Teaching Guide				
Identifying Data				2023/24
Subject (*)	Recommender Systems		Code	614G02044
Study programme	Grao en Ciencia e Enxeñaría de Datos			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	2nd four-month period	Fourth	Optional	6
Language	Spanish			
Teaching method	Face-to-face			
Prerequisites				
Department	Ciencias da Computación e Tecnoloxías da Información			
Coordinador	Parapar López, Javier	E-mail	javier.parapar@udc.es	
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Web				
General description	Recommendation systems are used in a variety of areas, with commonly recognized examples taking the form of playlist generators for video and music services, product advocates for online stores, or content advocates for social media platforms, and advocacy advocates. open web content. By the end of this course, you should be able to identify potential application domains for recommendation systems, design recommendation systems, identify potential strengths and weaknesses of a recommendation model, and compare design alternatives.			

Study programme competences	
Code	Study programme competences
A27	CE27 - Compresión e dominio de fundamentos e técnicas básicas para a procura e o filtrado de información en grandes coleccións de datos.
B2	CB2 - Que os estudantes saiban aplicar os seus coñecementos ao seu traballo ou vocación dunha forma profesional e posúan as competencias que adoitan demostrarse por medio da elaboración e defensa de argumentos e a resolución de problemas dentro da súa área de estudo
B3	CB3 - Que os estudantes teñan a capacidade de reunir e interpretar datos relevantes (normalmente dentro da súa área de estudo) para emitir xuízos que inclúan unha reflexión sobre temas relevantes de índole social, científica ou ética
B4	CB4 - Que os estudantes poidan transmitir información, ideas, problemas e solucións a un público tanto especializado como non especializado
B7	CG2 - Elaborar adecuadamente e con certa orixinalidade composicións escritas ou argumentos motivados, redactar plans, proxectos de traballo, artigos científicos e formular hipóteses razoables.
B8	CG3 - Ser capaz de manter e estender formulacións teóricas fundadas para permitir a introdución e explotación de tecnoloxías novas e avanzadas no campo.
B9	CG4 - Capacidade para abordar con éxito todas as etapas dun proxecto de datos: exploración previa dos datos, preprocesado, análise, visualización e comunicación de resultados.
B10	CG5 - Ser capaz de traballar en equipo, especialmente de carácter multidisciplinar, e ser hábiles na xestión do tempo, persoas e toma de decisións.
C1	CT1 - Utilizar as ferramentas básicas das tecnoloxías da información e as comunicacións (TIC) necesarias para o exercicio da súa profesión e para a aprendizaxe ao longo da súa vida.
C4	CT4 - Valorar a importancia que ten a investigación, a innovación e o desenvolvemento tecnolóxico no avance socioeconómico e cultural da sociedade.

Learning outcomes	
Learning outcomes	Study programme competences

Know, understand and analyze the different recommendation models	A27	B2 B3 B8 B9	C1 C4
Know, understand and analyze the techniques for an efficient implementation of scalable recommendation systems	A27	B4 B7 B10	
Know, understand and analyze the evaluation methodologies of recommendation systems	A27	B4 B8 B9	C4

Contents	
Topic	**Sub-topic**
Introduction	Recommender Systems
Preferences elicitation	Ratings, elicitation
Recommendation models	Collaborative filtering , content and hybrid
Evaluation of recommendation systems	Metrics and protocols
Advanced recommendation models	Contextual, social and temporal
Interpretability, justification and risks	User-to-user and Item-to-Item recommendations
Applications and domains	Tasks and use cases

Planning				
Methodologies / tests	**Competencies**	**Ordinary class hours**	**Student?s personal work hours**	**Total hours**
Laboratory practice	B2 B9 B10 C1	15	60	75
Guest lecture / keynote speech	A27 B3 B8 C4	19	54	73
Mixed objective/subjective test	A27 B2 B3 B4 B7 B8 C4	2	0	2
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**
Laboratory practice	Classes dedicated to the development of practical work involving the resolution of complex problems, and the analysis and design of solutions that constitute a means for their resolution. This activity may require students to present their work orally. The work carried out by the students can be done individually or in work groups
Guest lecture / keynote speech	Oral exposition complemented with the use of audiovisual media and the introduction of some questions directed to the students, with the purpose of transmitting knowledge and facilitating learning. In addition to the time of oral exposition by the professor, this formative activity requires the student to dedicate some time to prepare and review on their own the materials object of the class
Mixed objective/subjective test	Final exam

Personalized attention	
Methodologies	**Description**

Laboratory practice	Monitoring of the development of the practices in the reserved hours of laboratory and attention to the student in the necessary cases of problems of particular difficulty The individual work of the students will be evaluated. Values of equality will be promoted following current recommendations.

Assessment			
Methodologies	Competencies	Description	Qualification
Mixed objective/subjective test	A27 B2 B3 B4 B7 B8 C4	Final exam	50
Laboratory practice	B2 B9 B10 C1	Evaluation of the student's assignments	50

Assessment comments
It will be necessary to reach 40% of the score in each part. The evaluation will be considered as not presented when no practical work or final exam is not submitted. Second opportunity The evaluation will be carried out with the same criteria described above. A new deadline will be opened for the delivery of the practical works, in the event that they are not delivered at the first opportunity. - The fraudulent performance of tests or evaluation activities, once verified, will directly imply the qualification of fail in the call in which it is committed: the student will be graded with "suspense" (numerical note 0) in the corresponding call of the academic year, whether the commission of the foul occurs on the first opportunity or on the second. To do this, her rating will be modified in the first opportunity report, if necessary.

Sources of information	
Basic	Ricci, F., Rokach, L., & Shapira, B. Recommender systems handbook. Springer, Boston, MA.Jannach, D., Zanker, M., Felfernig, A., & Friedrich, G. (2010). Recommender systems: an introduction. Cambridge University Press.Aggarwal, C. C. (2016). Recommender systems (Vol. 1). Cham: Springer International Publishing.Banik, R. (2018). Hands-on recommendation systems with Python: start building powerful and personalized, recommendation engines with Python. Packt Publishing Ltd.Ricci, F., Rokach, L., & Shapira, B. Recommender systems handbook. Springer, Boston, MA.Jannach, D., Zanker, M., Felfernig, A., & Friedrich, G. (2010). Recommender systems: an introduction. Cambridge University Press.Aggarwal, C. C. (2016). Recommender systems (Vol. 1). Cham: Springer International Publishing.Banik, R. (2018). Hands-on recommendation systems with Python: start building powerful and personalized, recommendation engines with Python. Packt Publishing Ltd.
Complementary	

Recommendations
Subjects that it is recommended to have taken before
Information Retrieval/614G02027 Machine Learning I/614G02019 Linear Algebra/614G02001
Subjects that are recommended to be taken simultaneously
Subjects that continue the syllabus
Other comments

(*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.