

生物統計學 Biostatistics

科號	11120LS 262200	組別		學分	3	人數限制	30				
修課年級	<input type="checkbox"/> 大學部二年級以上 <input type="checkbox"/> 碩士班一年級以上(含博士班) <input type="checkbox"/> 碩士班二年級以上(含博士班)										
上課時間	T6R7R8		教室	220 + 217							
科目中文名稱	生物統計學										
科目英文名稱	Biostatistics										
任課教師	張筱涵										

一、課程說明	This 3-credit course is designed for undergraduate students pursuing a biology major. The course format includes a lecture portion covering statistical concepts that are relevant for analyzing biological data, and a computer laboratory component covering usage of R software to perform the analyses described in lecture. It assumes no previous coding experience in R or any other programming language.																																
二、指定用書	Michael C. Whitlock and Dolph Schluter. 2014. <i>The Analysis of Biological Data (Second Edition)</i> . Roberts and Company Publishers, Greenwood Village, Colorado. (ISBN-10: 1936221489)																																
三、教學方式	Lecture and computer laboratory																																
四、教學進度	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Week 1</td> <td style="width: 45%;">2/14 Course overview and introduction to statistics</td> <td style="width: 40%;">2/16 Data visualization and introduction to R</td> </tr> <tr> <td>Week 2</td> <td>2/21 Data visualization</td> <td>2/23 Probability distributions</td> </tr> <tr> <td>Week 3</td> <td>2/28 Probability distributions (和平紀念日放假，提供影片讓同學自主學習)</td> <td>3/2 Inference from samples</td> </tr> <tr> <td>Week 4</td> <td>3/7 Inference from samples</td> <td>3/9 Hypothesis testing</td> </tr> <tr> <td>Week 5</td> <td>3/14 Hypothesis testing</td> <td>3/16 Goodness-of-fit test and contingency analysis</td> </tr> <tr> <td>Week 6</td> <td>3/21 Goodness-of-fit test and contingency analysis</td> <td>3/23 Normal distribution and one-sample inference</td> </tr> <tr> <td>Week 7</td> <td>3/28 Normal distribution and one-sample inference</td> <td>3/30 Comparing two means</td> </tr> <tr> <td>Week 8</td> <td>4/4 兒童節放假</td> <td>4/6 Comparing two means (校際活動週停課一日，擇期補課)</td> </tr> <tr> <td>Week 9</td> <td>4/11 Midterm (R)</td> <td>4/13 Midterm (materials until 4/6)</td> </tr> <tr> <td>Week</td> <td>4/18</td> <td>4/20</td> </tr> </table>			Week 1	2/14 Course overview and introduction to statistics	2/16 Data visualization and introduction to R	Week 2	2/21 Data visualization	2/23 Probability distributions	Week 3	2/28 Probability distributions (和平紀念日放假，提供影片讓同學自主學習)	3/2 Inference from samples	Week 4	3/7 Inference from samples	3/9 Hypothesis testing	Week 5	3/14 Hypothesis testing	3/16 Goodness-of-fit test and contingency analysis	Week 6	3/21 Goodness-of-fit test and contingency analysis	3/23 Normal distribution and one-sample inference	Week 7	3/28 Normal distribution and one-sample inference	3/30 Comparing two means	Week 8	4/4 兒童節放假	4/6 Comparing two means (校際活動週停課一日，擇期補課)	Week 9	4/11 Midterm (R)	4/13 Midterm (materials until 4/6)	Week	4/18	4/20
Week 1	2/14 Course overview and introduction to statistics	2/16 Data visualization and introduction to R																															
Week 2	2/21 Data visualization	2/23 Probability distributions																															
Week 3	2/28 Probability distributions (和平紀念日放假，提供影片讓同學自主學習)	3/2 Inference from samples																															
Week 4	3/7 Inference from samples	3/9 Hypothesis testing																															
Week 5	3/14 Hypothesis testing	3/16 Goodness-of-fit test and contingency analysis																															
Week 6	3/21 Goodness-of-fit test and contingency analysis	3/23 Normal distribution and one-sample inference																															
Week 7	3/28 Normal distribution and one-sample inference	3/30 Comparing two means																															
Week 8	4/4 兒童節放假	4/6 Comparing two means (校際活動週停課一日，擇期補課)																															
Week 9	4/11 Midterm (R)	4/13 Midterm (materials until 4/6)																															
Week	4/18	4/20																															

	10	Non-parametric tests	Non-parametric tests *Final project 題目截止日	
	Week 11	4/25 Analysis of variance	4/27 Analysis of variance	
	Week 12	5/2 Correlation and regression	5/4 Correlation and regression	
	Week 13	5/9 Correlation and regression	5/11 Correlation and regression	
	Week 14	5/16 Computationally-intensive methods	5/18 Project discussion	
	Week 15	5/23 Likelihood and Bayesian analysis	5/25 Project discussion	
	Week 16	5/30 Meta-analysis	6/1 Final	
	五、成績考核	Problem sets: 10%; Class participation: 5%; Midterm: 30%; Final: 30%; Project presentation: 25%		