

KSH 398 Research Methodologies and Scientific Writing

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| Credit | : 2(1-3) |
| Semester | : 5 (odd) |
| Course format | : Lectures, reading assignments, practice and demonstration. 100 minutes per week. 15 weeks. |
| Pre-requisite | : - |
| Lecturers | : Dr. Burhanuddin Masyud, MS (Course coordinator) Dr. A. Machmud Thohari, DEA Dr. Yeni Aryati Mulayni, M.Sc Dr. Mirza Dikari Kusri, MSc. |

Course Description

This course describes in detail the meaning and various research methodology; problems formulation and research objectives; hypothesis formulation, literature studies, determination of approach or data gathering/collection methods, sampling techniques, questionnaire development, data analysis and presentation; results and discussion writing technique, and conclusion; proposal writing and research report writing including presentation materials preparation and research presentation techniques.

Course Objectives

This course is design to provide students with knowledge and skills on scientific research starting from research proposal writing, data collection, data organization and presentation to results writing in a scientific paper in the form of undergraduate thesis, seminar material and scientific articles to be published in scientific journal.

Learning Outcomes

1. General learning outcomes

Upon successful completion of this course the students will be able to:

Explain the meaning of scientific research, types and criteria of scientific writing and steps in scientific writing; identify and formulate research problems and determine the approaches or methods of research problem solving and writing research

proposal and writing research reports as a form of scientific paper and organize results presentation in the form of power point and posters.

2. Specific Learning outcomes

Upon successful completion of this course the students will be able to:

- a. Explain the meaning of scientific research and scientific principles
- b. Explain scientific writing types and criteria.
- c. Explain research identification process and problem formulation
- d. Explain the meaning of research hypothesis and determination of research variables
- e. Explain how to cite references
- f. Explain and write example of reference citation
- g. Explain various research approaches (methods) and solve research problems that have been identified and formulated
- h. Explain data collection/gathering techniques, organizing and form of data presentation
- i. Explain the content of a research proposal and write an example of research proposal
- j. Explain and write a scientific paper based on research
- k. Write presentation of research results in the form of power point and poster

Structure of Course Delivery

1. Lectures.
2. Reading assignments.
3. Course practice.
4. Demonstration.

Major References

1. Fakultas Kehutanan IPB. 2006. Panduan Penulisan Tugas Akhir Mahasiswa Fakultas Kehutanan IPB. Bogor: Fakultas Kehutanan IPB
2. Sugiyono. 2006. Metode Penelitian Kuantitatif, Kualitatif Dan R & D. Bandung: Penerbit Alfabeta.
3. Arikunto S. 2002. Prosedur Penelitian Suatu Pendekatan Praktek. Cetakan Ke-12. Jakarta. Penerbit Rineka Cipta.

4. Singarimbun M & S Efendi (Edt). 1995. Metode Penelitian Survei. Cetakan Kedua. Jakarta: LP3ES.
5. Sudjana. 1991. Desain dan Analisis Eksperimen. Bandung: Penerbit Tarsito

Teaching Material Support

The choice of media and type of technology use include:

1. Face-to-face contact.
2. Printed power point presentation. Text and power point presentation will be available for each discussion topic.
3. Reading materials. Students are encouraged to read the recommended major references. Students are also encouraged to make additional notes based on the development of the discussions for each sub-topic.
4. Computer
5. Projector Infocus
6. Whiteboard.

Course Outline

| Topics | Sub-topics | Bloom's Taxonomy | Week |
|---|---|------------------|-------|
| Introduction | <ol style="list-style-type: none"> 1. Meaning of research, scientific method and research steps 2. Scientific ethics and science norms 3. Plagiarism | C1, C2 | 1 |
| Scientific writing | <ol style="list-style-type: none"> 1. Meaning and criteria of a scientific writing 2. Types of scientific writing: undergraduate thesis, thesis, doctoral thesis, paper and scientific articles | C1, C2 | 2 & 3 |
| Various research methods | <ol style="list-style-type: none"> 1. Research category based on objectives 2. Research category based on research variables 3. Research category based on research subjects 4. Research category based on location 5. Research category based on approaches | C1, C2. | 4 |
| Identification and formulation of research problems | <ol style="list-style-type: none"> 1. Methods to identify research problems and problems formulation 2. Technique to determine scope of research 3. Formulation of research problems | C1, C2, C3 | 5 |
| Literature reviews | <ol style="list-style-type: none"> 1. Significance of references in a research 2. Criteria of good and recommended references 3. Technique and rules in citing reference 4. Technique in writing references | C1, C2, C3, | 6 |
| Hypothesis, variables and | <ol style="list-style-type: none"> 1. Meaning of hypothesis and research variables 2. Types of hypothesis and research hypothesis | C1, C2, C3 | 7 |

| Topics | Sub-topics | Bloom's Taxonomy | Week |
|---|--|------------------|---------|
| research data | statement 3. Types of research variables and determination of research variables | | |
| Data processing and methods of analysis | 1. Data processing and analysis 2. Hypothesis testing | C3, C4 | |
| Results presentation of data and illustration writing | 1. Introduction to various types or forms of data presentation: Tables, figures, graphs, photograph and map 2. Methods in writing a good and correct illustration | C1, C2, C3, C4 | 8 |
| Formulation of research proposal | 1. Objective of proposal writing and technical requirements for organizing research proposal 2. Content of a research proposal 3. Research timeline and budget | C1, C2, C3 | 9 |
| Abstract writing and summary of research results | 1. Meaning of abstract, summary 2. Content of abstract and summary 3. Writing technique for abstract and summary | C1, C2, C3 | 10 & 11 |
| Writing research results: undergraduate thesis | 1. Structure of undergraduate thesis – general format and sequence. 2. Undergraduate thesis writing technique (research results report): establishment of topic and title, technical requirements in writing chapters and sub-chapters, presentation of data (tables and figures), results and discussion writing, references, conclusions and recommendation | C1, C2, C3 | 12, 13 |
| Presentation writing of research results | 1. Writing scientific article/seminar paper 2. Writing power point 3. Writing poster | C1, C2, C3 | 14, 15 |

Potential Course Overlap

There is a possible overlap with topics offered in other courses such as with Inventory and Statistical Methods (STK211) especially on sub-topic sampling technique.

Evaluation and Grading

1. Quizzes

Quizzes are given as ways to receive feedbacks from students on their understanding of previous sub topics given in class. Quizzes are given in the form of direct question to the student during the course of the lecture about 10 minutes. Quizzes will cover certain topic from previous materials given.

2. Mid-term examination

Midterm examination will be held during examination period scheduled by Registrar's office (after 7 weeks lecture). Each exam is composed of multiple choice and essay questions to identify different cognitive level and certain skills. Length of the exam is 90-120 minutes. The exam will cover course topics delivered in week 1-7.

3. Final Examination

Midterm examination will be held during examination period scheduled by Registrar's office (after 14 weeks lecture). Each exam is composed of multiple choice and essay questions to identify different cognitive level and certain skills. Length of the exam is 90-120 minutes. The exam will cover course topics delivered in week 8-14.

4. Course Practice

Each student is required to submit an assigned paper at the end of the course that review the whole topics discussed directed at real life application. Specifically it is directed at wildlife captive breeding design. Papers are based on literature studies, field observation, internet and other necessary sources. This assigned paper is intended to recognize the cognitive, affective and skills of students after taking the whole course for 14 weeks. Plagiarized paper will receive zero grade.

Compositions of grading are as follows

| Assessment Tools | Maximum Score | % of Grade |
|-------------------------|----------------------|-------------------|
| Mid-term examination | 100 | 20 |
| Final examination | 100 | 20 |
| Structured Assignment | 100 | 20 |
| Course Practice | 100 | 40 |

Final grade classification: A (> 75), B (68-74), C (60-67), D (55-59), E (< 55)

**Coverage of DFORCE Core Competence
in Research Methodologies and Scientific Writing (KSH 398)**

Code : KSH 398

Course : Research Methodologies and Scientific Writing

Credit : 2(1-3)

| Code | Core Competencies | Course Content Covered | Cognitive Level | Topics |
|-------------|---|--|------------------------|--------------------------|
| I | Students will be able to understand the identification process of research problem and able to identify and formulate research problems | Meaning of research, scientific method and research steps Scientific ethics and science norms Plagiarism HAKI | C1, C2 | Introduction |
| II | Students will be able to understand and differentiate scientific writings, types of scientific writing and writing styles | Meaning and criteria of a scientific writing Types of scientific writing: undergraduate thesis, thesis, doctoral thesis, paper and scientific articles | C1, C2 | Scientific writing |
| III | Students will be able to understand types of research methodologies | Research category based on objectives Research category based on research variables Research category based on research subjects Research category based on location Research category based on approaches | C1, C2 | Various research methods |

| Code | Core Competencies | Course Content Covered | Cognitive Level | Topics |
|-------------|--|--|------------------------|---|
| IV | Students will be able to understand the identification process of research problem and able to identify and formulate research problems | Methods to identify research problems and problems formulation | C1, C2, C3 | Identification and formulation of research problems |
| | | Technique to determine scope of research | | |
| | | Formulation of research problems | | |
| V | Students will be able to understand the significance of literature reviews in a research, references understand the correct ways to write citation from a reference and the correct ways of writing references | Significance of references in a research | C1, C2, C3 | Literature reviews |
| | | Criteria of good and recommended references | | |
| | | Technique and rules in citing reference | | |
| | | Technique in writing references | | |
| VI | Students will be able to understand the meaning of hypothesis, research variables and able to formulate research hypothesis and determining research variables | Meaning of hypothesis and research variables | C1, C2, C3 | Hypothesis, variables and research data |
| | | Types of hypothesis and research hypothesis statement | | |
| | | Types of research variables and determination of research variables | | |
| VII | Students will be able to understand various methods and research results processing and analysis | Introduction to various types or forms of data presentation: Tables, figures, graphs, photograph and map | C3, C4 | Data processing and methods of analysis |
| | | Methods in writing a good and correct illustration | | |
| VIII | Students will be able to understand various forms of data presentation and illustration writing | Introduction to various types or forms of data presentation: Tables, figures, graphs, photograph and map | C1, C2, C3, C4 | Results presentation of data and illustration writing |
| | | Methods in writing a good and correct illustration | | |
| IX | Students will be able to understand and write research proposal for undergraduate thesis | Objective of proposal writing and technical requirements for organizing research proposal | C1, C2, C3 | Formulation of research proposal |
| | | Content of a research proposal | | |

| Code | Core Competencies | Course Content Covered | Cognitive Level | Topics |
|------|--|---|-----------------|--|
| | | Research timeline and budget | | |
| X | Students will be able to understand and write abstract and summary of a research | Meaning of abstract, summary Content of abstract and summary Writing technique for abstract and summary | C1, C2, C3 | Abstract writing and summary of research results |
| XI | Students will be able to understand and write results of a research | Structure of undergraduate thesis – general format and sequence Undergraduate thesis writing technique (research results report): establishment of topic and title, technical requirements in writing chapters and sub-chapters, presentation of data (tables and figures), results and discussion writing, references, conclusions and recommendation | C1, C2, C3 | Writing research results: undergraduate thesis |
| XII | Students will be able to write materials for research presentation | Writing scientific article/seminar paper Writing power point Writing poster | C1, C2, C3 | Presentation writing of research results |

**Assessment Tools to Measure the Achievement of
Learning Outcomes in Research Methodologies and Scientific Writing (KSH 398)**

Code : KSH 398

Course : Research Methodology and Scientific Writing

Credit : 2(1-3)

| Code | Core Competencies | Learning Outcome | Bloom's Taxonomy | Assessment Tool(s) | Learning Activities |
|-------------|---|--|-------------------------|---|--|
| I | Students will be able to understand the identification process of research problem and able to identify and formulate research problems | Students will be able to explain steps in scientific writings and ethics and norms principles in scientific writing | C1, C2 | Written examinations at different cognitive level (mid-term and final exam), Written assignment, quiz | <ul style="list-style-type: none"> ▪ Classroom lecture and discussion ▪ Reading text, looking for answers to stated learning objectives |
| II | Students will be able to understand and differentiate scientific writings, types of scientific writing and writing styles | Students will be able to explain and differentiate scientific writings, types of scientific writing and writing styles | C1, C2 | Written examinations at different cognitive level (mid-term and final exam), Written assignment, quiz | <ul style="list-style-type: none"> ▪ Classroom lecture and discussion ▪ Reading text, looking for answers to stated learning objectives |
| III | Students will be able to understand types of research methodologies | Students will be able to explain types of research methodologies | | Written examinations at different cognitive level (mid-term and final exam), Written assignment, quiz | <ul style="list-style-type: none"> • Classroom lecture and discussion • Reading text , looking for answers to stated learning objectives |
| IV | Students will be able to understand the identification process of research problem and able to identify and formulate research problems | Students will be able to explain the identification process of research problem and able to identify and formulate research problems | C1, C2 | Written examinations at different cognitive level (mid-term and final exam), Written assignment, quiz | <ul style="list-style-type: none"> ▪ Classroom lecture and discussion ▪ Reading text, looking for answers to stated learning objectives |
| V | Students will be able to | Students will be able to | | Written examinations at | <ul style="list-style-type: none"> • Classroom lecture |

| Code | Core Competencies | Learning Outcome | Bloom's Taxonomy | Assessment Tool(s) | Learning Activities |
|------|---|---|------------------|--|---|
| | understand the significance of literature reviews in a research, references understand the correct ways to write citation from a reference and the correct ways of writing references | explain the significance of literature reviews in a research, references understand the correct ways to write citation from a reference and the correct ways of writing references | | different cognitive level (Mid-term and final exam). | and discussion <ul style="list-style-type: none"> • Reading text , looking for answers to stated learning objectives |
| VI | Students will be able to understand the meaning of hypothesis, research variables and able to formulate research hypothesis and determining research variables | Students will be able to determine research variables and formulate research hypothesis | C1, C2, C3 | Written examinations at different cognitive level (middle and final exam), Written assignment, quiz | <ul style="list-style-type: none"> ▪ Classroom lecture and discussion ▪ Reading text, looking for answers to stated learning objectives |
| VII | Students will be able to understand the significance of literature reviews in a research, references, and understand the correct ways to write citation from a reference and the correct ways of writing references | Students will be able to explain the significance of literature reviews in a research, references, explain the correct ways to write citation from a reference and the correct ways of writing references | C1, C2, C3 | Written examinations at different cognitive level (middle and final exam), Written assignment, quiz | <ul style="list-style-type: none"> ▪ Classroom lecture and discussion ▪ Reading text, looking for answers to stated learning objectives |
| VIII | Students will be able to understand various forms of data presentation and illustration writing | Students will be able to explain various forms of data presentation and illustration writing | C1, C2, C3 | Written examinations at different cognitive level (middle and final exam), Written assignment, quiz | <ul style="list-style-type: none"> ▪ Classroom lecture and discussion ▪ Reading text, looking for answers to stated learning objectives |
| IX | Students will be able to understand the position of a proposal, its systematic and contents and | Students will be able to explain and write research proposal for undergraduate thesis | C3, C4 | Written examinations at different cognitive level (middle and final exam), Written assignment, quiz | <ul style="list-style-type: none"> ▪ Classroom lecture and discussion ▪ Reading text, looking for answers to stated |

| Code | Core Competencies | Learning Outcome | Bloom's Taxonomy | Assessment Tool(s) | Learning Activities |
|-------------|--|---|-------------------------|--|--|
| | proposal writing for a research proposal | | | | learning objectives |
| X | Students will be able to understand and write abstract and summary of a research | Students will be able to explain and write abstract and summary of a research | C1, C2, C3, C4 | Written examinations at different cognitive level (Mid-term and final exam). | <ul style="list-style-type: none"> • Classroom lecture and discussion • Reading text , looking for answers to stated learning objectives |
| XI | Students will be able to understand and write results of a research in the form of articles and power points | Students will be able to explain and write results of a research in the form of articles and power points | C1, C2, C3 | Written examinations at different cognitive level (middle and final exam), Written assignment, quiz | <ul style="list-style-type: none"> ▪ Classroom lecture and discussion ▪ Reading text, looking for answers to stated learning objectives |