



EMMANUEL COLLEGE

The Center for Science Education



SUMMER 2014

Science Content Professional Development Courses for Secondary School Science Teachers

The Center for Science Education at Emmanuel College is offering science content professional development summer institutes at minimal cost for teachers - a \$60 registration fee for each course. Enrollment is restricted to 16 per class. The college reserves the right cancel courses due to under-enrollment.

REGISTRATION \$60.00 REGISTRATION DEADLINE MAY 31ST

The Physics and Biology of DNA

June 30-July 3, 2014 9:00 a.m. – 2:30 p.m.

2 Graduate Credits Available

DNA is the central molecule of life. In addition to being of great biological importance, DNA also provides beautiful examples of basic physical principals. Through lectures, discussions, laboratory, and computer exercises participants will learn about the biological role of DNA and its physical properties. Participants will see a demonstration how biophysical data can be collected from single molecules of DNA and be guided through the analysis of actual data. There will be group discussions on how instruction in both the life and physical sciences can be enhanced by using DNA as an example.

Dr. Alan Price, Assistant Professor of Physics

24-28 PDPs

Neuroscience and Immunology

July 7-10, 2014 9:00 a.m. – 2:30 p.m.

2 Graduate Credits Available

Neuroscience and immunology represent two of the fastest growing sciences in biomedical research. The scope of both of these fields incorporates genetics, cell biology, molecular biology, systems physiology as well as advanced lab techniques including imaging, DNA analysis and both *in vitro* and *in vivo* assays. In this institute participants will be led through an example of the interdisciplinary approach used in the joint ongoing research project currently underway at Emmanuel College. During these four days, time will be split between discussions of the interplay between the nervous and immune systems followed by hands on lab work that will take participants through the process of studying the function of microglial cells, cells that originate in the bone marrow and migrate into the central nervous system. These studies will have important implications in further understanding such diseases as Alzheimer's, Parkinson's and Multiple Sclerosis.

Dr. Josef Kurtz, Associate Professor of Biology

Dr. Todd Williams, Associate Professor of Biology

24-28 PDPs

Green Chemistry

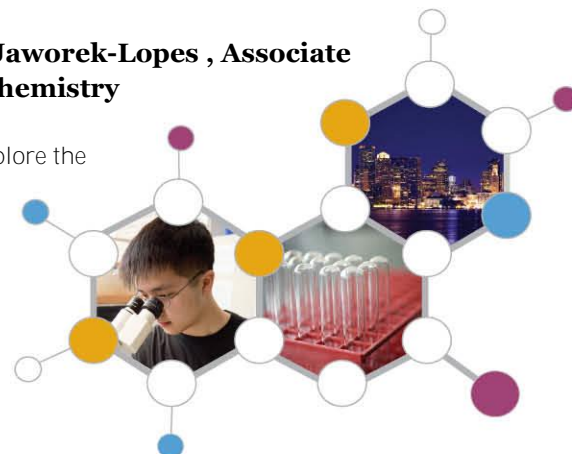
July 7- July 10, 2014 9:00 a.m. – 2:30 p.m.

2 Graduate Credits Available

Green chemistry may be referred to as sustainable chemistry. Participants will explore the principles of green chemistry through lectures, discussions, laboratory, and computer activities. Attendees are encouraged to bring an activity considered "non-green"; the group will work together to provide potential sustainable solutions to these.

Dr. Christine Jaworek-Lopes, Associate Professor of Chemistry

24-28 PDPs



Biology in the Big Picture**July 14-July 17, 2014 9:00 a.m. – 2:30 p.m.****2 Graduate Credits Available**

The world of science is often perceived as existing in a vacuum; the dispassionate search for 'truth' independent of influence and bias. In reality, the practice of science sits right at the intersection of knowledge impacting fields such as law, politics, literature, art, religion and business and being equally subject to influence from these fields and others. What would the science be in going to the moon without Jules Verne? What impact will knowing your genetic sequence have on your future job options? Does prayer play any role in surgical outcomes? We will address these questions (and many others) as we investigate the role of science in the larger world around us.

Dr. Josef Kurtz, Associate Professor of Biology**24-28 PDPs****The Human Microbiota in Health and Disease****July 14- 17, 2014 9:30 a.m. -1:00 p.m.****20-24 PDPs**

Strictly by cell numbers a human being is composed of 25% human cells and 75% microbial cells. While scientists have visualized this since the 17th century, it has been only recently established that these associated microbes, collectively termed the human microbiota, play an essential role in our immunity, health, and disease states. Currently, the link between the human microbiota and health status is the focus of an expanding number of research initiatives and each month numerous insights are emerging. For example particular compositions of the human microbiota are correlatively linked with obesity, autism, and may influence whether or not certain medications we take are effective. By means of lectures and discussions we will explore some of these insights, we will consider the ethical use of human microbiota data and research (for example unregulated probiotics), and in lab sessions we will sequence some of our own microbes to highlight the technologies used.

Dr. Padraig Deighan, Assistant Professor of Biology and Dr. Jason Kuehner

Please sign me up for the following course(s):

1) _____

2) _____

NAME _____ DATE _____

ADDRESS _____

CITY/STATE/ZIP _____

E-MAIL _____ PHONE _____

SCHOOL _____ GRADE LEVEL _____

For Credit Cards: PLEASE PRINT!

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CREDIT CARD # _____

CV2 # _____ EXPIRATION DATE _____

SIGNATURE _____ DATE _____

fax to 617-975-9304

Or pay by check **-\$60.00 per course** made out to **Emmanuel College**. Mail this form and check to:
 Diane Bissaro, Emmanuel College,
 400 The Fenway, Boston, MA 02115

Any questions?

Contact Diane Bissaro

617-735-9713

bissardi@emmanuel.edu