

CURRICULUM COURSE / CLERKSHIP DESCRIPTION  
UNIVERSITY OF LOUISVILLE SCHOOL OF MEDICINE

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**SECTION I**

Check one in each category:

New Course  Revision to current

Elective  Selective  Required

YEAR: 1  2  3  4

Course Title / Number "RIG: Special Topics in Medical Research and Critical Thinking"

Department Surgery

Credit Hours\*: 2 credit hours

\*Use the appropriate formula to determine:

Preclinical Courses: 15 hours = 1 credit hour

Required 3<sup>rd</sup> Year Clinical Clerkships: 1 week = 1.25 credit hours

Clinical Electives/4<sup>th</sup> Year Rotations: 1 week = 1 credit hour

Number of Faculty teaching 2

Length of Clinical Rotation 2, 3 or 4 weeks N/A

Maximum / Minimum enrollment Maximum: 25 MD DIR  
students + Interested  
DMD students

Course/ Clerkship Director(s) Erica R. H. Sutton, M.D., and Pamela W. Feldhoff, Ph.D.

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Course Coordinator [if applicable] Melodee Toles  
Email [Melodee.toles@louisville.edu](mailto:Melodee.toles@louisville.edu)

Preferred Day and Time [applies to 2<sup>nd</sup> yr elective only] Summer elective before 2<sup>nd</sup> year – Mondays 0900-1100 (Lecture); Thursdays 0900-1100 (Indep. Study)

Preferred Location Bldg/ Hospital – Instructional Bldg B Room/Ward – 307 Paris Sim Ctr

Textbook required [if any]

**No text is required for the course. Handouts and ancillary materials will be provided on Blackboard and RedMed.**

DESCRIPTION:

**This elective, designed for DIR candidates and interested dental students, will teach participants critical thinking skills in research by exposing them to innovation, collaboration, and influential people and ideas in science. Students who complete the course will find their place among world-class thinkers, innovators, and scientists and should feel at home in any research environment.**

**The course will feature several lectures from national leaders and innovators of their respective fields in Biochemistry, Law, Entrepreneurship, Biomechatronics, Surgery and Medicine. Students will be required to participate in stimulating and informative exercises, based on Harvard University's published Question Formulation Technique (QFT) guidelines, which are designed to enrich their critical thinking abilities.**

STATEMENT OF GOALS & OBJECTIVES [Please include a statement detailing how the course goals/objectives align with the school's educational objectives and URL]:

- 1. Students will be able to formulate ideas and devise procedures to solve presented problems in healthcare (ACGME1 3.1 & ACGME5 3.2).**
- 2. Students will gain a fundamental grasp of issues pertaining to research and research environments (ACGME1 3.6).**
- 3. Students will be able to demonstrate their collaborative abilities through effective communication (ACGME1 6.2).**
- 4. Students should feel empowered to pursue their own research endeavors; they should leave the course inspired to work in a research environment.**

METHOD OF EVALUATING STUDENT [If a uniform evaluation form is used, please attach a copy to this application]

**(1) Course Components (refer to course calendar for layout):**

- **“Mini”** – a 5-minute problem set for individual completion at the beginning of every class period. Students study a problem and quickly suggest ways in which to tackle or solve the problem. The exercise is simple and effective, and is meant to get students in an analytical frame of mind. These 5-minute exercises allow students to eventually see and react (in the form of planning, analyzing, and designing) to problems they may face within a very quick timeframe. This exercise is assessed purely for participation.
- **“Maxi” (Ma)** – a 75-minute problem set for small group completion. Maxis take place after Minis. The problem sets used for Maxis are derived from real problems in science today. Such problems include hospital logistics, apparatus insufficiencies in the OR, experimental design, public health & policy issues, and ethics questions to name a few. The small groups will solve such problems, making sure to address aspects such as materials, budget, planning, pitfalls, prior art (in the case of designing apparatuses), benefits, drawbacks, and a detailed description (with appropriate diagrams, if necessary). Maxi's will incorporate the Question Formulation Theory (QFT), leading to the following cascade of events:
  - Students are given a prompt in the form of a statement or article.
  - This statement generates questions per the QFT protocol.
  - The class answers these questions through discussion(s).
  - This generates information and identifies problems.
  - This information generates new ideas.
  - Ideas can generate solutions to problems.
  - Students will then research how to implement these solutions to generate either easy novel solutions, or resolution of shortcomings in implementation, which leads to interesting avenues of research.
  - Student teams will present their findings, design, and potential conclusions in the form of a report submitted for a grade.

Students will come to class having already read the background materials required for a given Maxi, allowing class time to be used for discussion, collaboration, and report completion.
- **Guest Lectures (L)** – 35-minute presentations from faculty members from UofL and collaborating institutions. Students will come to class having read the lecturers' CVs and selected publications / multimedia. Each student will also write 5 questions that will be submitted to Blackboard before the corresponding class period. All questions will be provided to the speaker ahead of time; speakers will choose the best, most insightful 5-10 questions and present these questions to the class in a 35- to 40-minute follow-up to their lecture. The speakers will first focus on the content of the questions (what made them good, why are they important, etc.) before answering each question in sufficient detail. Students will learn, over time, how to think critically and hone their questioning abilities. Should time permit, students can ask the speakers more questions in class. Student-submitted questions are an individual activity and will be graded with the same weight as Maxis (above).
- **Research themes** – every class period ends with a 20-minute research theme presented by the course director. Themes will focus on grant writing and how to write various components of a research paper (abstract, specific aims, background, methods, discussions, conclusions, etc.)

**(2) Course Grading:**

- Participation: **24%** of overall grade (3% per session; determined by Mini submission)
- Maxi / Lecture Questions: **40%** of overall grade (will be graded objectively, criteria will be predefined for quality of submission).
- End-of-Course Assessment: **32%** of overall grade:
  - Students will work with their DIR mentors (using knowledge gained from their individual labs and the course) to craft an individual student-generated project proposal consisting of an abstract, background and significance, specific aims, and an outline of materials and methods. This is important, because as researchers, students will be evaluated based on the quality of their proposals. Mentors are advised to guide and teach the student(s) in their lab; they should refrain from quickly and simply providing the student with these components. Special emphasis is placed on student generation of the content required for this assignment. Evaluation will, within reason, use NIH-peer reviewing (and other established) guidelines to evaluate student efforts. **Students will be working on this proposal throughout the semester with their mentor during and outside the allotted blocks of independent study time (officially scheduled for Thursdays).**
- Mentor Assessment: **8%** of overall grade
  - Mentors will assess their students on performance and contributions to the lab. These assessments will be submitted directly to the course directors.

**(3) Guest Lecturers:**

- Donald Coffey, Ph.D. – Johns Hopkins Brady Urological Institute (Baltimore, MD)
- Brian Coppola, Ph.D. – University of Michigan IDEA Institute (Ann Arbor, MI)
- Anthony Atala, M.D. – Wake Forest Institute for Regenerative Medicine (Winston-Salem, NC)
- Mark Lyles, D.M.D., Ph.D. – United States Naval War College (Newport, RI)
- Michael Fowler, J.D., Ph.D. – University of Louisville

INSTRUCTOR'S  
SIGNATURE



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DEPARTMENT  
CHAIR SIGNATURE



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EPC APPROVAL/  
DATE

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**SECTION II**

If this is a new required course or selective, complete Section IIa.

If this is an elective, complete Section IIb.

Section IIa [Required or Selective]

1. Rationale for request and where this would fit into the existing curriculum

2. Additional time required outside of regular class time

3. Method of Remediation

Section IIb [Elective]

1. Time Commitment      **(8) 120-minute lectures + (8) 120-minute blocks of independent study – course length of 8 weeks in total in the SUMMER**  
Length for clinical electives is 4, 3 or 2 weeks. One or more times may be marked.  
Availability is to be indicated by SU [summer], F[fall], W [winter], SP [spring], or ALL.
2. Time and Location first day of session      **Monday June 2, 2014; 0900-1100 Hrs.,  
Instructional Bldg B Rm. 307 (Paris Simulation Center)**
3. Prerequisites      **Successful Completion of First Year Medical or Dental Courses (minimum of 'Pass' in all MS1 coursework on the first attempt; minimum of B in all Dental 1 coursework)**

It is absolutely necessary for instructors to list prerequisites for the clinical electives. Please note that electives are scheduled following the completion of one year of basic Clerkships. The basic clerkships are:  
FMED-901, MED-901, OB&G-901, PEDI-901, PSY-901 and SURG-901

4. Method of Remediation

**Students who do not pass this course on the first attempt will be allowed to make up any deficient points for a passing grade (70%) only through a mutually-agreed upon means suitable to the student, his/her research mentor, and the course directors. This policy is in place so that students can still receive elective credit that can be applied towards graduation. However, it is our unofficial recommendation that students in this scenario be excluded from further consideration for the medical school DIR track in order to preserve the integrity and quality of the track.**

**Absences: Students will be required to complete and submit all assignments in order to pass the course (passing = 70% or above). Students who miss sessions are required to provide documentation regarding the circumstances of their absence(s) within 3 days of the absence. Students who miss class will lose participation points for the session (each session = 3% towards overall grade). Opportunities for make-up will be provided on a case-by-case basis, determined by the course directors, but such opportunities are not guaranteed and students should make every effort to attend all sessions for maximal benefit.**



# Special Topics in Medical Research & Critical Thinking

# JUNE 2014

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2 Class Session (0900-1100) <b>L: Don Coffey</b>	3	4	5 INDEPENDENT STUDY (0900- 1100)	6	7
8	9 Class Session (0900-1100) <b>Ma: Small Group</b>	10	11	12 INDEPENDENT STUDY (0900- 1100)	13	14
15	16 Class Session (0900-1100) <b>L: Brian Coppola</b>	17	18	19 INDEPENDENT STUDY (0900- 1100)	20	21
22	23 Class Session (0900-1100) <b>Ma: Small Group</b>	24	25	26 INDEPENDENT STUDY (0900- 1100)	27	28
29	30 Class Session (0900-1100) <b>L: Anthony Atala</b>					



# Special Topics in Medical Research & Critical Thinking

# JULY 2014

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3 INDEPENDENT STUDY (0900- 1100)	4	5
6	7 Class Session (0900-1100) <b>L: Mark Lyles</b>	8	9	10 INDEPENDENT STUDY (0900- 1100)	11	12
13	14 Class Session (0900-1100) <b>Ma: Small Group</b>	15	16	17 INDEPENDENT STUDY (0900- 1100)	18	19
20	21 Class Session (0900-1100) <b>L: Michael Fowler</b>	22	23	24 INDEPENDENT STUDY (0900- 1100)	25 <b>End-of-course Assessment &amp; Mentor Evaluation Due</b>	26
27	28	29	30	31		