Welcome!

1st Year Ph.D. Student Orientation
Fall 2016
Professor Charles Roth
Agenda

- Introductions
- Curriculum
- Adviser selection
- Ph.D. Qualifying Examination
- Academic integrity
- Support
- Payroll
- Course registration
Course Requirements

• 30 credits coursework
  – 5 core courses
    • Analy Methods (Engineering math)
    • Adv Transport I (Fluids)
    • Adv Thermo
    • Adv Transport II (Mass transport)
    • Kinetics and Reactor Design
  – 5 electives
    • Generally, any technical course that helps your research or is of interest
    • Could take 5 Pharm. Eng. Electives (Pharm. Eng. Option)
    • Encouraged to take 1 “broadening” elective, e.g. life science elective, entrepreneurship, etc.

• Developmental courses
  – 155:605 Teaching in Engineering Curriculum (Spring ‘17)
  – 155:601/602 Graduate Seminar (continuous)

• 24 credits research

• 72 total credits (so research really > 24)
Degree Requirements

• 72 credits of coursework as described
  – Must maintain 3.0 GPA overall with no more than 1 grade less than B in core courses

• Teaching requirement
  – During 1st-2nd year, generally assist with two classes

• PhD qualifying examination
  – Typically end of first year (when core courses complete)

• PhD proposal and defense
  – End of second year

• Dissertation and defense
  – Hopefully within 5 years
Advisor Selection

• You need a PhD advisor to support your studies, both in terms of funding you and providing an intellectual climate and facilities for your research.

• Pizza with the Professors
  – Tuesdays/Fridays, 12:00-1:20, C-115.

• Lab Open House
  – Time/date to be announced

• Go talk to faculty and their students!

• Advisor selection choices due by end of classes in Dec.

• In the end, it is your responsibility to find an advisor. This is the most important assignment of the year!
1. Biomass Process Engineering
Biofuels and biochemicals from lignocellulosic biomass via the biochemical conversion platform (e.g., pretreatment and enzymatic hydrolysis)

2. Carbohydrate-Active Enzyme Engineering
Engineer CAZymes for desired properties (e.g., increase productive enzyme binding to cellulose III, reduce non-productive protein binding to lignin)

3. Glyco-engineering
Hybrid chemo-enzymatic processes for glycan/glycoconjugate synthesis, modification, and their characterization

CBM $1_{\text{Cel7A}}$ stacked on cellulose III fibril

Steric clash

Step-like surface

Glycosynthase Technology
Newest Faculty (September 2015)

• Haoran Zhang
  – From Tufts, MIT
  – Interests in metabolic engineering and synthetic biology

• George Tsilomelekis
  – From Patras (Greece), Delaware
  – Interests in catalysis, renewable energy
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<th>Date</th>
<th>12:00pm</th>
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<td>Sept. 13:</td>
<td>Roth</td>
<td>Ierapetritou</td>
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<td>Tsilomelekis</td>
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<td>Oct. 18:</td>
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PhD Qualifying Exam

• Eligibility based on completion of and performance in core courses
• Given last week in May
• Students given a choice of papers to review one
  – 15 minute presentation
  – 15 minutes questions
• Big picture: what is the paper about, why did they do this, are their conclusions justified, what could they have done better, what are the next steps?
• Fundamentals: equations and assumptions
• Bridge to skills needed in research
• Pass/Conditional Pass/Fail
PhD Proposal

• Formal written proposal of what your research will entail
• Need to justify plan with references from literature
• Preliminary data needed
• Also presentation (~30 minutes)
  – Questions from audience and committee
• Committee is faculty from CBE and perhaps outside member
• Pass/Conditional Pass/Fail
Dissertation

• A PhD must culminate in a dissertation
• Detailed, cohesive story of what you have accomplished and how it pushes the field forward
• Written dissertation plus presentation
• Again, committee is faculty from CBE and outside member
Graduate Students May Never:

- Quote of paraphrase without complete citations;
- Cite a source that has been identified through a secondary source but has not been consulted;
- Copy from the internet;
- Collaborate with others without explicit permission from instructor;
- Use unauthorized materials during an examination or on an assignment;
- Look at or copy the work of another student during an exam;
- Submit the work completed in one class to fulfill the requirements of a second class with the consent of the instructor.
Graduate Students as Researchers must adhere to the ethical codes of their discipline/profession and cannot:

• Falsify/fabricate or selectively withhold data or results;
• Misuse or appropriate the data of others;
• Present data in a sloppy or deceptive manner;
• Fail to maintain accurate laboratory notebooks;
• Fail to credit all contributors and authors appropriately;
• Sabotage to research of others; Misuse research funds or institutional property for personal use;
• Develop inappropriate relationships for personal gain;
• Fail to comply with Federal Guidelines for the treatment of human or animal subjects.
“Sanctions for a given violation may be imposed differently on those with more or with less experience as students. Thus violations of academic integrity by graduate students will normally be penalized more severely than the same violations by inexperienced undergraduate students. In particular, violations that would be considered nonseparable for an undergraduate student may be treated as separable for a graduate student.”

“In this policy, the term graduate student refers to post-baccalaureate students pursuing advanced degrees of any type or enrolled in a graduate course or courses. The term also includes students in the advanced stages of a professional program that leads to a master’s or doctoral degree without conferral of a baccalaureate degree.”
CONSEQUENCES

• Disciplinary Probation
• Failure in the course
• Loss of Financial Support
• Suspension of Student Status
• Removal from Rutgers
Support at Rutgers

• Graduate Program Administrative Assistant
  – Lynn DeCaprio, lynny@rci.rutgers.edu, 5-2228

• Graduate Program Director
  – Charlie Roth, cmroth@rutgers.edu, 5-6686

• Graduate School-New Brunswick staff
  – Associate Dean Barbara Bender, bbender@rutgers.edu, 2-7747

• CAPS: Rutgers Counseling, ADAP (alcohol and other drug assistance program) and Psychiatric Services
  – Contact tel:732-932-7884
Registration – TA appointments

- 155:501 Advanced Transport Phenomena I (3)
- 155:507 Analytical Methods (3)
- 155:511 Advanced Chemical Engineering Thermodynamics (3)
- 155:601 Chemical Engineering Graduate Seminar (0)
- 155:877 Teaching Assistantship (6)

Total 15 credits
• 155:501  Advanced Transport Phenomena I (3)
• 155:507  Analytical Methods (3)
• 155:511  Advanced Chemical Engineering Thermodynamics (3)
• 155:601  Chemical Engineering Graduate Seminar (0)
• 155:701  Chemical Eng. Research (6)
• 155:811  Graduate Fellowship (0)

• Total 15 credits
To Do

• Payroll
  – Spend time with Lynn being entered into the system

• Registration
  – Select classes via WebReg
  – Print term bill
  – Obtain, sign tuition remission form
  – Make copies of term bill and tuition remission form
  – Take to cashier’s office (College Ave.)