| Teaching Guide | | | | |
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| Identifying Data | | | | 2020/21 |
| Subject (*) | Physical-chemistry of polymers | | Code | 730495011 |
| Study programme | Mestrado Universitario en Materiais Complexos: Análise Térmica e Reoloxía (plan 2012) | | | |
| Descriptors | | | | |
| Cycle | Period | Year | Type | Credits |
| Official Master's Degree | 1st four-month period | First | Obligatory | 3 |
| Language | English | | | |
| Teaching method | Face-to-face | | | |
| Prerequisites | | | | |
| Department | | | | |
| Coordinador | Piro , B. | E-mail | piro@univ-paris-diderot.fr | |
| Lecturers | Mammeri , Fayna<br>Piro , B. | E-mail | fayna.mammeri@univ-paris-diderot.fr<br>piro@univ-paris-diderot.fr | |
| Web | | | | |
| General description | This course is an introduction to the science of polymers and provides an overview of characterization, structure and properties of polymers. It is illustrated by examples of applications of polymers. | | | |
| Contingency plan | 1. Modifications to the contents<br>The contents are not modified<br><br>2. Methodologies<br>*Teaching methodologies that are maintained<br>Guest lecture/keynote speech (via Teams)<br>Supervised projects (tutored via Teams or email)<br><br>*Teaching methodologies that are modified<br>Laboratory practice. It is replaced by the presentation of practical cases in the Keynote sessions and the reading and discussion of scientific articles (analysis of documentary sources).<br><br>3. Mechanisms for personalized attention to students<br>- Email: Daily. Used to make queries, request virtual meetings to resolve doubts and monitor the work being supervised.<br>- Microsoft Teams: Personalized tutoring of students<br>- Moodle: This will be used as a repository for documentation provided to students.<br><br>4. Modifications in the evaluation<br>Keynote Sessions 60%<br>Supervised projects 30%<br>Analysis of documentary sources 10%<br><br>*Evaluation observations: -<br><br>5. Modifications to the bibliography or webgraphy<br>No change. | | | |

| Study programme competences / results | |
|---|---|
| Code | Study programme competences / results |
| A5 | Understanding the relationships between structure and properties of materials |

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|---|---|
| B1 | Knowledge and understanding to provide a basis or opportunity for originality in developing and / or applying ideas, often in a research context |
| B2 | The students have the skill to apply their knowledge and their ability to solve problems in new or unfamiliar contexts within broader (or multidisciplinary) contexts related to their field of study |
| B4 | That the students can communicate their conclusions and the knowledge and last reasons behind that conclusions to specialized and non specialized audience in a clear and unambiguous way |
| B8 | Applying a critical, logical and creative way of thinking |
| B12 | Communicate effectively in the work environment |
| B13 | Analysis-oriented attitude |
| B14 | Ability to find and manage the information |
| B18 | Ability for abstraction, understanding and simplification of complex problems |
| B21 | To assess the importance of research, innovation and technological developments in the socio-economic and cultural progress of society |
| C2 | Have a good command of spoken and writing expression and understanding of a foreign language. |
| C4 | Developing for the exercise of an open, educated, critical, committed, democratic and solidary citicenship, able to analyze reality, diagnose problems, formulate and implement solutions based on knowledge and oriented to the common good. |
| C6 | Critically assessing the knowledge, technology and information available to solve the problems they face with. |
| C8 | To assess the importance of research, innovation and technological development in the socio-economic and cultural progress of society. |

| Learning outcomes | | | |
|---|---|---|---|
| Learning outcomes | Study programme competences / results | | |
| This course is designed as an introduction to the basic science of polymers and provides an overview of characterization, structure and properties of polymers. The course offers an introduction to the science underlying the synthesis and characterization of polymer morphology polymers, and information about their structures and properties. The course also illustrates some examples of applications of polymers. | AR5 | BR1<br>BR2<br>BR4<br>BR8<br>BR12<br>BR13<br>BR14<br>BR18<br>BR21 | CR2<br>CR4<br>CR6<br>CR8 |

| Contents | |
|---|---|
| Topic | Sub-topic |
| 1. Physicochemical fundamentals of polymers | Physicochemical of polymers |
| 2. Synthesis and characterization of polymers | - Polymer synthesis: stepwise polymerization and PCR<br>- Structure: chain conformations, amorphous polymers and semicrystalline polymers morphology<br>- Molecular weight measurement) |
| 3. Introduction to polymer processing | - Polymer processing techniques |
| 4. Mechanical and rheological properties | - behavioral stress / strain<br>- viscoelasticity<br>- nonlinear mechanical behavior and rheological. |

| Planning | | | | |
|---|---|---|---|---|
| Methodologies / tests | Competencies / Results | Teaching hours (in-person & virtual) | Student?s personal work hours | Total hours |
| Guest lecture / keynote speech | A5 B1 B2 B12 B13 B18 | 15 | 10 | 25 |

| | | | | |
|---|---|---|---|---|
| Laboratory practice | B8 B14 B21 C4 C6 C8 | 15 | 5 | 20 |
| Supervised projects | B2 B4 B14 B21 C2 | 5 | 25 | 30 |
| Personalized attention | | 0 | | 0 |
| **(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.** | | | | |

| Methodologies | |
|---|---|
| **Methodologies** | **Description** |
| Guest lecture / keynote speech | Presentation given by the professor, on a schematic basis, focusing on the main topics, covering both theoretical and practical issues. |
| Laboratory practice | Performance of practical activities such as demonstrations, exercises, experiments, etc.. |
| Supervised projects | Activities whose purpose is that the students enlarge the study of the topics pesented in the program and consolidate their acquired knowledge and capabilities. These activities should also help the students learn and improve their capabilities in literature survey. |

| Personalized attention | |
|---|---|
| **Methodologies** | **Description** |
| Guest lecture / keynote speech<br>Laboratory practice<br>Supervised projects | The personalized attention to students, understood as a support in the teaching-learning process, will take place in the hours of tutoring of the professor.<br><br>No academic dispensation is accepted. |

| Assessment | | | |
|---|---|---|---|
| **Methodologies** | **Competencies / Results** | **Description** | **Qualification** |
| Guest lecture / keynote speech | A5 B1 B2 B12 B13 B18 | Examination or objective test. | 50 |
| Laboratory practice | B8 B14 B21 C4 C6 C8 | Continuous assessment through monitoring of student work in the classroom, laboratory and / or tutorials. | 20 |
| Supervised projects | B2 B4 B14 B21 C2 | Presentation (oral and written) of the supervised work. | 30 |

| Assessment comments |
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| Sources of information | |
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| **Basic** | Apuntes e documentación facilitada en clase ou a través do correo electrónico. |
| **Complementary** | |

| Recommendations |
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| **Subjects that it is recommended to have taken before** |
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| **Subjects that are recommended to be taken simultaneously** |
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| **Subjects that continue the syllabus** |
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| **Other comments** |

To help achieve a sustained immediate environment and meet the objective of action number 5: "Healthy and sustainable environmental and social teaching and research" of the "Green Campus Ferrol Action Plan:The delivery of the documentary work carried out in this subject:They will be requested in virtual format and/or computer supportIt will be done through Moodle, in digital format without the need to print them.If it is necessary to make them on paper:Plastics shall not be usedDouble-sided printing shall be carried out.Recycled paper will be used.Printing of drafts shall be avoided.- A sustainable use of resources and the prevention of negative impacts on the natural environment must be made.- It will work to identify and change gender biases and attitudes, and influence the environment to change them and promote values of respect and equality.- Situations of discrimination should be identified and actions and measures proposed to correct them.