

**Master of Science (Public Health Infectious Diseases and Epidemiology)**  
**Faculty of Public Health, Mahidol University**

<b>Information on Courses</b>	
1	<b>Course Name:</b> Statistical Analysis in Infectious Diseases and Epidemiology
2	<b>Course code:</b> PHIE 605
3	<b>Name(s) of Course Director:</b> 1) Lect. Nanapas Bhagaman 2) Assistant Professor Dr. Fuangfa Utrarachkij 3) Assistant Professor Dr. Tawee Saiwichai
4	<b>Rationale For the inclusion of the course in the program:</b> This PHIE605 is a compulsory subject of the Master of Science (Public Health Infectious Diseases and Epidemiology). It is an introductory course dealing with the practical issues of relative risk, odds ratios and interpretation. This course intended to provide students with a broad overview of basis statistical methods and concepts used in public health. Students can tackle examples of infectious problems related to difference specific data analysis and show how to make academic interpretations from the numerical results.
5	<b>Semester/year Offered :</b> 2/1
6	<b>Credit value:</b> 2 credits
7	<b>Pre-requisite (if any) :</b> -
8	<b>Objective (s) of Course:</b> During learning this course, students are expected to: <ol style="list-style-type: none"> <li>1. choose the appropriate statistical method for study design of infectious diseases and epidemiology.</li> <li>2. analyze data and risks in infectious diseases and epidemiology.</li> <li>3. interpret the result of statistical data analysis.</li> <li>4. communicate the result of statistical analysis.</li> </ol>
9	<b>Course learning outcome (CLO) :</b> After successful completion of this PHIE 605, students are able to: <ol style="list-style-type: none"> <li>1. apply basis statistical methods in solving infectious diseases and epidemiological problems.</li> <li>2. integrate knowledge of fundamental statistics for using data sets from actual surveillance and investigation studies.</li> <li>3. demonstrate skills in data analysis with an ability to interpret of results critically.</li> <li>4. communicate statistical results as information in public health infectious diseases and epidemiology.</li> </ol>

	5. demonstrate cooperation of teamwork in statistical problem solving with moral and ethical concerns.
10.	<b>Transferable skill :</b> Statistical analysis, communication, information technology, problem solving, academic presentation, team work and critical thinking skills
11.	<b>Teaching and learning assessment strategy:</b> <ol style="list-style-type: none"> <li>1. Computer-based evaluation by students</li> <li>2. Students focus group verification by program committee at the end of this course</li> </ol>
12.	<b>Course description;</b> Statistical methods for data analysis to calculate risk or odds ratios and interpret of results according to infectious diseases and epidemiological research
13.	<b>Teaching methods:</b> <ol style="list-style-type: none"> <li>1. Interactive lecture</li> <li>2. Analyzing data by statistical software</li> <li>3. Case studies</li> <li>4. Inquiry-based learning</li> </ol>
14.	<b>Evaluation methods and types:</b> <ol style="list-style-type: none"> <li>1. Classroom participation : Individual hands on practice</li> <li>2. Presentation : Group discussion</li> <li>3. Assignment : Individual submission</li> <li>4. Final report submission : Group work</li> </ol>

15. Content outline of the course/module and SLT per topic					
Topic	CLO	No. of Hours			
		Lecture	Practice	SL	TLT
1. Statistics for describing data of infectious diseases <ul style="list-style-type: none"> <li>● Percentages, Means, Median, Mode, Standard deviation</li> <li>● Assignment &amp; Group Discussion</li> </ul>	2	1	2	3	6
2. Analyzing Statistics with test <ul style="list-style-type: none"> <li>● Confidence intervals and P-values</li> <li>● T-tests, ANOVA, Chi-square and other parametric tests</li> <li>● Assignment &amp; Group Discussion</li> </ul>	1	1	2	3	6
3. Statistics at work : Microbiology section, parasitology section and	3	1	2	3	6

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Topic	CLO	No. of Hours			
		Lecture	Practice	SL	TLT
Epidemiology section <ul style="list-style-type: none"> <li>● Examples of Basic techniques for analysing data</li> <li>● Group Discussion</li> </ul>					
4. Concepts of disease burden <ul style="list-style-type: none"> <li>● Cost of illness &amp; Indirect cost of illness</li> <li>● Disability-Adjusted Life Year (DALY)</li> <li>● completed life table &amp; abridged life table</li> <li>● Assignment &amp; Group Discussion</li> </ul>	3	1	2	3	6
5. Statistics at work : <ul style="list-style-type: none"> <li>● Examples of tables and graphs which used in research</li> <li>● How to present risk ratio and odds ratio in data analysis</li> <li>● Group Discussion</li> </ul>	3,4	1	2	3	6
6. Table design for presenting finding <ul style="list-style-type: none"> <li>● How we create the tables</li> <li>● Group Discussion</li> </ul>	3,4	1	2	3	6
7. Creating figures for your findings of infectious diseases <ul style="list-style-type: none"> <li>● Bar graphs, Histograms, Line graphs</li> <li>● Plots, Combination graphs, Pie graphs</li> <li>● Stem-and-Leaf plots</li> <li>● Presentation of Group Work</li> </ul>	3,4,5	1	2	3	6
8. Concept statistics : <ul style="list-style-type: none"> <li>● Risk ratio</li> <li>● Odds ratio</li> <li>● Compare risk</li> </ul>	2	1	2	3	6
9. Statistics application tools <ul style="list-style-type: none"> <li>● Presentation of Group Work</li> </ul>	1,2,5	1	2	3	6

15. Content outline of the course/module and SLT per topic					
Topic	CLO	No. of Hours			
		Lecture	Practice	SL	TLT
10. E-health ● Presentation of Group Work	1,2,5	1	2	3	6
11. Statistical used in Cross-sectional studies ● The process of statistical hypothesis testing ● Prevalence and incidence measuring	3,4	1	2	3	6
12. Statistical of statistical used in Case-Control studies ● Basic of analysing matched case-control data ● Basic of analysing unmatched case-control data	3,4	1	2	3	6
13. Statistical used in Cohort studies ● measure effects ● Interpretation differences in cohort designs	3,4	1	2	3	6
14. Statistical used in Experimental studies ● Success rate ● Efficacy ● Effectiveness	3,4	1	2	3	6
15. Current situation of infectious diseases: Analyzing and report ● Presentation of Group work (9:00 – 11:30) ● Curriculum verification: focus group study by program committees (Approx. 30 minutes)	4,5	1	2	3	6
Total		15	30	45	90

Note : SL = self-learning, TLT = total learning time