Part II: Proposal to Revise the Curriculum and Graduate Ph.D. in Toxicology

Programmatic Rationale

6.1 Need for training in cancer. Kentucky has the notoriety of being the worst ranked (50th) state in the U.S. in overall cancer deaths, due in part to the fact that Kentucky also has one of the highest incidences of smoking (ranked 48th). Another cause for concern is the increase in carcinogenic metals (e.g., arsenic, chromium and cadmium) found in the soil and water supply in Eastern Kentucky. These metals, which are byproducts of coal, are known to induce oxidative stress and have been linked to various cancers. The burden in Appalachian Kentucky, where the cancer mortality rate is 17% higher than the U.S. rate, raises considerable concern. Thus, the need for sustained support to develop scientists committed to the study of cancer in Kentucky is great. Currently, there is no dedicated Cancer Biology training program for predoctoral students and postdoctoral fellows at UK or in the state of Kentucky. Training of doctoral students and postdoctoral fellows in the GCT is currently supported by an NIEHS T32 Training Grant in "Molecular Mechanisms of Toxicity". This grant, first funded in 1990, currently supports students in the Ph.D. program in Toxicology. While one research focus relates to cancer and carcinogenesis, the training is not solely focused on cancer and does not emphasize the basic, translational and clinical aspects of cancer biology signaling mechanisms associated with tumor cell survival, progression and metastasis, or the tumor microenvironment as a contributing factor. The expansion of the GCT to include cancer biology will provide an excellent environment for training in these areas. A strong training program in cancer biology is a key component of the NCI supported Cancer Center Support Grant, and is absolutely essential to the competitive renewal of this Grant, due in 2017. Thus, a key feature of the proposed Department is a strong education and training component in mechanisms of environmentally induced cancers and cancer biology.

6.2 Training program in Toxicology and Cancer Biology. The proposed doctoral program continues to build on the first-year Integrated Biomedical Sciences (IBS) courses currently used by all doctoral programs in the COM. In the second year, the proposed curriculum provides strong basic training in both toxicology and cancer biology, that can be complemented by elective courses that focus on various aspects of these disciplines. Coursework in each of these areas has been and is being developed by faculty with the requisite expertise. The current and proposed curricula, designed to be fully implemented in Fall 2014, are provided in Part II, **Appendix H**.

Briefly, a 3-credit course in Biology and Therapy of Cancer (MI616) *or* Topics in Biochemistry-Advanced Concepts Signal Transduction (BCH 780) will be required of all doctoral students, as will Molecular Toxicology and Carcinogeneisis (TOX 680), a 3-credit course that incorporates the strengths of the current Toxicology faculty on the role of oxidative stress and DNA damage and repair in chemical/metal carcinogenesis and cancer. This course is being revised from the current 5 credit course, to a 3 credit course (**Appendix I**). Environmental and Regulatory Toxicology (TOX 509) is retained as a required course. A fourth 2-credit course, Drug Metabolism and Disposition (TOX 663) covers the absorption, distribution, metabolism, elimination and transport of chemicals, with a focus on environmental carcinogens and cancer chemotherapeutic drugs, completes the required courses of all doctoral students for the PhD in Toxicology and Cancer Biology. Additional recommended elective courses include MI616 or BCH 780 (whichever has not already been taken), Systems Biochemistry (currently under development by new faculty members), and PHA 622, Molecular Drug Targets and Therapeutics (in Cancer). This list is not considered comprehensive, or intended to exclude other courses that Advisory Committees of doctoral students consider to be relevant for the training of a student. Current graduate students will continue to be subject to the current curricular requirements.

Current Curriculum for Ph.D. in TOX 11-20-2013

Pre-qualifying

Course No: Title	Credit Hour
IBS601: Biomolecules and Metabolism	3
IBS602: Molecular Biology	3
IBS603: Cell Biology	3
IBS604: Cell Signaling	3
IBS605: Genetics	2
IBS606: Integrated Biomedical Sciences	4
STA580: Biostatistics or STA570: Basic Statistical Analysis	3-4
TOX600: Ethics in Scientific Research	1
TOX770-001: Toxicology Seminar	0
TOX770-002: Toxicology Seminar/Orientation-Journal Club	1
PHA621 Advanced Pharmacodynamics	3
TOX509 Biochemical and Environmental Toxicology	3
TOX680 Molecular Mechanisms in Toxicology	5
TOX780 Special Problems in Toxicology/Grant Writing	2
Elective	2-3
	Total: 38-40

Post-qualifying

TOX767: Dissertation Residency Credit	2/semester

Proposed Curriculum for Ph.D. in TOX/Cancer Biology

Pre-qualifying

Course No: Title	Credit Hour
IBS601: Biomolecules and Metabolism	3
IBS602: Biomolecules and Molecular Biology	3
IBS603: Cell Biology	3
IBS606: Integrated Biomedical Sciences	3
IBS608: Special Topics in IBS (4 x 0.5 h mini-courses)	2
IBS610: Critical Scientific Readings	2
IBS611: Practical Statistics[1]	1
TOX770-001: Toxicology Seminar[2]	0
TOX770-002: Toxicology Seminar/Orientation-Journal Club	1
TOX600: Ethics in Scientific Research	1
TOX663: Drug Metabolism and Disposition[3]	2
TOX680: Molecular Toxicology and Carcinogenesis[4]	3
TOX780: Special Problems in Toxicology/Grant Writing	2
TOX509: Environmental and Regulatory Toxicology[4]	2
TOX790: Research in Toxicology (or IBS609)[5]	2
MI616: Biology and Therapy of Cancer **or**	
BCH780: Topics in Biochemistry-Adv. Concepts Signal Transduction[6]	3
Elective related to Toxicology or Cancer Biology (or subject to DGS approval)	3
	Total: 36

Post-qualifying

TOX767: Dissertation Residency Credit[7]	2/semester

Footnotes:

[1]Replaces STA570/STA580.

[2]Ph.D. students register for TOX770-001 until residency is completed and again in the semester in which they present a seminar (required for the degree).

[3]Replaces PHA621.

[4]Credit hours reduced compared to former curriculum to accommodate inclusion of MI616/BCH780 course requirement.

[5]Ph.D students entering directly into TOX/Cancer Biology program register for TOX790 for 1 h credit in their first two semesters in the program. Similarly, IBS students register for IBS609 for 1 h credit in their first two semesters.

[6]Ph.D. students in the Cancer Biology track will be expected to enroll in both MI616 and BCH780, one as a required course and the other as an elective.

[7]Ph.D. students register for TOX767 each semester post-residency until successful completion of their dissertation.

Proposed TOX/Cancer Biology Core Courses

Course ID: Course Title (credit hours/semester)
TOX509: Environmental and Regulatory Toxicology (2)
TOX600: Ethics in Scientific Research (1)
TOX663: Drug Metabolism and Disposition (2)
TOX680: Molecular Toxicology and Carcinogenesis (3)
TOX767: Dissertation Residency Credit (2)[1]
TOX770-001: Toxicology Seminar (0)[2]
TOX770-002: Toxicology Seminar/Orientation-Journal Club (1)
TOX780: Special Problems in Toxicology/Grant Writing (2)
TOX790: Research in Toxicology (1)[3]
MI616: Biology and Therapy of Cancer **or** BCH780: Topics in Biochemistry-Adv. Concepts in Signal Transduction (3)

List of Recommended Electives

Course ID: Course Title [Instructor] (credit hours/semester)
BCH780: Topics in Biochemistry-Advanced Concepts in Signal Transduction [O'Connor] (3)
MI616: Biology and Therapy of Cancer [Rangnekar] (3)
BIO560/TOX560 Environmental Physiology and Toxicology [Unrine] (4)
PHA622: Molecular Drug Targets and Therapeutics (in Cancer) [Piascik] (1)
TBN: Systems Biochemistry [Lane]

List of Acceptable Electives

Course ID: Course Title [Instructor] (credit hours/semester)
ANA516: Select Topics in Advanced Neuroscience; Brain Body Mind [Gash] (3)
ANA605/PGY605: Neurobiology of CNS Injury and Repair [Hall] (3)
ANA636: Advanced Neuroanatomy [Maley et al.] (5)
BCH604: Structural Biology [Fried] (3)
BCH610: Biochemistry of Lipids and Membranes [Waechter; Whiteheart] (3)
BCH611: Biochemistry and Cell Biology of Nucleic Acids [Noonan] (3)
BCH612: Structure and Function of Proteins/Enzymes [Zhu] (3)
BCH615/BIO615/ MI615: Molecular Biology [Peterson] (3)
BIO520/INF520: Bioinformatics [Smith] (3)
BIO618: Molecular Neurobiology (4)
BIO685/MI685: Immunobiology, Infection and Inflammation [Kaplan et al.](3)
CHE565: Environmental Chemistry [Guzman] (3)
CHE666: Proteomics and Mass Spectrometry
CPH601: Environmental Health [Mannino] (3)
CPH604: Public Health and Disease Prevention [Eddens] (3)
CPH605: Epidemiology [Fleming] (3)
CPH615: Cancer Epidemiology [Coker] (3)
CPH620: Occupational and Environmental Health [Sanderson] (3)
HES600: Research Methods in Human Environmental Science [Easter] (3)
PGY617: Physiological Genomics [McClintock] (2)
PHA649: Molecular Pharmacology (3)
PHA621: Advanced Pharmacodynamics (3)
PHR612: Quantitative Pharmacodynamics [McNamara/Leggas](3)
PHR664: Theory and Practice of Drug Metabolism (3)

APPENDIX I

TOX 680 – Molecular Toxicology and Carcinogenesis
Spring 2015

MWF, 11:00 – 11:50 AM, Room HSRB310, unless otherwise noted*
Course Director: Dr. Hsin-Sheng Yang, 323-6684, hyang3@uky.edu

Section 1. Oxidative Stress (Yang, 323-6684; hyang3@emai.uky.edu)

1. Principles of Oxidative Stress	Shi
2. Detection of Oxidative Stress	Shi
3. Cellular Antioxidant Defense Mechanisms	Wei
4. Antioxidant Enzymes	Wei
5. Redox Regulation	St. Clair
6. Mitochondria and Cancer	Izumi
7. Role of oxidative stress in toxicity and carcinogenicity	Shi
8. Metals and Human Disease I	Zhang
9. Metals and Human Disease II	Zhang
10. Disease prevention by oxidative stress prevention	Shi
11. Nitrosative Stress	TBA
12. Student Presentations of Relevant Literature	
13. SECTION 1 EXAM	

Section 2. Genotoxicology (Wang, 323-5784; zwang@email.uky.edu)

14. DNA Damage	Orren
15. DNA Damage	Orren
16. Base Excision Repair	Izumi
17. Nucleotide Excision Repair	Mellon
18. Mismatch Repair	Gu
19. Single- and Double-strand Break Repair	Orren
20. Recombinational Repair and Crosslink Repair	Orren
21. Measurement of Genotoxicity	Wang
22. DNA Damage-induced Mutagenesis	Wang
23. Epigenetics and Toxicology	Li
24. Student Presentations of Relevant Literature	
25. SECTION 2 EXAM	

Section 3. Cellular Mechanisms in Toxicology and Carcinogenesis

26. Cell Cycle Checkpoints I	Orren
27. Cell Cycle Checkpoints II	Orren
28. Protein Translation in Cancer I	Yang
29. Protein Translation in Cancer II	Yang
30. ER and Cellular Stress	Yang
31. Cell-Intrinsic Apoptotic Pathways	TBA
32. Extrinsic Apoptotic Pathways	Rangnekar
33. Anoikis	TBA
34. Proteosomal Degradation and Autophagy	TBA
35. Student Presentations of Relevant Literature	

36. SECTION 3 EXAM

Section 4. Toxic Insults and Disease

37. Chemical Carcinogenesis	Li
38. Tobacco Smoke and Air Pollutants	Orren
39. Occupational and Environmental Lung Disease	Mannino
40. Cd, Cigarettes, Cellular Changes, COPD	Mannino
41. Lung Toxicity and Animal Models	Fu
42. Lung Cancer	Hirschowitz
43. Environmental Agents in Gastrointestinal Cancers	TBA
44. Experimental Hepatocarcinogenesis	Glauert
45. Skin Carcinogenesis I	D'Orazio
46. Skin Carcinogenesis I	D'Orazio
47. Renal Toxicology	Fu
48. Student Presentations of Relevant Literature	

SECTION 4 EXAM: HELD DURING FINAL EXAM PERIOD

Course Description. As a required course for the Ph.D. degree in Toxicology and Cancer Biology, the major goals of TOX680 are to provide a solid knowledge base as to: 1) the key molecular and cellular mechanisms related to toxicity and carcinogenesis, and 2) the established relationships between exposures to toxicants and development of cancer and other human diseases.

Exams and Grading: Final letter grades will be based on exams (80%), student presentations (15%) and attendance (5%). A 2-h exam will be given following each section. Each lecture will be tested and contribute10 points to the final test score. Therefore, each lecture is equally weighed in the final course grade. All written exams will be in the form of closed book test.

Attendance: Attendance to the class is mandatory and is critical for success in this course. The first unexcused absence will result in a warning. For the second and each subsequent unexcused absence, you will lose 0.5% of your final grade, which may accumulate up to 5% of your final course grade. Unexcused late arrival for class is not allowed; nor is unexcused early departure from class. Arriving 10 minutes after the class starts will be considered a 50% attendance for the lecture and will subject to the attendance point deduction accordingly.

Officially recognized reasons for nonattendance (excused absence) may be found in the UK Senate Rules (SR 5.2.4.2), a copy of which is listed below.

"5.2.4.2 Excused Absences: (US: 11/11/85; 2/9/87) The following are defined as excused absences:

A. Illness of the student or serious illness of a member of the student's immediate family. The instructor shall have the right to request appropriate verification.

B. The death of a member of the student's immediate family. The instructor shall have the right to request appropriate verification.

*Children of students are considered members of the immediate family (RC: 11/9/94)

C. Trips for members of student organizations sponsored by an academic unit, trips for University classes, and trips for participation in intercollegiate athletic events. When feasible, the student must notify the instructor prior to the occurrence of such absences, but in no case shall such notification occur more than one week after the absence. Instructors may request formal notification from appropriate university personnel to document the student's participation in such trips.

D. Major Religious Holidays. Students are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day for adding a class.

E. Any other circumstances which the instructor finds reasonable cause for nonattendance."

Brothers, Sheila C

From:	Nikou, Roshan
Sent:	Friday, September 26, 2014 3:48 PM
To:	Brothers, Sheila C; Carvalho, Susan E; Ellis, Janie; Ett, Joanie M; Hippisley, Andrew R; Jackson, Brian A; Lindsay, Jim D.; Nikou, Roshan; Price, Cleo; Timoney, David M
Cc:	Badurdeen, Fazleena F; Schuer, Kevin M; Jones, Davy; Orren, David K; McCormick, Katherine; Perkins, Andrea L; Dupont-Versteegden, Esther E
Subject:	Transmittals
Attachments:	Establish Deptof Toxicology and Cancer Biology-signed.pdf; MastersPH-signed.pdf; Manufacturing.pdf; PhysicianAssistant.pdf

TO: Andrew Hippisley, Chair and Sheila Brothers, Coordinator
Senate Council

FROM: Brian Jackson, Chair and Roshan Nikou, Coordinator
Graduate Council

The Graduate Council approved the following proposals and is now forwarding them to the Senate Council to approve.

Please note, the courses listed below are accessible via e-Cats' workflow.

Establishment of the Department of Toxicology and Cancer Biology
Change in Manufacturing Systems Engineering Masters Program (additional information is attached)
Change in Public Health Masters program
Change in Physician Assistant Masters program

HHS 402G Muscle Biology
PPS 710 Techniques in Secondary Data Research
BMI 730 Principles of Clinical Informatics
BMI 731 Biomedical Information Retrieval
BMI 732 Biomedical Ontologies and Semantic Web Techniques
BMI 733 Biomedical Natural Language Processing
BMI 734 Introduction to Biomedical Image Analysis
BMI 735 Introduction to BioImage Informatics
CPH 709 Global Health Internship
PAS 656 Patient Evaluation and Management
PA 775 Special Topics in Health Administration

Thank you,

Issues with Toxiology and Cancer Biology

10/2/14

~~IBS 604 and IBS 605 were dropped~~

~~TOX 663 Missing~~ ✓

TOX 790 Cross listing not in bulletin ✓

TOX 680 Title different from bulletin Molecular Mechanisms in Tox

~~TOX 649 Title different from bulletin~~

TOX 509 Title different from bulletin Biochemical & Environmental Tox

PHA 621 Tittle different from bulletin Principles of Drug Action

~~PHR 612 & PHR 664 Missing~~

IBS 602 Molecular Biology & Genetics

603 Cell Biology & Signaling

~~605~~ Experimental Genetics

606 Physiological communication

PHA 649 Adv Molecular Pharmacology

~~PHR 612~~ MIP

664

BCH 612 Structure & function of Proteins & Enzymes

IBS

P

TOX 680 - 4/10/14 ✓

509 2/7/14 ✓

Ellis, Janie

From: Orren, David K
Sent: Thursday, December 04, 2014 1:20 PM
To: Ellis, Janie
Subject: RE: PhD Toxicology

Importance: High

Janie,

I apologize for the errors in the course titles listed in our original curriculum proposal. As you requested, included below are the corrected titles, taken from the Course Bulletin.

In the former Ph.D. curriculum section:

PHA621: Principles of Drug Action

In the projected Ph.D. curriculum section, but also note that IBS601, IBS602, and IBS603 are required courses and IBS606 is a recommended elective for the proposed Master's degrees in TOX):

IBS601: Biomolecules and Metabolism

IBS602: Molecular Biology and Genetics

IBS603: Cell Biology and Signaling

IBS606: Physiological Communication

In the list of Acceptable Electives section for both Ph.D. and Master's curricula:

PHA649: Advanced Molecular Pharmacology

Also please remove PHR664 from the list of Acceptable Electives for both the Ph.D. and Master's curricula.

As we discussed the changed titles for TOX509 and TOX680 in the projected Ph.D. (and Master's) curricula were part of major course changes that were submitted quite a while back.

Please let me know if you find other errors, or have additional questions or concerns. If you need, I can provide updated curriculum pages with these changes incorporated. Let me know.

Best regards,

Dave

David K. Orren, Ph.D.
Associate Professor
Graduate Center for Toxicology
University of Kentucky College of Medicine
356 HSRB, 1095 V.A. Drive

Lexington, KY 40536-0305

Phone: 859-323-3612
Fax: 859-323-1059
Email: dkorre2@uky.edu

From: Ellis, Janie
Sent: Thursday, December 04, 2014 7:28 AM
To: Orren, David K
Subject: RE: PhD Toxicology

I am in the office until 2 pm, staff meeting from 830-930.

Janie Ellis
Senate Council Office
257-5871

From: Orren, David K
Sent: Tuesday, December 02, 2014 2:19 PM
To: Ellis, Janie; Jones, Davy
Cc: Brothers, Sheila C
Subject: RE: PhD Toxicology

Janie,

I will be glad to give you a call on Thursday. Please let me know times when you might be available.

Dave

David K. Orren, Ph.D.
Associate Professor
Graduate Center for Toxicology
University of Kentucky College of Medicine
356 HSRB, 1095 V.A. Drive
Lexington, KY 40536-0305

Phone: 859-323-3612
Fax: 859-323-1059
Email: dkorre2@uky.edu

From: Ellis, Janie
Sent: Tuesday, December 02, 2014 1:50 PM
To: Jones, Davy
Cc: Brothers, Sheila C; Orren, David K
Subject: RE: PhD Toxicology

Great, I will talk with David on Thursday when I return.

Janie Ellis
Senate Council Office

From: Jones, Davy
Sent: Tuesday, December 02, 2014 1:45 PM
To: Ellis, Janie
Cc: Brothers, Sheila C; Orren, David K
Subject: RE: PhD Toxicology

Janie,

David Orren is your contact person for the courses and program proposal. It is my understand that you and Dr. Orren spoke on Oct. 7 and resolved all course issues, and on Oct. 7 at Dr. Orren's request I addressed your questions (reprinted below) about the relationship of the program change proposal to the new department proposal, and I did not receive any further correspondence that any additional information or action was needed.

Davy

.....
FROM OCT. 7

From: Jones, Davy
Sent: Tuesday, October 07, 2014 12:43 PM
To: Ellis, Janie; Orren, David K
Cc: Brothers, Sheila C; Jackson, Brian A; Nikou, Roshan
Subject: RE: PhD in toxicology

Janie,

I understand that you have discussed 3-9 just now with Dr. David Orren. Please see below for numbers 1 and 2.

Thanks much.

Davy

From: Ellis, Janie
Sent: Tuesday, October 07, 2014 11:59 AM
To: Jones, Davy; Orren, David K
Cc: Brothers, Sheila C
Subject: PhD in toxicology

Davy,
After reviewing the above, I have found the following issues which will need to be addressed before moving this proposal forward.

1. **The transmittal from the Graduate Council does not refer to the PhD in Toxicology only to the establishment of the department of Toxicology and Cancer Biology which by inference does not approve the PhD.**

Janie, please see the email description of the proposal below. To summarize briefly, although as you note the document constituting the Part I/Part II proposal is titled after the Part I (' create a new department'), the content of the document explains that the proposal is two-parted, with Part II being the changes to the current graduate programs (Ph.D., M.S.). Part I was included in the submission to the Graduate Council for its edification as to 'larger related context' of the Part II program change aspects. It was the *Part II* that was before the *Graduate Council* (and which was reviewed to the Graduate Council by member Brett Spears) before the Graduate Council approved the Part II change to the graduate program. Reciprocally, *Part I* was submitted to the *Senate Academic Organization and Structure Committee* for action, with Part II being included also for the SAOSC's edification as to 'larger related context.' It was Part I that was before the SAOSC last week, which SAOSC acted to endorse.

From: Brothers, Sheila C
Sent: Monday, September 29, 2014 2:21 PM
To: Jones, Davy
Cc: Ellis, Janie; Jackson, Brian A; Lawson, Brandy; Dutch, Rebecca; Nikou, Roshan; Bailey, Ernest; Brown, Roger M
Subject: RE: Transmittals

Okay. It sounds like the Toxicology organization/structure component is fine as is – the proposal we received this past April is the most recent version.

I think the recent transmittal from the GC was the first time we've seen the program proposal, so we'll use that version.

Sheila

Staff Representative to the Board of Trustees
Office of the Senate Council
Phone: (859) 257-5872

> **From:** Jones, Davy
> **Sent:** Monday, September 29, 2014 10:12 AM
> **To:** Brothers, Sheila C
> **Cc:** Ellis, Janie; Jackson, Brian A; Lawson, Brandy; Dutch, Rebecca; Nikou, Roshan; Bailey, Ernest; Brown, Roger M
> **Subject:** RE: Transmittals
>
> Sheila et al.,
>
> Here's the scoop. Back this spring there were two related proposals, one an 'infrastructure' proposal to change Tox to a department, and one an 'academic content' proposal to change features of the existing graduate degrees homed in Tox. The infrastructure/dept proposal would route from college to SAOSC to SC to Senate, whereas the 'change degree content' proposal would route from college to Grad Council to 10-day post. The two proposals were drafted as two parts of a single pdf package (part I 'change to a department'; part II 'change to content of existing degrees'), for the edification of all parties as to total context.

Part I on 'change to a department' got out of the college sooner than did Part II on 'change to degree content,' with Brandy's transmission of the joint pdf package to Sheila for SAOSC handling of Part I. Later, the Part II on 'change to degree program' got out of the college with Becky's transmittal of the joint package to Brian Jackson (this Part II academic program aspect is what was before the Graduate Council last Thursday). So, the version of the joint pdf that Becky forwarded to Brian does contain the most recent version of the Part II 'change to degree content' and is what should be 10-day posted. There has been some interaction of Tox with SAOSC on editorial tinkering to Part I on 'change to be a department' and those ongoing tinkerings are only about Part I and do not affect the material in Part 2 that need to be 10-day posted consequent to the Grad Council approval last Thursday. So, even though the pdf version that Becky sent to Brian for Grad Council did not include some of the ongoing tinkerings to Part I, that is not an issue for the Part II material that was before the Grad Council and was approved, and which needs now to be 10-day posted.

Whew!

Thanks all.

Davy

2. **The establishment of the actual program is buried in the establishment of the Department and does not stand out alone as a separate entity.**

There is not a new program being established, rather, change to existing graduate programs (see 1 above). Hence, the action by the Graduate Council was on Part II, and the action by the SAOSC was on Part I. Please see also the email string below.

From: Ellis, Janie
Sent: Tuesday, December 02, 2014 1:32 PM
To: Jones, Davy
Cc: Brothers, Sheila C
Subject: PhD Toxicology

Davy,
Here are the issues with the above:
Titles are different on the form vs what is listed in the bulletin for:

	Bulletin	Proposal
TOX 680 Carcinogenesis	Bulletin has it as Molecular Mechanism in Toxicology	Molecular Toxicology and
TOX 509 Toxicology	Biochemical and Environmental Toxicology	Environmental and Regulatory
PHA 621	Principles of Drug Action	Advanced Pharmacodynamics
IBS 602 Biology	Molecular Biology & Genetics	Biomolecules and Molecular

IBS 603	Cell Biology & Signaling	Cell Biology
IBS 606	Physiological Communication	Integrated Biomedical Sciences
PHA 649	Advanced Molecular Pharmacology	Molecular Pharmacology

PHR 664 I cannot find this course listed

This program was attached to the request for a new department and was not separated from that request. As a general rule, we receive them as two separate requests.

Also, would you give me the name of the individual who is handling this proposal if it is not yourself so I can communicate with them.

Janie Ellis
Staff Support
Senate Council Office
257-5871
Janie.ellis@uky.edu