

**MBG 640 Advanced Neurobiology
2019 – 2020 Spring Syllabus**

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Catalog Description :

Information about nervous system development, embryonic and adult neurogenesis concepts and importance of neurogenesis on learning, memory and neurodegenerative disorders; discussion of neurorestorative therapies; to enable the students to follow up-to-date techniques and publications

Recommended Reading :

- 1) Principles of Neuroscience; Kandel, Schwartz and Jessell, McGraw Hill, 2000 (ISBN-10: 9780838577011)
- 2) Contemporary articles (as pdf files)

This is a graduate level course. The first 5 weeks will be a general review of developmental neurobiology and introduction to embryonic and adult neurogenesis. Thereafter, the course will consist of brief summary of topics, followed by in-depth discussion of historical as well as contemporary papers. Students will be required to make at least 2 presentations throughout the semester

Week 1	Introduction to the nervous system
Week 2	Neuroanatomy
Week 3	Development of the nervous system – embryonic neurogenesis
Week 4	Adult neurogenic zones and adult neurogenesis
Week 5	Neural stem cell isolation and manipulation
Week 6	Neural stem cell and tissue engineering approaches to traumatic brain injury
Week 7	Neurodegenerative diseases Paper discussions & student presentations (Alzheimer's)
Week 8	Neurodegenerative diseases Paper discussions & student presentations (Parkinson's)
Week 9	Neurodegenerative diseases Paper discussions & student presentations (ALS)
Week 10	Neurodegenerative diseases Paper discussions & student presentations (TBI / SCI)
Week 11	Neurodegenerative diseases Paper discussions & student presentations (Huntington's / MS)
Week 12	Neuroregeneration and tissue engineering Paper discussions & student presentations (neuroregeneration)
Week 13	Neuroregeneration and tissue engineering Paper discussions & student presentations (neuroregeneration)
Week 14	Neuroregeneration and tissue engineering Paper discussions & student presentations (neuroregeneration)

Grading : Midterm presentations 35 %
In-class discussions and attendance 15 %
FINAL (50 pts Final exam, 50 pts take-home review article) 50 %