ROADMAP TO A PHD DEGREE

MARSHALL WILSON, CENTER DIRECTOR
KSENija D. GLUSAC, GRADUATE COORDINATOR
ANDREW TORELLI, CHAIR OF THE GRADUATE COMMITTEE
NORA CASSIDY, GRADUATE PROGRAM ADVISOR
TOPICS COVERED:

• OVERVIEW OF REQUIRED COURSES
  Ksenija D. Glusac

• ACADEMIC HONESTY AND PLAGIARISM
  Andrew Torelli

• TEACHING RESPONSIBILITIES
  Ksenija D. Glusac

• ADVISOR SELECTION
  Ksenija D. Glusac

• ROTATIONS
  Marshall Wilson

• VACATION POLICIES
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• ENGLISH COURSES
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IMPORTANT MILESTONES

1. ADVISOR SELECTION
2. QUAL EXAM
3. PRELIM EXAM
4. DISSERTATION ABSTRACT
5. PhD DEFENSE

years
COURSES:

- **TWO MAJOR “CORE” COURSES PER SEMESTER (SIX TOTAL)**

- **OTHER COURSES ARE AVAILABLE IF NEEDED (TO IMPROVE THE LACKING KNOWLEDGE IN BASIC CHEMISTRY FIELDS OR TO EXPAND THE KNOWLEDGE NEEDED FOR RESEARCH)**

- **MINIMUM GPA: 3.2 (MAJORITY OF A’S AND B’S).**

- **TALK WITH YOUR INSTRUCTOR REGARDING YOUR COURSE PROGRESS DURING THE SEMESTER.**

- **SUCCESS IN YOUR COURSEWORK CAN AFFECT YOUR ADVISOR SELECTION**
COURSES IN THE FIRST YEAR (FALL SEMESTER):

CHEM 6140: QUANTUM CHEMISTRY
- Schrödinger equation for simple systems and approximations for larger molecular systems
- Sets the stage for the photochemistry and photophysics (Tarnovsky, PCS 7010) and computational chemistry (Olivucci, part of PCS 7040) courses

CHEM 5660: ORGANIC SPECTROSCOPY
- Application of spectroscopy to study the structure of organic and organometallic molecules.
- IR, UV/VIS, MS, NMR and EPR
COURSES IN THE FIRST YEAR (SPRING SEMESTER):

CHEM 5420: ORGANIC REACTION MECHANISMS
- Mechanistic aspects in organic synthesis
- Reaction types: additions, eliminations, radical reactions, reduction/oxidation reactions, etc.

PCS 7010: PHOTOCHEMISTRY AND PHOTOPHYSICS I
- Primarily photophysics
- Types of excited states, radiative and nonradiative transitions, energy and electron transfer, lasers.

PAVEL ANZENBACHER

ALEXANDER TARNOVSKY
COURSES IN THE FIRST YEAR:

PCS 7810: SEMINARS PHOTOCHEMICAL SCIENCES

- FALL AND SPRING SEMESTER
- ATTEND DEPARTMENTAL SEMINARS.
- FALL: ATTEND GROUP MEETINGS.
- SPRING: PRESENTS A BRIEF SEMINAR (TOPICS COVERED: SEVERAL RESEARCH PAPERS OF RESEARCHERS FROM BGSU).

ESOL 5040: ENGLISH

- THIS COURSE IS TAKEN BY INTERNATIONAL STUDENTS WHO NEED TO IMPROVE THEIR SKILLS OF SPOKEN ENGLISH LANGUAGE

- SOME STUDENTS NEED TO TAKE WRITTEN ENGLISH COURSES IN THE LATER SEMESTERS (ESOL 500, 501 AND 506)
COURSES IN THE FIRST YEAR (SUMMER SEMESTER):

CHEM 6830: PROBLEMS IN CHEMISTRY (HALL LECTURE)

• Every year one of the leading scientists in the field of photochemistry gives 4-5 lectures during the summer semester:
  http://www.bgsu.edu/departments/photochem/research/heinlen_seminars.html
• As a requirement for this course, student needs to write a report about the Hall lecture.
• Your PhD advisor will grade the report.

CHEM 6900: DIRECTED RESEARCH

• Your research performance during the first-year summer period will be graded.
• Your PhD advisor will grade.
COURSES IN THE SECOND YEAR:

PCS 7020: PHOTOCHEMISTRY AND PHOTOPHYSICS II
- Primarily photochemistry
- Topics covered: excimers, exciplexes, photooxidations, photoreductions, acid-base and other basic types of photochemistry.

PCS 7040: SPECIAL TOPICS IN SPECTROSCOPY
- Single-molecule spectroscopy (Lu)
- Computational chemistry: molecular mechanics, photochemistry, ab initio methods (Olivucci)
- Selected topics change from year to year
**COURSES IN THE SECOND YEAR:**

**OPTIONAL COURSES:**

Depending on your research interests, you might decide to take other optional courses, such as:

**CHEM 5450** GENERAL BIOCHEMISTRY I  
Prof: Andrew Torelli

**CHEM 5540** PRINCIPLES OF INSTRUMENTAL ANALYSIS  
Prof: Ksenija D. Glusac

**CHEM 5630** ADVANCED INORGANIC CHEMISTRY  
Prof: Alexis Ostrowski

**BIOL 6110** TRANSMISSION ELECTRON MICROSCOPY  
Prof: Carol Heckman

**PHYS 6010** TECHNIQUES IN EXPERIMENTAL PHYSICS  
Prof: Mikhail Zamkov
WHAT IF I HAD A LOW SCORE AT THE ORGANIC CHEMISTRY ENTRANCE EXAM?

PCS 7820: REVIEW OF ORGANIC CHEMISTRY

- Taken by students who need to improve their knowledge of organic chemistry
- Two-semester course
- Topics covered: classes of organic compounds and their reactivity
- Students will attend the organic chemistry lectures for Chem 3410 and 3440 courses (thought by Steven Chung)
- In addition, students will attend recitation sessions once a week (thought by Pavel Anzenbacher).
- This course needs to be taken before Chem 5660 (Organic Spectroscopy)
WHAT IF I HAD A LOW SCORE AT THE PHYSICAL CHEMISTRY ENTRANCE EXAM?

CHEM 5050 AND 5060: PHYSICAL CHEMISTRY

• TAKEN BY STUDENTS WHO NEED TO IMPROVE THEIR KNOWLEDGE OF PHYSICAL CHEMISTRY
• TWO ONE-SEMESTER COURSES
• TOPICS COVERED: THERMODYNAMICS AND QUANTUM CHEMISTRY
• THIS COURSE NEEDS TO BE TAKEN BEFORE CHEM 6140 (QUANTUM CHEMISTRY)
**EXAMS:**

**QUALIFYING EXAM:**
- At the end of fall semester of the second year
- Present your research project and results to the PhD committee
- Purpose: Are you making good progress and do you understand the basic aspects and the background literature regarding your research project?

**PRELIMINARY EXAM:**
- At the end of the fall semester of the third year
- Present an original research proposal unrelated to your research project to the PhD committee
- Purpose: Can you develop an independent research project that is creative and designed to answer some basic scientific question?
TOPICS COVERED:

- **Overview of Required Courses**
  Ksenija D. Glusac

- **Academic Honesty and Plagiarism**
  Andrew Torelli

- **Teaching Responsibilities**
  Ksenija D. Glusac

- **Advisor Selection**
  Ksenija D. Glusac

- **Rotations**
  Marshall Wilson

- **Vacation Policies**
  Marshall Wilson

- **English Courses**
  Nora Cassidy
What is academic integrity?

- Moral code in academia
- Honesty about representing source of ideas and knowledge
- Well-known violations: cheating, plagiarism
- Many other scenarios — consider ‘Academic Integrity Quiz’
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TEACHING ASSIGNMENTS

- Teaching assistant in the lab (usually 2 labs/week)
- Grading (exams and homeworks)
- Total ~12 hours/week
**TEACHING ASSIGNMENTS**

- **You must show up, you must be on time and you must be prepared**

- **Interact with students in the lab while on assignment (Do not talk on your cell phone, check your e-mail, talk to your friends...)**

- **Do not date students if you are their TA.**

- **TA awards are available for outstanding teaching assistants (Nominated by faculty).**

- **More about the assignments at the Friday meeting with Dr. Mejiritski**
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Advisor Selection

Bullerjahn
Willson
Glusac
Sun
Torelli
Olivucci
Tarnovsky
Anzenbacher
Lu
Klosterman
Ostrowski
Zayak
Leontis
IT IS IMPORTANT TO FIND A GOOD MATCH. THINGS TO CONSIDER:

• SHARED RESEARCH INTERESTS

• PUBLICATIONS

• FUNDING

• GROUP MEMBERS

• LIMITED SLOTS PER FACULTY (BE FLEXIBLE)
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**Rotations:**

- **Fall Semester:** Visit up to three different research groups

- Submit three choices by **Wednesday, August 28, 2013.**
  - **Group 1 (required) — September**
  - **Group 2 (required) — October**
  - **Group 3 (optional) — November**

- Get to know group members

- **Shadow graduate students**

- Participate in group seminars

- Submit prioritized list of three groups in which you would like to work by end of first week of **December.**
**ROTATIONS:**

**STUDENT SELECTS GROUP BASED ON:**
- **Type of Research**
- **Experience in Group Visitation**

**FACULTY SELECTS STUDENT BASED ON:**
- **Entrance Exam Scores**
- **Grades in First Semester Courses**
- **Experience in Group Visitation**

**Each faculty member will usually only be able to select one new graduate student each year. So these selections must be made very carefully**
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**VACATION POLICY:**

- **Paid vacation days/year** include all University holidays and 14 working days.
- **Students** are required to be working in the laboratory between terms and during summer even though class is not in session.
- **Vacation days** may be accumulated for several years with approval of supervising professor.
- **All vacation days** should be reported to Alita ([AFRATER@BGSU.EDU](mailto:AFRATER@BGSU.EDU))
- **University holidays** for the next academic years include:
  - Labor Day – September 2, 2013
  - Veteran’s Day – November 11, 2013
  - Thanksgiving Day – November 28, 2013
  - Columbus Day (Floating Holiday) – November 29, 2013
  - President’s Day (Floating Holiday) – December 24, 2013
  - Christmas Day – December 25, 2013
  - New Year’s Day – January 1, 2014
  - Martin Luther King Day – January 20, 2014
  - Memorial Day - May 26, 2014
  - Independence Day – July 4, 2014
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ENGLISH COURSES:

TESTING OF STUDENTS

PLACEMENT OF STUDENTS

RESULTS TO GRADUATE COORDINATOR
ENGLISH COURSES:

**WRITING CLASSES**

- **ESOL 5000: Academic Composition I**
  - Grammar and sentence structure

- **ESOL 5010: Composition II**
  - Graduate level writing

- **ESOL 5060: Advanced Writing**
  - Writing project (thesis)

**SPEAKING CLASSES**

- **ESOL 5030: Intermediate Listening and Speaking**
  - Required for TOELF scores 20 and below. Students are not cleared to teach. Vocabulary, presentation skills.

- **ESOL 5040: English for Tas I**
  - Required for TOEFL scores 21-23
  - For non-native tutors
  - Cleared to teach

- **ESOL 50450: English for Tas II**
  - Required for TOEFL scores 21-23
  - Special emphasis on communication
  - Cleared to teach