

Faculty of Nursing, Prince of Songkla University  
Course Syllabus

Section 1: General Description

1. Code and Course Title      642-512 Statistics for Nurses
2. Credit      2 (1-2-3) Lecture/Discussion 15 hours, Lab/Practice 30 hours
3. Program      Master of Nursing Science (International Program) (revised 2011)
4. Course Coordinator      Assist. Prof. Dr. Jintana Damkliang  
Coordinator Assistant      Assist. Prof Dr. Luppana Kitrungrrote
5. Semester/ Year/ Academic Year      1/1/2020
6. Classroom      The 3rd Building, third floor, Room 3410, Faculty of Nursing

7. Lecturers

- 7.1 Assist. Prof. Dr. Jintana Damkliang
- 7.2 Assist. Prof Dr. Luppana Kitrungrrote
- 7.3 Assoc. Prof. Dr. Piyanuch Jittanoon
- 7.4 Assist. Prof Dr. Charuwan Kritpracha
- 7.5 Assist. Prof Dr. Chantra Promnoi
- 7.6 Dr. Ratjai Vachprasit

Section 2: Course Objectives

1. Course Objectives

After completion of this course, students will be able to

- 1.1 Explain and apply probability theory to statistical analysis
- 1.2 Discriminate variables and their level of measurement
- 1.3 Apply statistical software in data processing and analysis
- 1.4 Select and apply descriptive statistics in analyzing, interpreting, and reporting statistical findings
- 1.5 Select and apply inferential statistics both parametric and nonparametric statistics in analyzing, interpreting, and reporting statistical findings
- 1.6 Implement ethics knowledge on data analysis, interpretation, and report of the result

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## 2. Objectives of a Course Revision

To integrate teaching and learning method, including content series, on research and research utilization and statistics for nurse courses together using online platform.

## Section 3: Course Description and Design

### 1. Course Description

Probability theory, variable and level of measurement; descriptive statistics; inferential statistics including parametric and non-parametric statistics; application of computer software in processing and analyzing data; interpretation and presentation of statistical analysis findings.

### 2. Number of Hours per Semester

Lecture/Discussion	Lab	Self-study	Field Practice	Tutorial
15	30	45	-	-

### 3. Number of Hours per Week for Consultation

3.1 Hours assigned for individual consultation

Name/ email-address	Week	Date	Hour	Room
Assist. Prof. Dr. Jintana Damkliang (jintana.d@psu.ac.th) Tel: 074-286513	1-5	Tuesday	4-5 pm	2 <sup>nd</sup> Building Room 2217
Assist. Prof. Dr. Luppana Kitrungrote (Luppana.k @psu.ac.th) Tel: 074-286515	6-9	Tuesday	4-5 pm	2 <sup>nd</sup> Building Room 2213

3.2 Hours assigned for group consultation/discussion at LMS2@PSU 1 hour/week

## Section 4: Learning Outcomes

### 1. Morality and Ethics

Morality and Ethics needed	Learning Methods	Evaluating Methods
1.1 Possess ethical behaviors in analyzing and reporting statistical findings	- Individual exercise for each topic - Small group discussion	- Check for plagiarism of copying homework - Giving class participation

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	in terms of ethical issues of data collection, data coding, data analysis and report findings	score for the group discussion activity
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## 2. Knowledge

Needed knowledge	Learning Methods	Evaluating Methods
2.1 Explain statistical knowledge regarding selecting statistics appropriated to research questions or research hypothesis, steps of doing data analysis, testing of statistical assumptions, reading and interpreting, and reporting statistical findings	<ul style="list-style-type: none"> <li>- Lecture/discussion with example</li> <li>- Demonstration</li> <li>individual assignment for doing exercise of each topic</li> <li>-Using active learning strategies including small group discussion with peer and instructor, LMS, and other channels</li> </ul>	<ul style="list-style-type: none"> <li>- Examinations</li> <li>- Quiz</li> <li>- Class participation</li> <li>- Individual exercises</li> </ul>

## 3. Cognitive Skills

Needed knowledge	Learning Methods	Evaluating Methods
3.1 Write hypotheses and choose appropriate statistics to fit the identified hypotheses 3.2 Enter, analyze selected data using computer software 3.3 Interpret and report the selected data 3.4 Explain the strength and weakness of data analysis process of the published articles	<ul style="list-style-type: none"> <li>- Lecture/discussion with example of published articles</li> <li>- Demonstration</li> <li>- Individual assignment for doing exercise for hypothesis testing, data analysis from selected data</li> <li>- Report findings of selected data</li> </ul>	<ul style="list-style-type: none"> <li>- Examination</li> <li>- Quiz</li> <li>- Class participation</li> <li>- Individual exercise</li> </ul>

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### 5. Numerical Analysis, Communication and Information Technology Skills

Needed knowledge	Learning Methods	Evaluating Methods
5.1 Analyze selected data using computer software	- Lecture/discussion	- Examination
5.2 Writing report of data analyzed.	- Demonstration	- Quiz
	- Individual assignment to apply statistical software in data analysis	- Class participation
		- Individual exercise
5.3 Demonstrate skills in using descriptive and inferential statistics both parametric and non-parametric statistics, testing statistical assumptions, reading and interpreting statistical analysis findings	- Lecture/discussion	- Examinations
	- Demonstration	- Quizzes
	- Individual exercise assignment to selected statistics for data analysis, interpret, and report the findings for selected data	- Class participations
		- Exercises

### Section 5: Course Plan and Evaluation

Week/ Date/Time	Time (Duration)	Topic	Methods	Lecturer
<b>Week 1</b> <b>Sep 1,</b> <b>2020</b> 8-9 am	10 min  1 hr. (D)	Course orientation  1. Concept and principle of statistical analysis in nursing research 1.1 Probability theory 1.2 Variable and level of measurement 1.3 Common statistical tests 1.4 Ethics in statistics and data analysis	- Online discussion  - Online discussion  - PowerPoint	- Assist. Prof. Dr. Jintana  - Assist. Prof. Dr. Luppana

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Week/ Date/Time	Time (Duration)	Topic	Methods	Lecturer
9-12 am	3 hrs. (L)	1.5 Exercise	- Practice/ Discussion/ Participation in LMS2@PSU	- Assist. Prof. Dr. Luppana
1-2 pm	1 hr. (D)	2. Concept and principle of hypothesis testing	- Online discussion - PowerPoint - <b>Quiz 1</b>	- Assist. Prof. Dr. Luppana
2-5 pm	3 hrs. (L)	2.1 Exercise	- Practice/ Discussion/ Participation in LMS2@PSU	- Assist. Prof. Dr. Luppana
<b>Week 2</b> <b>Sep 8,</b> <b>2020</b> 8-9 am	1 hr. (D)	3. Use of computer software for statistical analysis 3.1 Data Entry 3.2 Data Screening 3.3 Data management 3.4 Demonstration of statistical software	- Online discussion - Demonstration - PowerPoint	Dr. Ratjai
9-12 am	3 hrs. (L)	3.5 Practice of statistical software for data processing	Practice/ Exercise	Dr. Ratjai
1-2 pm	1 hr. (D)	4. Quantitative data analysis 4.1 Key principles of descriptive statistics and inferential statistics 4.2. Descriptive statistics 4.2.1 Frequency distribution 4.2.2 Measures of central tendency 4.2.3 Measures of dispersion	- Online discussion - PowerPoint	Assist. Prof. Dr. Charuwan

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Week/ Date/Time	Time (Duration)	Topic	Methods	Lecturer
2-5 pm	3 hrs. (L)	4.3 Practice of reading and interpreting output of descriptive statistical analysis	- Practice/ Discussion/ Participation in LMS2@PSU	Assist. Prof. Dr. Charuwan
<b>Week 3</b> <b>Sept 15,</b> <b>2020</b> 8-9 am	1 hr. (D)	4.4. Inferential statistics: Principles and application 4.4.1 Parametric statistics 4.4.2 Nonparametric statistics 4.5 Testing and managing violated statistical assumptions - Normality - Homogeneity of Variance - Linearity	- Online discussion - PowerPoint	Assist. Prof. Dr. Chantra
9-12 am	3 hrs. (L)	5.3 Practice of testing of statistical assumptions	- Practice/ Discussion/ Participation in LMS2@PSU <b>-Submit Practice Work 1</b>	Assist. Prof. Dr. Chantra
1-2 pm	1 hr. (D)	5. Inferential statistics: Parametric statistics 5.1 T-test: Independent and dependent t-tests 5.1.1 Application of t-test	- Online discussion - PowerPoint - Quiz 2	Assoc. Prof. Dr. Piyanuch
2-5 pm	3 hrs. (L)	5.1.2 Practice of analyzing, reading and interpreting output of t-test	- Practice/ Discussion/ Participation in LMS2@PSU <b>-Submit Practice Work 2</b>	Assoc. Prof. Dr. Piyanuch

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Week/ Date/Time	Time (Duration)	Topic	Methods	Lecturer
<b>Week 4</b> <b>Sept 22,</b> <b>2020</b> 8-10 am	2 hrs.	<b>Exam 1</b> <b>(Data analysis using a software program)</b>		- Assist. Prof. Dr. Jintana - Assist. Prof. Dr. Luppana
1-2 pm	1 hr. (D)	5.2 ANOVA 5.2.1 Application of ANOVA	- Online discussion - PowerPoint - Quiz 3	- Assist. Prof. Dr. Luppana
2-5 pm	3 hrs. (L)	5.2.2 Practice of analyzing, reading and interpreting output of ANOVA	- Practice/ Discussion/ Participation in LMS2@PSU -Submit Practice Work 3	- Assist. Prof. Dr. Luppana
<b>Week 5</b> <b>Sept 29,</b> <b>2020</b> 8-9 am	1 hr. (D)	5.3 Relationship between variables and prediction 5.3.1 Correlation 5.3.2 Regression	- Online discussion - PowerPoint - Quiz 4	Assist. Prof. Dr. Charuwan
9-12 am	3 hrs. (L)	5.3.3 Practice of analyzing, reading and interpreting output of correlation and regression	- Practice/ Discussion/ Participation in LMS@PSU -Submit Practice Work 4	Assist. Prof. Dr. Charuwan
1-3 pm	2 hrs.	<b>Wrap up 1</b> (Topic 1-5.2)	- Online discussion	- Assist. Prof. Dr. Luppana - Assist. Prof. Dr. Charuwan - Assoc. Prof.

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Week/ Date/Time	Time (Duration)	Topic	Methods	Lecturer
				Dr. Piyanuch - Assist. Prof. Dr. Chantra
<b>Week 6</b> <b>Oct 6,</b> <b>2020</b> 8-10 am	2 hrs.	<b>Exam 2</b> <b>(Data analysis using a software program)</b>		- Assist. Prof. Dr. Jintana - Assist. Prof. Dr. Luppana
1-2 pm	1 hr. (D)	5.4 Non-parametric statistics 5.4.1 Principles of non-parametric statistics 5.4.2 Group Comparison 1) Mann-Whitney U test 2) Wilcoxon Signed Rank test 3) Kruskal Wallis test 4) Friedman test	- Online discussion - PowerPoint - Quiz 5	- Assist. Prof. Dr. Jintana
2-5 pm	3 hrs. (L)	5.4.3 Practice of analyzing, reading and interpreting output of Mann-Whitney U test, Wilcoxon Signed Rank test, Kruskal Wallis test, and Friedman test	- Practice/ Discussion/ Participation in LMS@PSU -Submit Practice Work 5	- Assist. Prof. Dr. Jintana
<b>Week 7</b> <b>Oct 13,</b> <b>2020</b>		<b>Holiday</b> (King Bhumibol Adulyadej Memorial Day)		
<b>Week 8</b> <b>Oct 20,</b> <b>2020</b> 8-9 am	1 hr. (D)	5.4 Non-parametric statistics 5.4.4 Relationship between groups or variables 1) Chi-square test for independence 2) McNemar's test 3) Spearman Rho	- Online discussion - PowerPoint	- Assist. Prof. Dr. Jintana

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Week/ Date/Time	Time (Duration)	Topic	Methods	Lecturer
9-12 am	3 hrs. (L)	5.4.3 Practice of analyzing, reading and interpreting output of Chi-square test for independence, McNemar's test, and Spearman Rho	- Practice/ Discussion/ Participation in LMS@PSU	- Assist. Prof. Dr. Jintana
1-2 pm	1 hr. (D)	5.5 Review of reading printout/statistics tables in the research articles	- Online discussion	- Assist. Prof. Dr. Jintana - Assist. Prof. Dr. Luppana
2-3 pm	1 hr. (D)	<b>Wrap up 2</b> (Topic 5.3 and as students requested)	- Online discussion	- Assist. Prof. Dr. Charuwan
<b>Week 9</b> <b>Oct 27,</b> <b>2020</b> 8-10 am		<b>Exam 3</b> (Data analysis using a software program)		- Assist. Prof. Dr. Jintana - Assist. Prof. Dr. Luppana
1-2 pm	1 hr. (D)	<b>Wrap up 3</b> (Topic 5.4 and as students requested)	- Online discussion	- Assist. Prof. Dr. Jintana
2-2.30 pm	30 mins	Course evaluation	- Online discussion	- Assist. Prof. Dr. Jintana - Assist. Prof. Dr. Luppana

**Note:**

- **Wrap up:** Reflection between students and lecturers and receiving feedbacks from lecturers regarding to practice works, quiz, and exams
- D = discussion hour, L =lab hour

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## 5.2 Evaluation Plan of the Learning Outcomes

Learning Outcomes	Evaluation Methods	Evaluated Week	Evaluation Proportion (%)
LO 1.3	Discussion about ethics in data analysis (Individual work)	1	5
LO 1.3, 2.1,3.1,3.2, 5.1, 5.3	Participation in LMS@PSU	1-9	5
	Practice work on data analysis (5 times)	2, 4, 6	20 (4% for each time)
	Quiz (5 times)	1, 3, 4, 6	10 (2% for each time)
	Examination (3 times)	4, 6, 9	60 (20% for each time)

### Note:

1. Students can request for disclosure of an unexpected or a surprised mark/ grade within the next following semester only.
2. In case of the exercises or quizzes scores less than 50%, students have one chance to redo the exercise or quiz for revising the score; however, the revised score should be no greater than 50%.
3. The lecturers must give feedback within 1-2 weeks after students have submitted their assignments/paper.

## Section 6: Learning Resources

### 6.1 Required Textbooks/ Books

Gravetter, F. J., & Wallnau, L. B. (1996). *Statistics for the behavioral sciences* (4th ed.). St. Paul, MN: West Publishing.

Munro, B. H. (2014). *Statistical methods for health care research*. (5th ed.). Philadelphia, PA: Lippincott Williams & Wilkins.

Polit, D. F., & Beck, C. T. (2017). *Nursing research: Generating and assessing evidence for nursing practice* (10th ed.). Philadelphia, PA: Wolters Kluwer.

Polit, D. F., & Beck, C. T. (2018). *Essentials of nursing research: Appraising evidence for nursing practice* (9th ed.). Philadelphia, PA: Lippincott Wolters Kluwer.

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## 6.2 Suggested Books and Other Resources

### 6.2.1 Books

- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Hatcher, L. (2013). *Advanced statistics in research: Reading, understanding, and writing up data analysis results*. LL: Shadow Finch Media.
- Melnyk, B. M., & Fineout-Overholt, E. (2015). *An Evidence-based practice in nursing and healthcare: A guide to best practice* (2 ed.). Philadelphia, PA: Lippincott.
- Privitera, G. J. (2012). *Statistics for the behavioral sciences*. Los Angeles: Sage Publications.
- Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Boston : Pearson/Allyn & Bacon.
- Waltz, C. F., Strickland, O. L., & Lenz, E. R. (2017). *Measurement in nursing and health research* (5 th ed.). New York: Springer.

### 6.2.2 Electronic databases or websites

- <http://www.statsoft.com/textbook/>
- <http://www.stats.gla.ac.uk/steps/glossary/>
- <http://www.analyzemath.com/statistics.html>
- <http://www.psych.utoronto.ca/courses/c1/statstoc.htm>

## Executive Notes

**PLAGIARISM:** The use of published or unpublished work or specific ideas of another person without giving proper credit to that person is considered UNETHICAL writer. Demonstrating plagiarizing behavior of the students of Prince of Songkla University is prohibited and will result in serious academic consequences. Therefore, ensure you make your own contents. It is a student responsibility to adhere to graduate school and PSU university policy and procedures for academic misconduct as follows:

Step 1: At the first time, the student will be given a verbal or written warning from the advisor and/or course coordinator after they found plagiarism in the student's draft report.

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Step 2: The student's report score will be deducted 20% after the advisor and/or course coordinator found the plagiarism in the student's original report. Then, the student has to revise a report and submitted again. If no plagiarism is found, the student's report score is not exceed grade B

Step 3: If the report revised is found to be copied. The student's report score will be deducted 40%. When the student revises the report, its score will be no more than grade C

Step 4: After the student edited, the plagiarism is found. The students will be received grade F (Fail) in this course.

4. It is student's responsibility and passion in creating the progress of your work. It does student's responsibility and accountability to best understand the common knowledge used in conducting the literature review and writing academic reports such as citation methods and referencing system, and format of the report etc.

#### **The regulations of giving feedback to graduate students**

According to the consensus of the graduate committee in the meeting 2/2017 on February 6, 2017, Faculty of Nursing, the regulations of giving graduate students feedback about their assignments/paper are as follows;

1. The lecturers must give feedback within 1-2 weeks after students have submitted their assignments/paper.
2. The students must submit the last assignments/paper before due date, so that the lecturers can be read and reviewed before giving feedback. The students will get feedback after their presentation of the final assignments/paper in classroom.

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