**Course: 352-526 Advanced Medical Statistics and Medical Data Analysis**

⭘ Secondary responsibilities ⚫ Main responsibilities

**5 PLOs with 9 CLOs**

| **Program learning outcomes (PLOs)** |  | **Course Learning Outcomes (CLOs)**  | **Teaching and learning approach** | **Student assessment** | **Topics in this subject** |
| --- | --- | --- | --- | --- | --- |
| PLO1 To generate morally and ethically sound research. |  |  |  |  |  |
| PLO2 To design research studies in response to the needs of stakeholders. | ⭘ | 1. Students can apply appropriate statistical techniques in designing research studies and address the needs of stakeholders.   | 1. Pre-read module and exercise.2. Discussion on statistic analysis reflecting the study designs relevant to stakeholders.3. Audiovisual materials | 1. Class attendance.
2. Completing the exercise in the module.
3. Active participation and contribution in discussion.
 | * Logistic regression
* Poisson regression
* Multinomial regression
* Survey analysis
* Causal graphs and modeling strategy
 |
| PLO3 To use information technology to search health-related information for research. |  |  |  |  |  |
| PLO4 To relate theoretical health concepts into research through critical appraisal of the evidence. | ⚫ | 2. Students can explain the basic concepts of commonly-used statistical procedures to address problems in health research and epidemiology.  3. Students can explain the limitations of various statistical procedures for a given study design  | 1. Pre-read module, articles, and completing pre-class assigned tasks.2. Answering questions and completing exercises in the module booklets 3. In-class discussion. | 1. Class attendance.
2. Completing the exercise in the module.
3. Active participation and contribution in discussion.
 | * + Logistic regression
	+ Poisson regression
	+ Multinomial regression
	+ Survey analysis
 |
| PLO5 To generate community-based, community-oriented, community-participating field research with skills in leadership and problem-solving. |  |  |  |  |  |
| PLO6 To appropriately appraise research findings amidst the evolving state of knowledge in epidemiology. | ⚫ | 4. Students can explain the implications of data types and data formatting in statistical analysis and their effects on research findings. 5. Students can apply statistical concepts to plan analyses with integration of epidemiological concepts.   | 1. Pre-read module, articles, and completing pre-class assigned tasks.2. Answering questions and completing exercises in the module booklets 3. In-class discussion. | 1. Class attendance.
2. Completing the exercise in the module.
3. Active participation and contribution in discussion.
 | * Tabulation
* Logistic regression
* Poisson regression
* Multinomial regression
* Survey analysis
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| PLO7 To demonstrate mastery of principles of epidemiology and statistics in relation to health research. | ⚫ | 6. Students can execute statistical analyses to address health research objectives of various types of epidemiological studies. 7. Students can show the research findings in tabular and/or graphical formats with clear written descriptions of statistical analysis outputs.   | 1. Pre-read module, articles, and completing pre-class assigned tasks.2. Hands-on practice of analysis3. In-class discussion. | 1. Active participation and contribution in discussion.
2. Written examination
 | * Sample size calculation
* Logistic regression
* Poisson regression
* Multinomial regression
* Survey analysis
* Causal graphs and modeling strategy
* Causal graphs and modeling strategy
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| PLO8 To analyze big or complex data with clear presentation advocating appropriate usage of the findings. | ⚫ | 8. Students can explain the concepts of big data and data mining for health research  9. Students can explain the use of statistical models for various purposes, including complex data analysis  | 1. Pre-read module, articles, and completing pre-class assigned tasks.2. Answering questions and completing exercises in the module booklets 3. In-class discussion. | 1. Class attendance.2. Completing the exercise in the module.3., Active participation and contribution in discussion.4. Written examination | * Tabulation
* Logistic regression
* Poisson regression
* Multinomial regression
* Survey analysis
* Causal graphs and modeling strategy
* Big medical data and data mining
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| PLO9 To produce high-quality research article(s) translatable to policy and practice. |  |  |  |  |  |

**Matrixes PLOs and CLOs of Advanced Medical Statistics and Medical Data Analysis**

|  |  |
| --- | --- |
|  | **CLOs** |
| **PLOs** |  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1 |  |  |  |  |  |  |  |  |  |  |
| 2 | ⭘ | x |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |  |  |
| 4 | ⚫ |  | x | x |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |  |  |  |
| 6 | ⚫ |  |  |  | x | x |  |  |  |  |
| 7 | ⚫ |  |  |  |  |  | x | x |  |  |
| 8 | ⚫ |  |  |  |  |  |  |  | x | x |
| 9 |  |  |  |  |  |  |  |  |  |  |