2003
Willis, C.J., **Resolucion de problemas de quimica general**, Reverté, 1980

### Complementary Bibliography

KOTZ, JOHN C.y otros, **Química y Reactividad Química**, International Thomson,

## Recommendations

### Subjects that are recommended to be taken simultaneously

Mathematics: Overview of mathematics/P03G370V01203
Mathematics: Mathematics and IT/P03G370V01103

### Other comments

They Consider necessary previous requirements the following:
- Know the system of units.
- Know make basic mathematical calculations.
- Know basic concepts of the type: atoms, element, composed, mix, density, composition and basic inorganic formulation.

It is necessary to achieve the less 50% of the qualification of each one of the avaliation sections to pass the matter.

The assistance the face-to-face educational activities are compulsory. Absences no justified, upper 20% of the hours scheduled, suppose a suspense in each one of the sections and in consequence in the matter.