



ΔΙΔΡΥΜΑΤΙΚΟ ΠΡΟΓΡΑΜΜΑ ΜΕΤΑΠΤΥΧΙΑΚΩΝ ΣΠΟΥΔΩΝ
ΕΓΚΕΦΑΛΟΣ και ΝΟΥΣ
που οδηγεί σε Μεταπτυχιακό Δίπλωμα Εξειδίκευσης
INTERDISCIPLINARY GRADUATE PROGRAMME in the
BRAIN and MIND sciences
leading to Master's degree



ΠΡΟΓΡΑΜΜΑ ΜΑΘΗΜΑΤΩΝ ΚΟΡΜΟΥ ΤΟΥ ΠΜΣ «ΕΓΚΕΦΑΛΟΣ ΚΑΙ ΝΟΥΣ»

ΣΤ ΕΝΟΤΗΤΑ. Introduction to Computational Neuroscience				
ΗΜ/ΝΙΑ	ΩΡΑ	ΑΙΘΟΥΣΑ	ΤΙΤΛΟΣ ΔΙΑΛΕΞΗΣ	ΔΙΔΑΣΚΩΝ
ΠΑΡ 02/05/2025	10:00-12:00	7Α-01	Introduction to Computational neuroscience	ΠΑΠΟΥΤΣΙ
ΔΕΥ 05/05/2025	12:00-15:00	7Α-01	Basic principles of scientific programming, linear algebra, probability and statistics	ROUSSOS
TET 07/05/2025	12:00-15:00	ΔΙΕΠ	Tutorial I	ROUSSOS/ ALIPRANTIS/ PASCHALIDIS
ΠΑΡ 09/05/2025	12:00-15:00	ΔΙΕΠ	Tutorial - extra	ROUSSOS/ ALIPRANTIS/ PASCHALIDIS
ΔΕΥ 12/05/2025	12:00-15:00	7Α-01	Basic principles of signal processing and differential equations	ROUSSOS
TET 14/05/2025	12:00-15:00	7Α-04	Principal Component Analysis (PCA)	ROUSSOS
ΠΑΡ 16/05/2025	12:00-15:00	ΔΙΕΠ	Tutorial II	ROUSSOS/ ALIPRANTIS/ PASCHALIDIS
ΔΕΥ 19/05/2025	12:00-15:00	7Α-01	Spike Statistics and Information Theory	ROUSSOS
TET 21/05/2025	9.00-12.00	7Α-04	Introduction to Artificial Neural Networks	CHAVLIS
ΠΑΡ 23/05/2025	9.00-12.00	7Α-01	Supervised/Unsupervised learning	CHAVLIS
ΔΕΥ 26/05/2025	9.00-12.00	7Α-01	Introduction to reinforcement learning	ΠΑΠΟΥΤΣΙ
TET 28/05/2025	9.00-12.00	7Α-04	Introduction to reinforcement learning	ΠΑΠΟΥΤΣΙ
ΠΑΡ 30/05/2025	9.00-12.00	7Α-01	Spiking neuron models	CHAVLIS
TET 11/06/2025	10:00-13:00	7Α-04	EXAMS	

Βιβλιογραφία:

1. Arbib, Michael A., ed. *The handbook of brain theory and neural networks*. MIT press, 2003.
2. Ermentrout, Bard, and David H. Terman. *Mathematical foundations of neuroscience*. Vol. 35. New York: springer, 2010.
3. Izhikevich, Eugene M. *Dynamical systems in neuroscience*. MIT press, 2007.
4. Sutton, Richard S., and Andrew G. Barto. *Reinforcement learning: An introduction*. MIT press, 2018.
5. Sterratt, David, et al. *Principles of computational modelling in neuroscience*. Cambridge university press, 2023.
6. Gerstner, Wulfram, et al. *Neuronal dynamics: From single neurons to networks and models of cognition*. Cambridge University Press, 2014.
7. Dayan, Peter, and Abbott, Laurence F. *Theoretical neuroscience: computational and mathematical modeling of neural systems*. MIT press, 2005.

Υλικό online:

Neuromatch Academy Precourse <https://precourse.neuromatch.io/>

1. Python Workshops 1 & 2 (WOD1, WOD2)
2. Linear Algebra (WOD3)
3. Calculus (WOD4)
4. Statistics (WOD5)