Course Description: GS14 1612 Biostatistics for Life Scientists

Course Director: Christophe P. Ribelayga (Christophe.p.ribelayga@uth.tmc.edu; office: 713-500-5673; cell: 614-315-8494)

Lecturers: Christophe P. Ribelayga, Stephen L. Mills, and John Magnotti

Offering: Two semester hours. Spring annually.

Course outline: Biostatistics for life scientists – 30 lecture/exam days – Letter grade

Pre-requisite: Instructor’s approval.

Possibility to audit the course: YES

Class meets on Tuesday and Thursday 2-3 pm – Medical School Building MSB7.037

Week 1
Jan 9 Introduction to probability and statistics
   Probability (order, permutations, combinations), review
Jan 11 Introduction to R
   Probability (order, permutations, combinations), write R code

Week 2
Jan 16 Hypothesis testing, binomial probabilities, non-parametric tests, review
Jan 18 Hypothesis testing, binomial probabilities, non-parametric tests, hands-on exercises

Week 3
Jan 23 Chi-squared tests, review
Jan 25 Chi-squared tests, hands-on exercise

Week 4
Jan 30 REVIEW
Feb 1 TEST 1

Week 5
Feb 6 Central tendency, the normal distribution, z-test, t-test, review
Feb 8 Central tendency, the normal distribution, z-test, t-test, hands-on exercises

Week 6
Feb 13 Analysis of variance (simple + multiple factors), review
Feb 15 Analysis of variance (simple + multiple factors), hands-on exercises

Week 7
Feb 20 Analysis of variance, repeated measures, review
Feb 22 Analysis of variance, repeated measures, hands-on exercises

Week 8
Feb 27 Confidence interval and power of test, review
Mar 1 Confidence interval and power of test, hands-on exercises

Week 9
Mar 6 REVIEW
Mar 8 TEST 2

Week 10
SPRING BREAK

---------------------------------------------
<table>
<thead>
<tr>
<th>Week 11</th>
<th>Mar 20</th>
<th>Advanced topics in data analysis: Poisson analysis, review</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mar 22</td>
<td>Advanced topics in data analysis: Poisson analysis, hands-on exercises</td>
</tr>
<tr>
<td>Week 12</td>
<td>Mar 27</td>
<td>Advanced topics in data analysis: Linear regression, review</td>
</tr>
<tr>
<td></td>
<td>Mar 29</td>
<td>Advanced topics in data analysis: Linear regression, hands-on exercises</td>
</tr>
<tr>
<td>Week 13</td>
<td>April 3</td>
<td>Advanced topics in data analysis: Multiple regression, review</td>
</tr>
<tr>
<td></td>
<td>April 5</td>
<td>Advanced topics in data analysis: Multiple regression, hands-on exercises</td>
</tr>
<tr>
<td>Week 14</td>
<td>April 10</td>
<td>Advanced topics in data analysis: Clustering, review</td>
</tr>
<tr>
<td></td>
<td>April 12</td>
<td>Advanced topics in data analysis: Clustering, hands-on exercises</td>
</tr>
<tr>
<td>Week 15</td>
<td>April 17</td>
<td>Advanced topics in data analysis: Multidimensional analyses, review</td>
</tr>
<tr>
<td></td>
<td>April 19</td>
<td>Advanced topics in data analysis: Multidimensional analyses, hands-on exercises</td>
</tr>
<tr>
<td>Week 16</td>
<td>April 24</td>
<td>REVIEW</td>
</tr>
<tr>
<td></td>
<td>April 26</td>
<td>FINAL EXAM</td>
</tr>
</tbody>
</table>