

The Analytical Roadmap

	Year I			Year II			Year III	
	Fall	Spring	Summer	Fall	Spring	Summer	Fall	End
Coursework	[Yellow bar]							
Teaching	[Yellow bar]			[Purple bar]				
Cumes	[Yellow bar]			[Purple bar]				
Choose Research Director	[Yellow bar]							
Research		[Yellow bar]						
Prepare for & take Oral Exam					[Green bar]			



Time it will take to complete



Additional time it may take to complete



Represents 1 month of time to complete

A Road Map for KU Graduate Study

1. Distribution Requirements (Analytical, Biochemistry, Inorganic, Organic, Physical)

Pass 3 out of 5 by end of second semester of graduate study.

2. Divisional Course Requirements

6-7 courses

Additional courses for Training Grants.

3. FLORS Requirements (Foreign Language or Research Skill)

Foreign Language

Computer Programming

Electronics

Library Bibliography

4. Cumulative Exams

5. Oral Preliminary Examination

Original Proposal

6. Final Defense

Course Requirements

Distribution Courses

CHEM 731 Fundamentals and Methods of Analytical Chem.

CHEM 737 Coordination and Organometallic Chemistry

CHEM 740 Principles of Organic Reactions

CHEM 750 Quantum Chemistry and Spectroscopy

BIOL 658 Biochemistry

Required Courses

CHEM 904 Separations (Spring)

CHEM 920 Mass Spectrometry (Spring)

CHEM 908 Spectrochemical Methods of Analysis (Fall)

CHEM 925 Bioanalysis (Fall)

FLORS Requirement

BIOL 703 Radiation Safety (All semesters)

CHEM 720 Bibliography of Chemistry (Spring)

Additional Courses of Interest

BIOL	503	Immunology
BIOL	665	Biochemistry II
BIOL	672	Gene Expression
BIOL	688	The Molecular Biology of Cancer
BIOL	718	Laboratory in Molecular Biology
BIOL	750	Advanced Biochemistry
BIOL	801	Topics In: _____
BIOL	870	Advanced Pharmaceutical Biotechnology
BIOL	918	Modern Biochemical and Biophysical Methods
CHEM	903	Electrochemistry
CHEM	917	Statistical Mechanics
CHEM	916	Molecular Spectroscopy

Additional Courses of Interest

MDCH 860	Drug Metabolism
MDCH 952	Molecular Modeling
PHCH 625	Pharmacokinetics
PHCH 745	Advanced Drug Delivery
PHCH 801	Issues in Scientific Integrity
PHCH 862	Pharmaceutical Equilibria
PHCH 865	Advanced Pharmaceutical Analysis
PHCH 866	Pharmaceutical Mass Transport
PHCH 870	Advanced Pharmaceutical Biotechnology
PHCH 972	Mechanisms of Drug Deterioration & Stabilization
PHCH 974	Clinical Development of Anticancer Agents
PHCH 976	Advanced Topics in Biopharmaceutics & Pharmacokinetics
P&Tx 601	Biotechnology

Analytical Chemistry Cumulative Exams

Approximately two weeks prior to the exam date, we will announce a literature citation upon which the cumulative exam will be loosely based. You are encouraged to study this article and related materials in preparation for the exam. You may not bring the article with you to the exam, however, a copy of the paper will be provided for your use during the exam. You may take advantage of any resources that you feel will help in your preparation for the exam, including the formation of study groups and discussion of specific questions with the Analytical faculty.

Analytical Chemistry Cumulative Exams

The cumulative exam questions will not in general focus on details from the article. Rather, the questions will be based more broadly on the methodology used and/or the general possible format, however future exams will not be limited only to these types of questions. The paper selected for this exam described an instrumental method for the determination of gold in ore. The following are examples of some of the questions that might be asked on the cumulative exam:

Examples of Questions

1. Are the author's conclusions valid?
2. What problems might be associated with the analysis of gold in this complex matrix?
3. How would you obtain a representative gold ore sample?
4. Explain the physical properties underlying the instrumental method employed by the authors.
5. Draw a block diagram of the instrument used and explain the function of each component.
6. How well will this method work for the analysis of elements other than gold?
7. What other analytical methods might have been used to perform this analysis? How do they compare with the method used in the selected citation?

Choosing a Research Director

- Attend research presentations
- Visit with selected faculty
- Visit with research group
- Return for further discussions with faculty whose projects are of greatest interest
- Obtain signatures on the selection form
- Turn in completed form by December 15

Oral Comprehensive Exam

- Following completion of courses and 1/2 hour seminar in Analytical Colloquium
- Two Parts: (1) Defense of an independent proposal on a topic unrelated to your research. (2) Defense of your dissertation research.
- Committee: 3 faculty from Analytical, 1 from Chemistry outside of Division, and 1 from outside of Chemistry.

Oral Comprehensive Exam

- Timeline:

Four weeks prior to exam date you will receive a general topic.

One week prior to exam date, you will provide your committee with your written proposal, your CV, and a one-page abstract describing your thesis research.

- The exam itself will be divided approximately equally between the proposal and thesis research.

Special Opportunities

Training Grants

- Dynamic Aspects of Chemical Biology
- Pharmaceutical Aspects of Biotechnology
- <http://www.pharmchem.ku.edu/research-training.php>