



Course Syllabus (Academic Year 2020)

School of Interdisciplinary Studies, Kanchanaburi Campus, Mahidol University

- Course No. and Title** : KACB 319 Biostatistics
Credit (study hours) : 3 (3-0-6)
- Program Name** : Bachelor of Science in Conservation Biology
- Course Module** : Gen.Edu. course Core course Elective course
Pre/co-requisite : KAID270 Introduction to Statistics
- Semester** : 1st Semester 2nd Semester Academic Year 2020
- Class Schedule & Venue** : Monday 09:30 – 12:30, Online Webex / Google Classroom / On-site
- Course Coordinator** : Lect. Chetsada Phaenark Contact No. : 080-0762169
Email: jetsada2004@hotmail.com, chetsada.pha@mahidol.ac.th

7. Course Description

Biological data; sampling methods; the descriptive statistics; probability distribution; sampling distribution; estimation; hypothesis testing; the completely randomized design (CRD), the randomized complete block design (RCBD) and analysis of variance (ANOVA); chi-square test; regression; correlation; non-parametric statistics

8. Course Objectives / Course Learning Outcomes (CLOs)

CLOs		PLOs
1	Explain biological data, sampling method, and statistics for data analysis	1, 4, 5, 6, 7
2	Use the descriptive statistics for data presentation	1, 4, 5, 6, 7
3	Use the discrete and continuous probability distribution and sampling distribution for biological study	1, 4, 5, 6, 7
4	Demonstrate the parameter estimation from the sampling data	1, 4, 5, 6, 7
5	Demonstrate the hypothesis testing for biological data by appropriate statistical method	1, 4, 5, 6, 7
6	Demonstrate the experimental design in biological study for collecting and analyzing the data by analysis of variance (ANOVA)	1, 4, 5, 6, 7
7	Demonstrate the correlation testing and linear regression analysis of biological data	1, 4, 5, 6, 7
8	Demonstrate the data analysis by non- parametric statistics	1, 4, 5, 6, 7

* PLOs = Program Learning Outcomes

PLO1: Analyze biodiversity functions, value, status, trend, and their threats for monitoring and solving biodiversity problems.

PLO4: Conduct the own scientific research to solve the particular problem related to biodiversity conservation

PLO5: Apply the information technology for supporting biodiversity conservation management effectively, morally, and ethically.

PLO6: Apply the appropriate communication to support biodiversity conservation management.

PLO7: Collaborate with teammates and stakeholders in biodiversity conservation with responsibility, integrity, and respect the rights of them.

9. Class Instructor List

Instructor's Name	Contact No.	Email
9.1 Chetsada Phaenark (CP)	080-0762169	jetsada2004@hotmail.com, chetsada.pha@mahidol.edu
9.2 Weerachon Sawangproh (WS)		weerachon.saw@mahidol.edu

10. Course Outline

Week	Date	Contents	CLOs	Instructor	Assessment Distribution - % (detail in 11. Course Assessment)				
					11.1	11.2	11.3	11.4	11.5
1	16 Aug 21	• Course orientation	1	CP	5			1	0.5
		• Biostatistics and Biological Data		CP					
		• Sampling methods		CP					
2	18 Aug 21 บ่าย (ชดเชย)	• Descriptive Statistics	2	CP	5				1.0
		• Vital Statistics	2	CP					
		• Discrete Probability Distribution	3	CP					
3	23 Aug 21	• Continuous Probability Distribution	3	CP	0.5	3		1	0.5
		• Sampling distribution	3	CP					
		• Estimation	4	CP					
4	30 Aug 21	• Hypothesis testing (one population) • Hypothesis testing (two population)	5	CP	0.5	5		1	0.5
5	6 Sep 21	CRD - One way ANOVA	6	CP	0.5	5		1	0.5
6	13 Sep 21	RCBD, Factorial - Two way ANOVA	6	CP	0.5	5		1	0.5
7	20 Sep 21	Correlation and Linear Regression	7	CP	0.5	5		1	0.5
8	27 Sep 21	Probit Analysis	7	CP		5			0.5
Midterm Examination (4 – 8 Oct 21)			3–7		30				
9	11 Oct 21	Chi-square Testing	8	CP	0.5		5	1	0.5
10	18 Oct 21	Non-Parametric Statistics for one population	8	WS	0.5		5	1	0.5
11	25 Oct 21	Non-Parametric Statistics for two population	8	WS	0.5		5	1	0.5
12	1 Nov 21	Non-Parametric Statistics for >2 population	8	WS	0.5		5	1	0.5
13	8 Nov 21	Non-Parametric Statistics for correlation	8	WS	0.5		5	1	0.5
14	15 Nov 21	Class Discussion	1–8	CP & WS	5				1.0
15	22 Nov 21	Mini project presentation	1–8	CP & WS	10				1.0
Final Examination (29 Nov – 10 Dec 2021)			8		25				

11. Course Assessment

No.	Methods / Activities	Regulations	CLOs	Week	Weight Dist. (%)
11.1	1) Homework 2) Assignments 3) Mini project	Instructor will explain the detail of Homework /Assignments/Mini project/Activities in the class. The homework / assignments have been submitted on time (deadline time will be announced later)	1 – 8	1 – 15	25.00
11.2	Mid-term exam	3 hour exam (other regulation will be announced in the class later)	3 – 7	Midterm	30.00
11.3	Final exam	3 hour exam (other regulation will be announced in the class later)	8	Final	25.00
11.4	Quiz / Individual test	Pre-test in 10 min. before class or Post-test in 10 min. after class	1 – 8	1 – 13	11.00
11.5	Class participation	Students have to attend in the class, discussion, Q&A		1 – 15	9.00
Total (for criterion-referenced Grading defined in 12. Grading system)					100.00

12. Grading System

Grading system in this course is based on criterion-referenced evaluation as following

Grade	A	B+	B	C+	C	D+	D	F
Total Score	≥ 80 %	75 – 79%	70 – 74%	65 – 69%	60 – 64%	55 – 59%	50 – 54%	< 50 %

13. References

คณาจารย์ภาควิชาคณิตศาสตร์ คณะวิทยาศาสตร์ จุฬาฯ. (2554). *ความน่าจะเป็นและสถิติ*. พิมพ์ครั้งที่ 9. กรุงเทพฯ: โรงพิมพ์ห้างหุ้นส่วนจำกัดพิทักษ์การพิมพ์, 400 หน้า.

วัชรภรณ์ สุริยาวิวัฒน์. (2552). *สถิติสำหรับวิทยาศาสตร์ชีวภาพ เล่ม 1 (STATISTICS FOR BIOLOGICAL SCIENCE)*. กรุงเทพฯ: สำนักพิมพ์จุฬาลงกรณ์มหาวิทยาลัย, 451 หน้า.

วัชรภรณ์ สุริยาวิวัฒน์. (2552). *สถิติสำหรับวิทยาศาสตร์ชีวภาพ เล่ม 2 (STATISTICS FOR BIOLOGICAL SCIENCE)*. กรุงเทพฯ: สำนักพิมพ์จุฬาลงกรณ์มหาวิทยาลัย, 409 หน้า.