

## PROGRAMA DE CURSO

Código	Nombre			
IN7615	Aprendizaje Automático con Redes Neuronales			
Nombre en Inglés				
Research Seminar I				
SCT	Unidades Docentes	Horas de Cátedra	Horas Docencia Auxiliar	Horas de Trabajo Personal
6	10			
Requisitos			Carácter del Curso	
Estadística y cualquier curso de data mining o data science de la fcfm donde vean el problema de clasificación y cauterización.			Electivo de Pregrado o MGO. Electivo del DSI y del MDS	
Resultados de Aprendizaje				
<p>The main course’s goal is to provide a theoretical and practical perspective on the artificial neural networks model to perform machine learning. The course combines the explanation of theory with practical workshops on every subject.</p> <p>Through the workshops, we use several models (like random forests, ada boost, support vector machines, etc.) to build a real-life data scientist working setup. This way, we can compare with all models in order to show the benefits and costs neural nets have.</p> <p>The workshops are be performed in python using state of the art libraries like KERAS, Tensorflow, Natural Language Tool Kit, among other.</p>				

Actividades de Aprendizaje	Evaluación General
<ul style="list-style-type: none"> <li>• Theory of artificial neural networks (ANN)</li> <li>• 3 Workshops of ANN for classification in traditional problems. (churn prediction, propensity analysis, Sentiment analysis, among other)</li> <li>• Theory of Deep ANN and its applications.</li> <li>• Theory of Text Mining with ANN and 2 workshops on the application of these models for text processing</li> <li>• Theory of web mining and 2 workshops on the application of ANN for web mining</li> </ul>	<ul style="list-style-type: none"> <li>• The evaluation will be in % of attendance to the workshops</li> <li>• One course project</li> </ul>

Contenidos	Comentarios
<ol style="list-style-type: none"> <li>1. Lecture Introduction: Motivation, Methodology and Formalities</li> <li>2. Machine Learning</li> <li>3. Artificial Neural Networks</li> <li>4. Deep Neural Networks</li> <li>5. Text Mining</li> <li>6. Web Mining</li> <li>7. Social Network Mining</li> <li>8. Reinforcement Learning Intro.</li> </ol>	

Bibliografía
<ol style="list-style-type: none"> <li>1. Any book on Data Mining like:               <ol style="list-style-type: none"> <li>a. Machine Learning in Action, Peter Harrington</li> <li>b. Introduction to Machine Learning with Python: A Guide for Data Scientists, Andreas C. Müller (Author), Sarah Guido (Author)</li> </ol> </li> <li>2. Any book on ANN like:               <ol style="list-style-type: none"> <li>a. Neural Networks and Deep Learning: A Textbook, Charu C. Aggarwal</li> <li>b. Neural Network Projects with Python: The ultimate guide to using Python to explore the true power of neural networks through six projects, James Loy</li> </ol> </li> <li>3. Any python reference guide, like:               <ol style="list-style-type: none"> <li>a. Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent, Aurélien Géron (Author)</li> <li>b. Neural Networks with Keras Cookbook: Over 70 recipes leveraging deep learning techniques across image, text, audio, and game bots, V Kishore Ayyadevara</li> <li>c. Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython, Peter Harrington</li> </ol> </li> <li>4. A lot of google when programing.</li> </ol>