**Syllabus: Biology 397NP, Neurobiology and Physiology Lab**

Wednesdays 1:25 - 5:25, ISB Room 360

Instructor: Rolf Karlstrom

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Course webpage: see moodle

TA: Jessica Norstog: email: jnorstog@umass.edu

Lab Support: Kate Dorfman email: kdorfman@marlin.bio.umass.edu

Learning Goals/Course Objectives:

*Gain practice in the scientific method and lab research.*

*Develop skills in data collection and analysis.*

*Develop skills in lab techniques used to study physiology and neuroscience.*

*Develop science presentation skills.*

*Provide a knowledge base in neurobiology and physiology*

Outcomes:

*Students will generate and test new hypotheses about animal physiology*

*Students will collect, evaluate, and interpret scientific data.*

*Students will employ critical thinking to solve problems in biological science.*

*Students will improve their ability to communicate orally and in writing in a clear, concise manner.*

*Students will develop an appreciation for unanswered questions in basic research.*

Lab Scheduling (13 sessions, order may depend on Animal Protocol Approval):

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| --- | --- | --- | --- |
| Date | Wk | Lab Exercise | Notes |
| 1/25 | 1 | Intro to Course, Learn iWorx instrumentation and software |  |
| 2/1 | 2 | Mussel Muscle I: Lab exercises I and II, propose an experiment |  |
| 2/8 | 3 | Mussel Muscle II: Perform a real experiment |  |
| 2/15 | 4 | Mussel Muscle III: Analyze results/ 4 slide talks |  |
| 2/22 | 5 | Nerve Conduction I: Learn Backyard Brain, worm prep, design exp. | mussel muscle write-ups due |
| 3/1 | 6 | Nerve Conduction II: Do the experiment |  |
| 3/8 | 7 | Nerve Conduction III: Analyze data/ 4 slide talks |  |
| 3/15 | -- | Spring Break |  |
| 3/22 | 8 | ZF Metabolism I: Learn O2 probe, design/propose experiment  | nerve conductance write-ups due |
| 3/29 | 9 | ZF Metabolism II: Perform experiments (read glucose & fix heads) | Fluorescent Fish! |
| 4/5 | 10 | ZF Metabolism III: Analyze results/4 slide talks |  |
| 4/12 | 11 | Brain, Pituitary, and Organ Dissections, Pituitary Imaging | ISB 364 (Scopes) |
| 4/19 | 12 | Human Senses I: Touch and Hearing, Image Zebrafish Hair Cells | ISB 364 (Scopes) |
| 4/26 | 13 | Finish up day (or Human Senses II: Vision) | Zebrafish lab write-ups due |

Some online resources:

Neuroscience Online, the Open-Access Neuroscience Electronic Textbook. Edited by John Byrne. [McGovern Medical School at UTHealth](http://med.uth.tmc.edu/). <http://neuroscience.uth.tmc.edu/toc.htm>

iWorx videos and ideas online?

Backyard Brain videos and ideas online?

Human sensory biology games online?