GRADUATE Evening Courses in CHEMISTRY Spring 2019: ORGANIC • INORGANIC • PHYSICAL

- The **Chemistry Department at Rutgers Newark** (http://chemistry.rutgers.edu/) will offer the following Organic, Inorganic and Physical chemistry graduate courses in Spring 2019.
- **When/where:** All courses will be held from 6:00 PM to 9:00 PM, once a week at the Rutgers-Newark campus in Smith Hall Rm. 240 (SMT-240), 101 Warren Street, Newark.
- **Register**: at http://chemistry.rutgers.edu/grad/graduate-courses or scan the code

Principles of Spectroscopy (26:160:540) MONDAYS 6:00 - 9:00 PM

Instructor: Prof. Piotr Piotrowiak PIOTR@NEWARK.RUTGERS.EDU

The course lays down the general theoretical groundwork necessary for the understanding of the interaction between electromagnetic radiation (light) and matter. Practical illustrations will be drawn primarily from electronic and vibrational spectroscopy, however, the main objective is to provide broad conceptual and formal basis applicable to any type of spectroscopy, from routine UV-vis absorption to multidimensional NMR. The course begins with a brief review of undergraduate quantum mechanics and proceeds to introduce the concepts of transition probability, absorption, emission, dispersion, stimulated emission and laser action. Students will use scientific graphing and analysis software which will allow them to explore the response of equations to physically meaningful variables and parameters. In this fashion, a deeper and more intuitive understanding of the underlying physics is achieved.

Special Topics in Organic Chemistry (26:160:512): *"Organic Photochemistry: Applications in Synthesis & Material Science"* TUESDAYS 6:00 - 9:00 PM

Instructor: Prof. Elena Galoppini GALOPPIN@NEWARK.RUTGERS.EDU

This course will cover principles and applications of molecular photochemistry of organic compounds. Key photochemical reactions will be reviewed, with emphasis on mechanistic aspects and synthetic applications. The course will begin with an introduction of the principles of organic photochemistry of selected functional groups with references to classics in synthetic organic photochemistry. The second part of the course will focus on recent applications in synthesis and materials science. Examples of topics will include photochemistry in organized media, photochromism, solar cells, OLEDs, and functional group protections. The students will learn fundamental concepts of photochemical excitation of organic molecules and the molecular events that follow it. The students are expected to describe the photochemistry of organic functional groups, reactions mechanisms and rearrangements following photoexcitation of organic molecules, attain a good knowledge of classical and modern literature in organic photochemistry.

Special Topics in Inorganic Chemistry (26:160:579): *"Coordination Chemistry Applied to Catalysis"* THURSDAYS 6:00 - 9:00 PM

Instructor: Prof. Demyan Prokopchuk

This course will cover classical and modern aspects of coordination chemistry to transition metals and its impact on catalysis. Fundamental ligand design principles such as coordination number, binding mode, charge, and sterics will be presented. The coordination of different ligand classes to transition metals will be correlated with reactivity trends and catalytic activity. Students are expected to develop a rational approach in assessing the reactivity of metals/ligands using electronic structure and thermodynamic arguments. Particular emphasis will be placed on hydrogenation, small molecule activation, "non-innocent" ligands, and electrocatalysis.