



KEMENTERIAN RISET, TEKNOLOGI, DAN PENDIDIKAN TINGGI
UNIVERSITAS BRAWIJAYA
FAKULTAS KEDOKTERAN
PROGRAM MAGISTER ILMU BIOMEDIK

Jalan Veteran, Malang 65145, Jawa Timur – Indonesia
 Telp. (62)(341) 569117; 567192 Pes. 134, 135 – Fax. (62)(341) 564755
 E-mail: sekr.fk@ub.ac.id Website: <http://biomedical.fk.ub.ac.id>

Teaching Plan

Course Title : Research Methodology, Biostatistics, and Scientific Writing
Course Code : DKF6107
Credits : 3
Course Coordinator : Sri Winarsih, Dr., Dra., Apt., MSi.
 (Phone: 081333890897; e-mail: wiansri238@gmail.com)

Course Description

This course was designed with overall goal is to give basic knowledge of the application of philosophy, and basic principles of science and research methods focused on the development of scientific thinking process in identifying health problems for biomedical research. The key objective is to compose the thesis proposal. Subject areas covered include the paradigm and application of biomedical research, access to scientific information through the internet, writing scientific papers (proposal, thesis, and journal), composing a good hypothesis, methods in implementing research (including the design and statistical analysis, animal behavior, and laboratory safety), plagiarism, and tips for publication.

Course Learning Outcomes (CLOs)

On successful completion of this course, students will (be):		Bloom's Taxonomy
CLO1	Demonstrate a comprehensive understanding of the paradigm and application of biomedical research, the role and types of research, the steps to conduct research and compose research proposal, thesis, and publication	Level 2. Understanding
CLO2	Demonstrate a comprehensive understanding of the research design and applied statistical analysis (biostatistics)	Level 2. Understanding
CLO3	Demonstrate a comprehensive understanding of the handling of animal model and safety during research implementation in laboratory	Level 2. Understanding
CLO4	Able to apply information access and plagiarism prevention	Level 3. Applying
CLO5	Able to compose the background, problem statement, objective, and benefit of research, literature review, conceptual framework, and research methods according to the student's thesis	Level 3. Applying
CLO6	Demonstrate self-directed learning and ethical standards for the intellectual activities	Level 3. Applying

Links between CLOs and PLOs

	PLO1.1	PLO1.2	PLO2.1	PLO2.2	PLO2.3	PLO3.1	PLO3.2	PLO3.3	PLO3.4	PLO4.1
CLO1			√	√						
CLO2			√	√	√					
CLO3					√					
CLO4			√			√				√
CLO5	√	√	√	√	√	√	√			√
CLO6							√			√

Topics and Schedule

Week	Topics	Competencies	Lecturer
1	Introduction	Able to identify the output of the subject which is thesis proposal. Able to recognize the biomedical research topics in Faculty of Medicine at UB (herbal medicine, stem cells, growth and development, metabolic and degenerative disease, autoimmune disease, infection)	WN
2	Paradigm and Application of Biomedical Research, Role, and Type of Research	Able to explain the role and types of biomedical research.	RI
3	Scientific Writing (proposal, thesis,	Able to explain the components of scientific paper (proposal, thesis, journal)	WN



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	journal), Hypothesis, and Variable	Able to explain the good hypothesis, hypothesis testing, kinds of variable in research Able to apply hypothesis and variable in student's thesis	
4	Numerical Measurement	Able to apply the data presentation of numerical measurement (exercise)	SA
5	Experimental Research: Design, Sample Size Exercise	Able to explain the kinds of experimental design (true, quasi, pre-experimental, and clinical trial) and sample size determining Able to determine the appropriate design for student's thesis	WN
6	Observational Research: Design, Sampling & Sample size Exercise	Able to explain the kinds of observational design (cohort, cross-sectional, case-control) and sample size determining Able to determine the appropriate design for student's thesis	SW
7	Questionnaire, Observation Sheet, and Interview Guidance	Able to apply the data collection using questionnaire, observation sheet, and interview guidance (exercise)	SA
8	Pre-proposal presentation (Chapter I)	Able to compose the background, problem statement, objective, and benefit of research according to the student's thesis	Team
9	Data Collection and Data Management	Able to apply management of research data (exercise)	SW
10	Parametric Statistics (applied)	Able to explain the data analysis using t-test, one-way ANOVA, two-way ANOVA, correlation, regression, path analysis (exercise)	WN
11	Non-Parametric Statistics (applied)	Able to explain the data analysis using chi-square, Wilcoxon, Sign test, Kendall correlation, Kruskal-Wallis, Mann-Whitney, Spearman (exercise)	SW
12	Animal Behavior and Laboratory Safety	Able to explain the handling of animal model, and safety during research implementation in laboratory	RR
13	Plagiarism	Able to apply the plagiarism prevention	DL
14	Journal (access and publication)	Able to apply the way to access e-information properly and the way to publish research result	WD
15	Pre-proposal presentation (Chapter I – IV)	Able to compose the background, problem statement, objective, and benefit of research, literature review, conceptual framework, and research methods according to the student's thesis	Team
16	Final Exam	Written test towards the topics given (theory exam)	Team

Team of Lecturer

WN = Sri Winarsih, Dr. Dra., Apt., MSi.
RI = M. Rasyad Indra, Prof. Dr. dr., MS.
SA = Sri Andarini, Dr. dr., M.Kes.
SW = Siswanto, Dr. dr., M.Sc.
RR = Retty Ratnawati, Dr. dr., M.Sc.
DL = Diana Lyrawati, Dra., Apt., MS., Ph.D.
WD = Widodo, S.Si., M.Si., Ph.D.Med.Sc.

Teaching and Learning Strategy

Core material will be delivered through lectures, completed with mini exercises, oral presentation, and scientific writing of thesis idea.

Assessment Methods

Type	Weighting	CLO Assessed	Description
Written exam	40%	1, 2, 3, 4, 6	The examination will be held during 1 hour with questions on theoretical aspects of research methodology.
Pre-thesis proposal	60%	2, 4, 5, 6	The assessment comprises a thesis proposal completely, which consists of Chapter I (Introduction), Chapter II (Literature Review), Chapter III (Conceptual Framework and Research Hypothesis), Chapter IV (Research Methods)



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Learning Sources

1. Biostatistika untuk Kedokteran dan Kesehatan Masyarakat. Budiarto E. EGC. Jakarta. 2001.
2. Critical Appraisal of Epidemiological Studies and Clinical Trial. Second Edition. Elwood M. Oxford University. USA. 1998.
3. Dasar-Dasar Metodologi Penelitian Klinis, Sastroasmoro S. & Ismael S. Binarupa Aksara, Jakarta.1995.
4. Design and Analysis of Experiments. Peterson R.G. Marcel Dekker Inc. USA. 1995.
5. Metode Penelitian Kuantitatif, Kualitatif dan R & D. Sugiyono. CV Alfabeta. Bandung. 2009.
6. Prinsip dan Prosedur Statistika – Suatu Pendekatan Biometrik. Steel R.G.D. dan Torrie J.H. PT Gramedia Utama. Jakarta. 1981.

Course Coordinator,

Sri Winarsih, Dr., Dra., Apt., MSi.