TEACHING INSTRUCTIONAL DESIGN (BRP)

COURSE

INTERNSHIP IN MATERIALS PHYSICS

by

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Depok
August 2016

PREFACE

This Teaching Instructional Design (BRP) was prepared as a guide for practical work lecture activities for students who have completed a total of 64 credits. In the following semester students are expected to be able to start doing their final project research.

The Internship in Materials Physics course is a form of credit conversion (credits/SKS) for students who specialize in Material Physics at practical institutions for one semester in working on research projects under the guidance of lecturers, professionals, or experts. Practical work can be done in practical institutions. This course can be taken by students in semester 7. This course can be integrated with a thesis. The learning method is designed in such a way that students are not only able to work independently, but can also work in groups to master the material comprehensively and integratively.

It is hoped that this BRP can provide direction (guideline) in the learning process so that all the targets expected for lecturers and students can be achieved.

Depok, 20 August 2016

Anawati, Ph.D.

I. General Information

1.	Name of Program / Study Level	:	Physics / Undergraduate
2.	Course Name	:	Internship in Materials Physics
3.	Course Code	:	SCFI604514
4.	Semester	:	7th
5.	Credit	:	2 credits
6.	Teaching Method(s)	:	Collaborative learning
7.	Prerequisite course(s)	:	Has completed/acquired 64 credits
8.	Requisite for course(s)	:	None
9.	Integration Between Other Courses	:	Undergraduate Thesis
10.	Lecturer(s)	:	Anawati, Ph.D.
11.	Course Description	:	This course is a form of credit conversion (credit/SKS) for students who specialize in Material Physics at practical institutions for one semester in working on research projects under the guidance of lecturers, professionals, or experts. Practical work can be done in practical institutions. To be able to take this course, students are required to have completed a total of 64 credits. This course can be taken by students in semester 7. This course can be integrated with undergraduate thesis.

II. Course Learning Outcome (CLO) and Sub-CLOs

A. CLO

After completing this course students have the ability to systematically solve Physics or Applied Physics problems using experimental, numerical, and analytical methods and analyze the results comprehensively (ELOs 3, 5, 6,7, and 8).

B. Sub-CLOs

1. Able to determine problem formulations on the topic of Physics or applied physics research at hand. (C3)
2. Able to conduct a comprehensive literature review of the Physics or Applied Physics problems faced. (C3)
3. Can outline the arrangement of research work that will be carried out to achieve the desired goals. (C3)
4. Able to be responsible for carrying out laboratory research activities in accordance with applicable regulations. (A2)
5. Can listen to input from supervisors and experts in the research field at hand. (A5)
6. Able to operate related tools or programs in research topics in the field of Physics or Applied Physics. (P3)
7. Able to solve research topic problems given in the field of Physics or Applied Physics. (P4)

II. Teaching Plan

Week	Sub-CLO	Study Materials	Teaching Method	Time Required	Learning Experiences (*O-E-F)	Sub-CLO Weight on Course (%)	Sub-CLO Achievement Indicator	References
1-16	1-7	• Determination of practical work assignments • Workflow diagram design • Research preparation • Implementation of practical work in practical institutions • Data analysis • Report on practical work	Students learn independently under the guidance of a supervisor or field mentor	Structured assignments at practical institutions: 170 minutes/week, for 16 weeks Independent assignments: 240 minutes/week, for 16 weeks	15% O, 70% E, 15% F	100	Able to solve practical work problems in accordance with the practical work plan that has been made	[1]

*) O : Orientation
E : Exercise
F : Feedback

References:

[1] Related articles and journals

III. Assignment Design

Week	Assignment Name	Sub-CLOs	Assignment	Scope	Methods	Time limit	Outcome
1-16	Practical works	1-7	Practical works	Practical work activities are carried out in practical institutions and in the field	Independent or group assignments in practical institutions according to the direction of the supervisor or mentor in the field	1 semester	• Report on practical work • Practical work activity logbook • List of attendees at the practice institution
16	Presentation	1-7	Internship results	Presenting a result of work that has been done	Individual assignment	At the end of semester	• PowerPoint presentation

IV. Assessment Criteria (Learning Outcome Evaluation)

Evaluation Type	Sub-CLO	Assessment Type	Frequency	Evaluation Weight (%)
Practical work activity logbook	1-7	Activity logbook	16	20
List of attendees	1-7	Attendance form	16	20
Presentation	1-7	Presentation rubric	1	30
Report on practical work	1-7	Rubric report on practical work	1	30
			Total	**100**

V. Rubric(s)

A. Example of attendance form

ATTENDANCE FORM OF INTERNSHIP COURSE

Student name :
NPM :
Practical Institutions :
Supervisor :

Date	Week	Start hours at the practice institution	End hours of the practical institution	Other
	1			
	2			
	3			
	4			
	5			
	6			
	7			
	8			
	9			
	10			
	11			
	12			
	13			
	14			
	15			
	16			

B. Presentation Rubric

PRESENTATION ASSESSMENT RUBRIC

Student name :
NPM :
Supervisor name :

Total grade :

No	Evaluation	Score (0-100)	Weight (%)	Final Score
1	Mastery of knowledge about disciplines related to work tasks		30	
2	Mastery of practical work methodology		40	
3	Reasoning ability		30	

C. Example of Research Report Rubric

ASSESSMENT OF PRACTICAL WORK OF
UNDERGRADUATE PHYSICS STUDY PROGRAM
DEPARTMENT OF PHYSICS FMIPA UI

Name :
NPM :
Practical Work Tasks :
Supervisor 1 :
Supervisor 2 :

Description of Achievements: (filled in by Supervisors)

No	Components	Achievement (%)	Notes
1	• Sample synthesis • Analytic/numeric/instrumentation system designs		

2	• Samples characterization • Analytic/numeric formula derivation • Fabrication of instrumentation systems		
3	• Data analysis • Numerical analysis • System trial		
4	Result descriptions		
Average achievement			

Location, Date
Supervisor

(_____)
NIP/NUP.