APPLICATION FOR NEW COURSE

1. Submitted by College of Medicine Date 11-9-01

Department/Division offering course School of Public Health

2. Proposed designation and Bulletin description of this course:
   (a) **SPH 664**
   (b) Design & Analysis of Clinical Trials (Clinical Trials Analysis)
   (c) 3
   (d) __________________________
   (e) __________________________
   (f) 3
   (g) Course description:
   This course will introduce the fundamental concepts used in the design of Phase I-IV clinical trials and will also introduce statistical methodology associated with the analysis of data from clinical trials.
   (h) Prerequisites (if any): STA 570 or permission of instructor
   (i) May be repeated to a maximum of _____ (if applicable)

3. To be cross-listed as: __________________________

Prefix and Number Signature, Chair, cross-listing department

4. Effective Date: Fall 2002 (semester and year)

5. Course to be offered (a) **X** (b) (c)
   Fall Spring Summer

6. Will the course be offered each year? **Yes**, less frequently __________
   (Explain if not annually):

7. Why is this course needed:
   This course presents advanced biostatistical concepts associated with clinical research. No such course currently exists. This course is required for participants in the program leading to the Graduate Certificate in Clinical Research Skills.

• Note: If the title is longer than 24 characters (including spaces), write a sensible title (not exceeding 24 characters) for use on transcripts:
8. (a) By whom will the course be taught? __Richard Kryscio, PhD____________________

(b) Are facilities for teaching the course now available? _____ No __X__ Yes

If not, what plans have been made for providing them? ________________________________
__________________________________________________________________________

9. What enrollment may be reasonably anticipated? __15 to 25 students per semester__

10. Will this course serve students in the Department primarily? _____ No __X__ Yes

Will it be of service to a significant number of students outside the Department?
__X__ No ____ Yes If so, explain ________________________________
__________________________________________________________________________

Will the course serve as a University Studies Program course? __X__ No _____ Yes

If yes, under what Area? ___________________________________________________________________________

11. Check the category most applicable to this course:

_____ traditional; offered in corresponding departments elsewhere;

__X_ relatively new, now being widely established

_____ not yet to be found in many (or any) other universities

12. Is this course part of a proposed new program? _____ No __X__ Yes If yes, which?

__Graduate Certificate in Clinical Research Skills______________

13. Will adding this course change the degree requirements in one or more programs? □

__X__ No _____ Yes If yes, explain the change(s) ________________________________
__________________________________________________________________________
__________________________________________________________________________

14. Attach a list of the major teaching objectives of the proposed course and outline
and/or reference list to be used. (Attached)

15. If the course is a 100-200 level course, please submit evidence (e.g., correspondence)
that the Community College System has been consulted.

16. Within the Department, who should be contacted for further information about the
proposed course?
Name __Joel Lee, DRPH___________ Phone Extension: 323-1100 X276________

• Note: Approval of this course will constitute approval of the program change unless other program
modifications are proposed.
SPH 664: Design and Analysis of Clinical Trials
Course Director: Richard Kryscio, PhD
Biostatistics Consulting Unit, 323 Sanders-Brown Center 0298
Telephone: 257-5904; kryscio@uky.edu

Course Credit: Three (3) semester hours.

Course Materials: None required. The following books will be on reserve in the Medical Center Library for reading assignments:

Course Prerequisites: STA 570 (Biostatistics section) or permission of instructor. Students should be familiar with reading SAS output.

Course Objectives:

1. Introduce the fundamental concepts used in the design of Phase I-IV clinical trials, including sample size issues, power, and use of interim stopping rules.

2. Introduce statistical methodology associated with the analysis of data from clinical trials, including factorial designs, crossover designs, bioequivalence trials, and meta-analysis.

At the end of this course, students should know how to draft selected sections of a protocol that involve biostatistical issues and should know how to read critically the results of a clinical trial as published in the literature.

Course Requirements:

1. Two examinations: one at mid-term, emphasizing Objective 1; and one at the time of semester finals, emphasizing Objective 2. Both examinations will be take-home. Each examination is worth 33 points.

2. Homework assignments, at least one of which will be a group project requiring a presentation. Worth 34 points.

Course Grades: A for 90% or better, B for 80% to 89%; C for 70% to 79%; E for less than 70%. The instructor may use a curve if desired.
### Course Syllabus:

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Comments</th>
<th>Text Chapters</th>
</tr>
</thead>
<tbody>
<tr>
<td>28 Aug</td>
<td>Phase I trials</td>
<td>Dose escalation studies, Bayesian probability</td>
<td>4,20(S), 4(P), 3 (GBC)</td>
</tr>
<tr>
<td>4 Sep</td>
<td>Phase II trials</td>
<td>Emphasizes oncology trials</td>
<td>4(P), 3,4(GBC)</td>
</tr>
<tr>
<td>11 Sep</td>
<td>Endpoints</td>
<td>Primary, secondary, surrogate</td>
<td>6(P), 2(FD)</td>
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<tr>
<td>18 Sep</td>
<td>Randomization</td>
<td>Blocking, stratification, unequal allocation, masking</td>
<td>5,6(FFD), 9(P), 4(E), 6(S)</td>
</tr>
<tr>
<td>25 Sep</td>
<td>Sample size</td>
<td>Compare means, proportions, and waiting time to events</td>
<td>7(FFD), 7(P), 13(S)</td>
</tr>
<tr>
<td>2 Oct</td>
<td>Interim stopping</td>
<td>DSM committees, repeated significance testing</td>
<td>11,19(FFD), 10(P)</td>
</tr>
<tr>
<td>9 Oct</td>
<td>Interim stopping</td>
<td>Group sequential designs, O’Brien-Fleming and Pocock</td>
<td>15(FFD), 10(P), 5(GBC), 19(S)</td>
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**MIDTERM: Take-Home Exam**

| 16 Oct | Parallel designs       | Factorial designs, interaction effects                                   | 15(P), 4(GBC) |
| 23 Oct | Crossover designs      | Design and statistical analysis issues                                   | 16(P), 17(S) |
| 30 Oct | Analysis issues I      | Intent to treat, noncompliance, regression to the mean, subgroup analyses, baseline measurements | 16(FFD), 7,8(GBC), 10,11(S) |
| 6 Nov  | Analysis issues II     | Covariate adjustment (prognostic factor analysis), misuse of cutpoints, confounding, Center effects (multicenter studies) | 13(P), 7(S), 6(E), 14(FFD) |
| 13 Nov | Bioequivalence         | Design and statistical analysis issues                                   | 19)DM), 22 (S) |
| 20 Nov | PK trials              | Analysis: individual vs population                                       |               |
| 4 Dec  | Prevention trials      |                                                                           | 11(E)         |
| 11 Dec | FINAL EXAM             | Take-home final                                                           |               |