


# **QUALITY MANUAL DEPARTMENT OF MATHEMATICS**







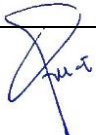
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**DEPARTMENT OF MATHEMATICS  
FACULTY OF MATHEMATICS AND NATURAL SCIENCES  
BRAWIJAYA UNIVERSITY  
MALANG  
2020**

## IDENTIFICATION SHEET

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## QUALITY MANUAL

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# 1. INTRODUCTION

## ***1.1. Scope of QMS Work Unit***

Quality manual is a guideline document of implementation of Quality Management System (QMS) implemented within the scope of teaching, research and community service, HR development as well as management, except for goods and services procurement since it is the part of faculty and university authorities. Its content is based on Indonesian National Standard (SNI), Quality Management System ISO 9001:2008 and guidelines for educational service IWA2:2007. This Quality Manual is applicable for academic executive unit at the Department of Mathematics Faculty of Mathematics and Natural Sciences Brawijaya University, including the activities of Three Pillars of Higher Education (TRI DHARMA Perguruan Tinggi) for SP S-1 Mathematics, S-2 Mathematics, S-3 Mathematics and S-1 Actuarial Science. The scope of QMS in the Department of Mathematics includes all requirements of ISO 9001:2008, except goods and services procurement clause 7.4., on Goods and Services Procurement.

## ***1.2. Quality Manual Objectives***

The objectives of Quality Manual Preparation at Department of Mathematics are:

1. Outlining the main process that is directly or indirectly related to the procurement of educational services at the Department of Mathematics.
2. Describing the relationship of various activities related to the process of planning, implementation, evaluation or improvement.
3. Describing the relationship between Internal Quality Assurance System (SPMI) and ISO 9001:2008 requirements.
4. Representing the commitment of Department of Mathematics in terms of sustainable quality improvement in writing, so it can be comprehended by all parties involved in human resources provision at the Department of Mathematics.

# 2. QUALITY MANAGEMENT POLICY FOUNDATION

1. Law No. 20 of 2003 on National Higher Education System.
2. Guidelines for Higher Education Quality Assurance 2003.
3. Government Regulation No.19 of 2005 on National Education Standards.
4. Accreditation of Higher Education Institution from National Accreditation Body, 2008.
5. Accreditation of Bachelor, Master and Doctoral Degree Program from National Accreditation Body, 2009.
6. QMS requirements ISO 9001:2008.
7. QMS requirements for educational services IWA2:2007.
8. Quality Standard of World Class University (WCU QS Asia) 2009.
9. Document of Quality Assurance System Brawijaya University.

10. Document of Quality Assurance System Faculty of Mathematics and Natural Sciences Brawijaya University.
11. Regulation of the Minister of Research, Technology, and Higher Education/ Permenristekdikti No. 44 of 2015 on National Higher Education Standard
12. Regulation of Brawijaya University Number 1 of 2017 on Quality Standard
13. Vision and Mission of Department of Mathematics Brawijaya University, 2020.

### 3. TERM AND DEFINITION

1. Quality is all product characteristics presenting the abilities to fulfill the demands or requirements determined by the customer (stakeholder), both expressed (stated in the contract), or implied.
2. Quality Manual is document with function as the reference of quality management implementation.
3. Customer is individual or entity who receives or purchasing educational services. Customer of the Department of Mathematics can be categorized into four: students or learners as the main customer, student parents and graduate users, Faculty of Mathematics and Natural Sciences UB as the mandator.

### 4. QUALITY MANAGEMENT SYSTEM (QMS)

#### 4.1. An Overview of Department of Mathematics

Department of Mathematics, Faculty of Mathematics and Natural Sciences, Brawijaya University (FMIPA UB) was founded on March 6, 1989 under Decree of the Directorate General of Higher Education, Department of National Education Number 23/DIKTI/Kep/1989 containing the operating permit for Department of Mathematics in Brawijaya University. Today, Department of Mathematics has 4 study programs as listed on Table 4.1. below.

Table 4.1. Study Program in Department of Mathematics

NO	Study Program	Establishment Permit	Accreditation	Accreditation Decree No.	Desc.
1.	SP. S1 Mathematics	23/Dikti/Kep/1989	A	2097/SK/BAN-PT/Ak-PJJ/S/IV/2020	2020-2025
2.	SP. S2 Mathematics	54/D/O/2010	A	689/SK/BAN-PT/Akred/M/IV/2019	2019-2024
3.	SP. S3 Mathematics	69/KPT/I/2016	B	3941/SK/BAN-PT/Akred/D/X/2017	2017-2022
4.	SP S1 Actuarial Science	70/M/2020	-	-	-

## 4.2. Organization of Department of Mathematics

### 4.2.1. Organizational Structure of Department of Mathematics

To run the management function of Department of Mathematics according to its main duties and function, it can be seen in the following structure chart Figure 4.1.

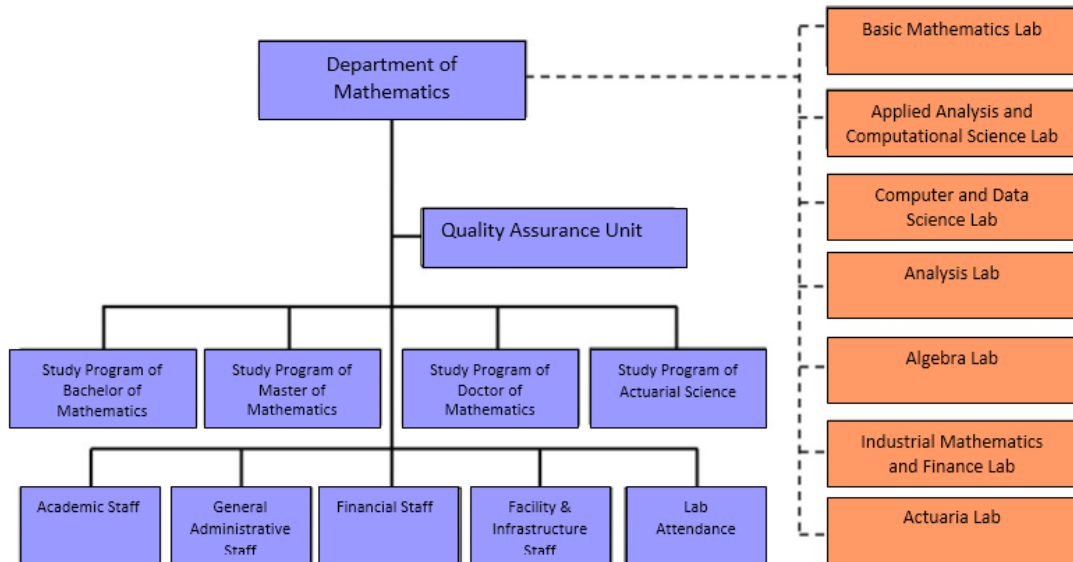


Figure 4.1. Organizational Structure Chart of Department of Mathematics Brawijaya University

### 4.2.2. Main Duties and Function

In implementing the organization duties and function of Department of Mathematics, the main duties and function of each position are formulated as follows.

#### 1. HEAD OF DEPARTMENT

##### Task Formulation:

- 1) Preparing plan, organizing, and controlling education activities and teaching, research, and community service in Department of Mathematics based on the applicable provision.
- 2) Preparing plan, organizing, and controlling the development of Department of Mathematics.

##### Task Description:

- 1) Preparing work program plan as work guidelines based on strategic plan (renstra) of Department of Mathematics
- 2) Reviewing the teaching load concept of lecturers for each semester based on the applicable provision to confirm its suitability.
- 3) Coordinating and integrating the Study Programs in Department of Mathematics.
- 4) Checking the concept of assignment letter for academic advisor as supervisor input.
- 5) Monitoring lecture implementation based on the applicable provision as evaluation materials.
- 6) Evaluating lecture implementation based on monitoring result to improve the quality.

- 7) Preparing the operating cost plan based on work program.
- 8) Directing and guiding student activities in Department of Mathematics environment.
- 9) Determining advisors for students who complete academic assignments (final assignment, seminar course, and field work practice/PKL) based on the suggestion from the head of study program.
- 10) Facilitating lecturers who conduct research and community service according to the workload and expertise for a smooth task implementation.
- 11) Preparing activity report of the department according to the achieved result as the responsibility of task implementation.
- 12) Performing other tasks assigned by supervisor.
- 13) Actively conducting development and cooperation with other parties.
- 14) Conducting human resources development efforts in Department of Mathematics.
- 15) Conducting facilities and infrastructure development efforts in Department of Mathematics.

**Output:**

- 1) Strategic plan for the next 4 (four) years
- 2) Annual work program plan of Department of Mathematics.
- 3) Concept of lecturers' teaching loads per semester.
- 4) Monitoring and evaluation (monev) results of lecture implementation.
- 5) Concept of assignment letter for academic advisor.
- 6) Concept of operating cost plan of Department of Mathematics.
- 7) Development of student activities of Department of Mathematics.
- 8) Academic advisor of final assignment, seminar course, field work practice.
- 9) Services for lecturers who conduct research and community service.
- 10) Report on cooperation results and human resources development, facilities and infrastructure development of Department of Mathematics.

**Responsibilities:**

- 1) Validity and determination of work program plan of Department of Mathematics.
- 2) Smooth and orderly activities implementation of education and teaching, research and community service of Department of Mathematics.
- 3) Validity of work materials.
- 4) Validity and determination of output.
- 5) Validity and determination of report.

**Function:**

- 1) Asking data and information to the relevant work unit.
- 2) Giving advices and suggestions to supervisors.
- 3) Signing official letters and documents.
- 4) Evaluating lecturers' performance on task implementation.
- 5) Providing assessment of lecturers according to Employee Work Objective (SKP).



## **2. SECRETARY OF DEPARTMENT**

### **Task Formulation:**

- 1) Assisting the head of department to prepare planning, organizing, and controlling activity implementation of education and teaching, research and community service in Department of Mathematics according to the applicable provision.
- 2) Assisting the head of department to prepare planning, organizing, and controlling of Department of Mathematics development.
- 3) Assisting the head of department to prepare planning, organizing, and controlling of administrative development in Department of Mathematics.

### **Task Description:**

- 1) Assisting the head of department to prepare work program plan as the work guidelines.
- 2) Assisting the head of department to review the teaching load concept of lecturers for each semester based on the applicable provision to confirm its suitability.
- 3) Assisting the head of department to check the concept of assignment letter for academic advisor as supervisor input.
- 4) Monitoring lecture implementation based on the applicable provision as evaluation materials.
- 5) Evaluating teaching and learning implementation based on monitoring result to improve the quality.
- 6) Preparing the operating cost plan based on work program.
- 7) Assisting the head of department to direct and guide student activities in Department of Mathematics environment.
- 8) Assisting the head of department to determine advisors for students who complete academic assignments (final assignment, seminar course, and field work practice/PKL) based on the suggestion from the head of study program.
- 9) Assisting the head of department to facilitate lecturers who conduct research and community service according to the workload and expertise for a smooth task implementation.
- 10) Preparing activity report of the department according to the achieved result as the responsibility of task implementation.
- 11) Making lecture schedule, midterm exam/final exam schedule and short semester schedule (SP).
- 12) Assisting the head of department to perform other tasks.
- 13) Actively assisting the head of department to conduct development and cooperation with other parties.
- 14) Assisting the head of department to conduct human resources development efforts in Department of Mathematics.
- 15) Assisting the head of department to conduct facilities and infrastructure development efforts in Department of Mathematics.

**Output:**

- 1) Documentation of annual work program plan and strategic plan of Department of Mathematics.
- 2) Concept of lecturers' teaching loads per semester.
- 3) Documentation of monitoring results of lecture implementation.
- 4) Concept of assignment letter for academic advisor.
- 5) Document of operating cost plan of Department of Mathematics.
- 6) Document of development of student activities of Department of Mathematics.
- 7) Concept of academic advisor of final assignment, seminar course, field work practice.
- 8) Concept of services for lecturers who conduct research and community service.
- 9) Document of report on cooperation results and human resources development, facilities and infrastructure development of Department of Mathematics.
- 10) Lecture schedule, midterm exam/final exam schedule and short semester schedule.

**Responsibilities:**

- 1) Carrying out the head of department's program
- 2) Validity and determination of work program plan documents of Department of Mathematics.
- 3) Smooth and orderly activities implementation of education and teaching, research and community service of Department of Mathematics.
- 4) Validity of work materials.
- 5) Validity and determination of output.
- 6) Validity and determination of report.

**Function:**

- 1) Asking data and information to relevant work unit.
- 2) Giving advices and suggestions to supervisors.
- 3) Signing official letters and documents on behalf on department.
- 4) Providing information/consideration materials to the head of department in the framework of lecturer performance appraisal on task implementation.
- 5) Performing position rotation of administrative staff.

**3. HEAD OF UNDERGRADUATE MATHEMATICS STUDY PROGRAM****Task Formulation:**

- 1) Assisting the head of department to prepare planning, organizing, and controlling activities implementation of education and teaching, research and community service in Department of Mathematics according to the applicable provision.
- 2) Assisting the head of department to prepare planning, organizing, and controlling of Department of Mathematics development.

**Task Description:**

- 1) Distributing designing/evaluating/revising the curriculum of study program
- 2) Distributing lecturer for teaching/education task (inside or outside study program in the environment of Brawijaya University)

- 3) Distributing lecturer for research task (from DPP/SPP fund source)
- 4) Distributing lecturer for community service task (DPP/SPP)
- 5) Distributing lecturer as academic advisor
- 6) Distributing lecturer as advisor for final assignment, seminar course, and field work practice
- 7) Distributing lecturer as undergraduate thesis examiner
- 8) Sending/assigning staff to participate in seminar/conference/workshop/research internship at regional and national level inside or outside Brawijaya University
- 9) Monitoring student academic development through academic advisors
- 10) Giving direction/suggestion to students who will take academic assignments in the form of final assignment, seminar course, field work practice/PKL, related to the candidate of final assignment advisor
- 11) Taking data and monitoring undergraduate thesis assisting process until the final examination
- 12) Evaluating teaching and learning process (PBM) through questionnaires with students as the respondents
- 13) Evaluating study program performance with students as the reviewer
- 14) Correcting/revising academic transcript for students who will take thesis defense
- 15) Signing/validating temporary degree certificate (SKL)
- 16) Confirming/summoning students who are at risk of evaluation on the first year, second year, and at the end of study period
- 17) Giving direction and taking data of alumni candidates of the study program, developing lecturers in teaching, research, and community service fields.
- 18) Developing references (text books and scientific journals) through proposal to the library
- 19) Encouraging and directing student scientific activities in the form of research and scientific writing
- 20) Giving suggestions to the department and dean on lecturer recruitment
- 21) Developing promotion activities on Mathematics implementation to the user community
- 22) Developing information system of study program as an information sub-system in the department, faculty and university
- 23) Refining the academic writing guidelines for thesis, seminar course, PKL
- 24) Refining final assignment and PKL writing guidelines and implementation
- 25) Preparing and making accreditation forms
- 26) Preparing and making proposal for various grants (semi que, TPSDP, etc.)
- 27) Coordinating teaching material procurement
- 28) Developing lecturer group based on fields of science and areas of interest
- 29) Planning and holding guest lecture
- 30) Coordinating with the head of study programs and the head of laboratories

**Responsibilities:**

- 1) Validity and determination of work program plan of study program.
- 2) Smooth and orderly activities implementation of education and teaching, research and community service of Department of Mathematics.
- 3) Validity of work materials.
- 4) Validity and determination of output.
- 5) Validity and determination of report.

**Function:**

- 1) Determining/replacing thesis advisor and examiners
- 2) Determining thesis defense schedule
- 3) Determining the number of credits recognized for degree transfer

**4. HEAD OF MAGISTER MATHEMATICS STUDY PROGRAM****Task Formulation:**

- 1) Assisting the head of department to prepare planning, organizing, and controlling activity implementation of education and teaching, research and community service in the study program environment according to the applicable provision.
- 2) Assisting the head of department to prepare planning, organizing, and controlling of study program development.

**Task Description:**

- 1) Designing/evaluating/revising the curriculum of study program
- 2) Distributing lecturer for teaching/education task (inside or outside study program in the environment of Brawijaya University)
- 3) Distributing lecturer as advisor for thesis, proposal seminar, and thesis seminar
- 4) Distributing lecturer as thesis examiner
- 5) Monitoring student academic development
- 6) Giving direction/suggestion to students who will write thesis as well as the thesis advisor candidates
- 7) Taking data and monitoring thesis assisting process until the final examination
- 8) Evaluating study program performance with students as the reviewer
- 9) Correcting/revising academic transcript for students who will take thesis defense
- 10) Signing/validating temporary degree certificate (SKL)
- 11) Confirming/summoning students who are at risk of evaluation on the first year and at the end of study period
- 12) Developing references (text books and scientific journals) through proposal to the library
- 13) Encouraging and directing student scientific activities in the form of research and scientific writing
- 14) Giving suggestions to the department and dean on lecturer recruitment
- 15) Developing promotion activities on Mathematics implementation to the user community
- 16) Refining the academic writing guidelines for thesis

- 17) Refining thesis writing guidelines and implementation
- 18) Preparing and making accreditation forms
- 19) Preparing and making proposal for various grants (semi que, TPSDP, etc.)
- 20) Coordinating teaching material procurement
- 21) Developing lecturer group based on fields of science and areas of interest
- 22) Planning and holding guest lecture
- 23) Coordinating with the head of study programs and the head of laboratories

**Responsibilities:**

- 1) Validity and determination of work program plan of study program.
- 2) Smooth and orderly activities implementation of education and teaching, research and community service of Department of Mathematics.
- 3) Validity of work materials.
- 4) Validity and determination of output.
- 5) Validity and determination of report.

**Function:**

- 1) Determining/replacing thesis advisor and examiners from inside or outside Brawijaya University
- 2) Determining thesis defense schedule

## **5. HEAD OF DOCTOR MATHEMATICS STUDY PROGRAM**

**Main Duties and Function**

- 1) Coordinating all elements of teaching and learning process to ensure the quality of S3 Mathematics Education
- 2) Responsible of curriculum development of SP S-3 Mathematics
- 3) Determining the distribution and details of tasks from each sub-section of activities in SP S-3 Mathematics
- 4) Knowing all path of examination scores from the course managed by lecturers
- 5) Making final decision for all policies taken by SP S-3 Mathematics

## **6. HEAD OF LABORATORY**

There are 7 Laboratories in the Department of Mathematics with each main duties and function (tupoksi) as follows:

**a. Basic Mathematics Laboratory**

- 1) Setting vision, mission, goals, as well as policies and objectives of Laboratory quality
- 2) Planning the needs for assistant, conducting assistant selection, training and assistant evaluation.
- 3) Monitoring and evaluating response activities, evaluating practice/Response materials
- 4) Sending response score to the lecturer
- 5) Planning, conducting, evaluating laboratory activities and planning Laboratory Activity development

- 6) Establishing cooperation with outside parties in terms of resource sharing and Laboratory empowerment
- 7) Organizing laboratory activity schedule
- 8) Planning, conducting and controlling of Laboratory Inventory
- 9) Improving cooperation among laboratories within mathematics environment
- 10) Monitoring and evaluating teaching-learning process for courses at Basic Mathematics Laboratory
- 11) Assisting the head of study program S1 in plotting course distribution to Laboratory lecturers
- 12) Evaluating and improving Course Plan, curriculum and syllabus
- 13) Reporting on all laboratory activities in writing to the head of department for quarterly period

### **OUTPUT**

- 1) Vision, mission, goals, as well as policies and objectives of Laboratory
- 2) List of Assistant Needs, List of Selected Assistants, List of Training, and Evaluation Report
- 3) Evaluation Result of Practice Activities
- 4) Evaluation Result of Practice/Response Materials
- 5) Laboratory Development Plan Document
- 6) Laboratory Management Review
- 7) Input and Training
- 8) Laboratory Activity Schedule
- 9) Inventory, status and inventory maintenance
- 10) Plan and topic to be coordinated
- 11) Course Portfolio
- 12) Course Plot
- 13) Course Plan, Curriculum, Syllabus Documents
- 14) Laboratory Quarterly Report

### **b. Applied Analysis and Computational Science Laboratory**

- 1) Setting vision, mission, goals, as well as policies and objectives of Laboratory quality
- 2) Planning, conducting, evaluating laboratory activities and planning Laboratory Activities development
- 3) Planning the needs for assistant, conducting assistant selection, training and assistant evaluation.
- 4) Preparing work plan and budget of laboratory
- 5) Monitoring and evaluating practice/response activities, evaluating practice/Response materials
- 6) Sending response score to the lecturer
- 7) Establishing cooperation with outside parties in terms of resource sharing and Laboratory empowerment
- 8) Organizing laboratory activities schedule

- 9) Planning, conducting and controlling of Laboratory Inventory
- 10) Improving cooperation among laboratories within mathematics environment
- 11) Monitoring and evaluating teaching-learning process for courses
- 12) Assisting the head of study program S1 in plotting course distribution to Laboratory lecturers
- 13) Evaluating thesis assisting process for lecturer at Laboratory
- 14) Developing scientific knowledge at Laboratory through guest lecture, regular lecture, and other activities
- 15) Planning and evaluating education, publication, and community service activities in Laboratory
- 16) Making and evaluating research and Community Service roadmap to Laboratory
- 17) Reporting all laboratory activities in writing to the head of department for quarterly period

### **OUTPUT**

- 1) Vision, mission, goals, as well as policies and objectives of Laboratory
- 2) Laboratory Development Plan Document
- 3) Laboratory Management Review
- 4) List of Assistant Needs, List of Selected Assistants, List of Training, and Evaluation Report
- 5) Budget Plan
- 6) Evaluation Result of Practice Activities, Evaluation Result of Practice/Response Materials
- 7) Input and Training
- 8) Laboratory Activities Schedule
- 9) Inventory, status and inventory maintenance
- 10) Plan and topic to be coordinated
- 11) Monitoring Results of Teaching and Learning Process (PBM)
- 12) Course Plot
- 13) Evaluation Results of Thesis Assistance
- 14) Report of Regular Seminar and other activities
- 15) Course Plan, Curriculum, Syllabus, Research and Community Service Data, Documents of Planning and evaluation of education, publication, research and community service
- 16) Research and Community Service Roadmap
- 17) Laboratory Quarterly Report

**c. Computer and Data Science Laboratory**

- 1) Setting vision, mission, goals, as well as policies and objectives of Laboratory quality
- 2) Planning, conducting, evaluating laboratory activities and planning Laboratory Activities development
- 3) Planning the needs for assistant, conducting assistant selection, training and assistant evaluation.
- 4) Preparing work plan and budget of laboratory
- 5) Monitoring and evaluating practice/response activities, evaluating practice/Response materials
- 6) Sending response score to the lecturer
- 7) Establishing cooperation with outside parties in terms of resource sharing and
- 8) Laboratory empowerment
- 9) Organizing laboratory activity schedule
- 10) Planning, conducting and controlling of Laboratory Inventory
- 11) Improving cooperation among laboratories within mathematics environment
- 12) Monitoring and evaluating teaching-learning process for courses
- 13) Assisting the head of study program S1 in plotting course distribution to Laboratory lecturers
- 14) Evaluating thesis assisting process for lecturer at Laboratory
- 15) Developing scientific knowledge at Laboratory through guest lecture, regular lecture, and other activities
- 16) Planning and evaluating education, publication, and community service activities in Laboratory
- 17) Making and evaluating research and Community Service roadmap to Laboratory
- 18) Reporting on all laboratory activities in writing to the head of department for quarterly period

**OUTPUT**

- 1) Vision, mission, goals, as well as policies and objectives of Laboratory
- 2) Laboratory Development Plan Document
- 3) Laboratory Management Review
- 4) List of Assistant Needs, List of Selected Assistants, List of Training, and Evaluation Report
- 5) Budget Plan
- 6) Evaluation Result of Practice Activities, Evaluation Result of Practice/Response Materials
- 7) Input and Training
- 8) Laboratory Activities Schedule
- 9) Inventory, status and inventory maintenance
- 10) Plan and topic to be coordinated
- 11) Monitoring Results of Teaching and Learning Process (PBM)
- 12) Course Plot
- 13) Evaluation Results of Thesis Assistance
- 14) Report of Regular Seminar and other activities
- 15) Course Plan, Curriculum, Syllabus, Research and Community Service Data, Documents of Planning and evaluation of education, publication, research and community service
- 16) Research and Community Service Roadmap
- 17) Laboratory Quarterly Report



#### **d. Analysis Laboratory**

- 1) Setting vision, mission, goals, as well as policies and objectives of Laboratory quality
- 2) Planning, conducting, evaluating laboratory activities and planning Laboratory Activities development
- 3) Planning the needs for assistant, conducting assistant selection, training and assistant evaluation.
- 4) Preparing work plan and budget of laboratory
- 5) Monitoring and evaluating practice/response activities, evaluating practice/Response materials
- 6) Sending response score to the lecturer
- 7) Establishing cooperation with outside parties in terms of resource sharing and
- 8) Laboratory empowerment
- 9) Organizing laboratory activity schedule
- 10) Planning, conducting and controlling of Laboratory Inventory
- 11) Improving cooperation among laboratories within mathematics environment
- 12) Monitoring and evaluating teaching-learning process for courses
- 13) Assisting the head of study program S1 in plotting course distribution to Laboratory lecturers
- 14) Evaluating thesis assisting process for lecturer at Laboratory
- 15) Developing scientific knowledge at Laboratory through guest lecture, regular lecture, and other activities
- 16) Planning and evaluating education, publication, and community service activities in Laboratory
- 17) Making and evaluating research and Community Service roadmap to Laboratory
- 18) Reporting on all laboratory activities in writing to the head of department for quarterly period

#### **OUTPUT**

- 1) Vision, mission, goals, as well as policies and objectives of Laboratory
- 2) Laboratory Development Plan Document
- 3) Laboratory Management Review
- 4) List of Assistant Needs, List of Selected Assistants, List of Training, and Evaluation Report
- 5) Budget Plan
- 6) Evaluation Result of Practice Activities, Evaluation Result of Practice/Response Materials
- 7) Input and Training
- 8) Laboratory Activities Schedule
- 9) Inventory, status and inventory maintenance
- 10) Plan and topic to be coordinated
- 11) Monitoring Results of Teaching and Learning Process (PBM)
- 12) Course Plot
- 13) Evaluation Results of Thesis Assistance
- 14) Report of Regular Seminar and other activities
- 15) Course Plan, Curriculum, Syllabus, Research and Community Service Data, Documents of Planning and evaluation of education, publication, research and community service
- 16) Research and Community Service Roadmap
- 17) Laboratory Quarterly Report

#### **e. Algebra Laboratory**

- 1) Setting vision, mission, goals, as well as policies and objectives of Laboratory quality
- 2) Planning, conducting, evaluating laboratory activities and planning Laboratory Activities development
- 3) Planning the needs for assistant, conducting assistant selection, training and assistant evaluation.
- 4) Preparing work plan and budget of laboratory
- 5) Monitoring and evaluating practice/response activities, evaluating practice/Response materials
- 6) Sending response score to the lecturer
- 7) Establishing cooperation with outside parties in terms of resource sharing and
- 8) Laboratory empowerment
- 9) Organizing laboratory activity schedule
- 10) Planning, conducting and controlling of Laboratory Inventory
- 11) Improving cooperation among laboratories within mathematics environment
- 12) Monitoring and evaluating teaching-learning process for courses
- 13) Assisting the head of study program S1 in plotting course distribution to Laboratory lecturers
- 14) Evaluating thesis assisting process for lecturer at Laboratory
- 15) Developing scientific knowledge at Laboratory through guest lecture, regular lecture, and other activities
- 16) Planning and evaluating education, publication, and community service activities in Laboratory
- 17) Making and evaluating research and Community Service roadmap to Laboratory
- 18) Reporting on all laboratory activities in writing to the head of department for quarterly period

#### **OUTPUT**

- 1) Vision, mission, goals, as well as policies and objectives of Laboratory
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- 5) Budget Plan
- 6) Evaluation Result of Practice Activities, Evaluation Result of Practice/Response Materials
- 7) Input and Training
- 8) Laboratory Activities Schedule
- 9) Inventory, status and inventory maintenance
- 10) Plan and topic to be coordinated
- 11) Monitoring Results of Teaching and Learning Process (PBM)
- 12) Course Plot
- 13) Evaluation Results of Thesis Assistance
- 14) Report of Regular Seminar and other activities
- 15) Course Plan, Curriculum, Syllabus, Research and Community Service Data, Documents of Planning and evaluation of education, publication, research and community service
- 16) Research and Community Service Roadmap
- 17) Laboratory Quarterly Report

**f. Industrial Mathematics and Finance Laboratory**

- 1) Planning, conducting, evaluating laboratory activities and planning Laboratory Activities development
- 2) Planning the needs for assistant, conducting assistant selection, training and assistant evaluation.
- 3) Preparing work plan and budget of laboratory
- 4) Monitoring and evaluating practice/response activities, evaluating practice/Response materials
- 5) Sending response score to the lecturer
- 6) Establishing cooperation with outside parties in terms of resource sharing and
- 7) Laboratory empowerment
- 8) Organizing laboratory activity schedule
- 9) Planning, conducting and controlling of Laboratory Inventory
- 10) Improving cooperation among laboratories within mathematics environment
- 11) Monitoring and evaluating teaching-learning process for courses
- 12) Assisting the head of study program S1 in plotting course distribution to Laboratory lecturers
- 13) Evaluating thesis assisting process for lecturer at Laboratory
- 14) Developing scientific knowledge at Laboratory through guest lecture, regular lecture, and other activities
- 15) Planning and evaluating education, publication, and community service activities in Laboratory
- 16) Making and evaluating research and Community Service roadmap to Laboratory
- 17) Reporting on all laboratory activities in writing to the head of department for quarterly period

**OUTPUT**

- 1) Vision, mission, goals, as well as policies and objectives of Laboratory
- 2) Laboratory Development Plan Document
- 3) Laboratory Management Review
- 4) List of Assistant Needs, List of Selected Assistants, List of Training, and Evaluation Report
- 5) Budget Plan
- 6) Evaluation Result of Practice Activities, Evaluation Result of Practice/Response Materials
- 7) Input and Training
- 8) Laboratory Activities Schedule
- 9) Inventory, status and inventory maintenance
- 10) Plan and topic to be coordinated
- 11) Monitoring Results of Teaching and Learning Process (PBM)
- 12) Course Plot
- 13) Evaluation Results of Thesis Assistance
- 14) Report of Regular Seminar and other activities
- 15) Course Plan, Curriculum, Syllabus, Research and Community Service Data, Documents of Planning and evaluation of education, publication, research and community service
- 16) Research and Community Service Roadmap
- 17) Laboratory Quarterly Report

**g. Actuarial Laboratory**

- 1) Setting vision, mission, goals, as well as policies and objectives of Laboratory quality
- 2) Planning, conducting, evaluating laboratory activities and planning Laboratory Activities development
- 3) Planning the needs for assistant, conducting assistant selection, training and assistant evaluation.
- 4) Preparing work plan and budget of laboratory
- 5) Monitoring and evaluating practice/response activities, evaluating practice/Response materials
- 6) Sending response score to the lecturer
- 7) Establishing cooperation with outside parties in terms of resource sharing and
- 8) Laboratory empowerment
- 9) Organizing laboratory activities schedule
- 10) Planning, conducting and controlling of Laboratory Inventory
- 11) Improving cooperation among laboratories within mathematics environment
- 12) Monitoring and evaluating teaching-learning process for courses
- 13) Assisting the head of study program S1 in plotting course distribution to Laboratory lecturers
- 14) Evaluating thesis assisting process for lecturer at Laboratory
- 15) Developing scientific knowledge at Laboratory through guest lecture, regular lecture, and other activities
- 16) Planning and evaluating education, publication, and community service activities in Laboratory
- 17) Making and evaluating research and Community Service roadmap to Laboratory
- 18) Reporting on all laboratory activities in writing to the head of department for quarterly period

#### **OUTPUT**

- 1) Vision, mission, goals, as well as policies and objectives of Laboratory
- 2) Laboratory Development Plan Document
- 3) Laboratory Management Review
- 4) List of Assistant Needs, List of Selected Assistants, List of Training, and Evaluation Report
- 5) Budget Plan
- 6) Evaluation Result of Practice Activities, Evaluation Result of Practice/Response Materials
- 7) Input and Training
- 8) Laboratory Activity Schedule
- 9) Inventory, status and inventory maintenance
- 10) Plan and topic to be coordinated
- 11) Monitoring Results of Teaching and Learning process (PBM)
- 12) Course Plot
- 13) Evaluation Results of Thesis Assistance
- 14) Report of Regular Seminar and other activities
- 15) Course Plan, Curriculum, Syllabus, Research and Community Service Data, Documents of Planning and evaluation of education, publication, research and community service
- 16) Research and Community Service Roadmap
- 17) Laboratory Quarterly Report

## **7. TREASURY OF DEPARTMENT**

### **Task Formulation:**

- 1) Assisting the head of department to prepare planning, organizing, and controlling of financial activity implementation in Department of Mathematics based on the applicable provision
- 2) Assisting the head of department to prepare planning, organizing, and controlling of financial development in Department of Mathematics

### **Task Description:**

- 1) Planning and allocating budget of Department of Mathematics
- 2) Receiving and recording any income fund
- 3) Spending fund based on the order of the head or secretary of department
- 4) Completing financial administration in the form of SPJ (letter of responsibility)
- 5) Carrying out activities to increase income of Department of Mathematics
- 6) Coordinating with the head of study program and head of laboratories regarding funding

### **Responsibilities:**

- 1) Validity and determination of budget plan documents of Department of Mathematics
- 2) Smooth and orderly financial activities implementation in Department of Mathematics.
- 3) Validity of work materials.
- 4) Validity and determination of output.
- 5) Validity and determination of report.

### **Function:**

- 1) Deciding regular expenses of the department
- 2) Together with the head of laboratories, deciding laboratory service costs
- 3) Receiving budget proposal from the head of study program, head of laboratories, etc.
- 4) Proposing the needs of Department of Mathematics

## **8. HEAD OF ADMINISTRATIVE AFFAIRS**

### **Duties and Function:**

- 1) Providing Administration Service of Department
- 2) Serving administration of official and non-official correspondence
- 3) For Advisor: undergraduate thesis/thesis, PKL, Seminar Course.
- 4) For Implementation: Research, undergraduate thesis/thesis, PKL
- 5) For Cover Letter of undergraduate thesis/thesis minutes
- 6) For data/information/help application
- 7) For answering data/information request
- 8) Others, according to the order of the head/secretary of department
- 9) Archiving outgoing/incoming mail.
- 10) Checking and initialing the free loan letters for students of the Department of Mathematics or outside the Department of Mathematics.
- 11) Checking and initialing letters that will be signed by head/secretary of department
- 12) Arranging letters for lecturers
- 13) Coordinating announcement publication
- 14) And other tasks given by the Head/Secretary of Department which are ad-hoc

## **9. GENERAL ADMINISTRATION**

### **Duties and Function**

- 1) Office Stationery (ATK) Procurement Service
  - a. Preparing plan and or holding ATK needs every semester to be submitted to the Faculty
  - b. Monitoring and evaluating the use of ATK every semester and report it to the Secretary of Department
  - c. Making a list of inventori and report it to the Administration Coordinator annually.
  - d. Providing the stationery needed by the faculty staff, administrative staff and students.
- 2) Treasury Service
  - a. Assisting in making SPJ for the treasurer of Department including purchasing stationery, salary payment, etc.
  - b. Assisting in making application letter for operational funding needs of the Department to the Faculty.
  - c. Making monthly report on the use and operation to the Treasurer of department.
  - d. Making a list and pay salary for teachers and administrators in SP.
  - e. Archiving and collecting study plan (KRS) and study result (KHS) for each semester.

## **10. EDUCATION ADMINISTRATION**

### **Duties and Function**

- 1) Providing undergraduate thesis/thesis defense registration form
- 2) Receiving undergraduate thesis/thesis defense registration
- 3) Assisting in typing Notification Letter to Thesis Examiners.
- 4) Receiving proposal/final Seminar Registration.
- 5) Archiving Student Seminar Attendance (Proposal/final).
- 6) Arranging the Implementation of undergraduate Thesis/Thesis Defense.
- 7) Archiving student exam files after thesis defense.
- 8) Sending the Minutes of undergraduate Thesis/Thesis Defense to the Faculty
- 9) Archiving Alumni Biodata & Academic Transcripts.
- 10) Recording and taking data of the results of undergraduate thesis/thesis defense including GPA, length of study, duration of thesis writing, thesis advisor and undergraduate thesis/thesis title.
- 11) Student PKL services
- 12) Providing Registration Forms and completeness of PKL administration.
- 13) Receiving PKL Registration and PKL seminar
- 14) Filing and sending notification to PKL advisor
- 15) Organizing the Implementation of PKL Exam
- 16) Filing PKL reports and PKL scores
- 17) Sending PKL scores to the Faculty
- 18) Assisting with lecture services: Providing markers and erasers for lectures

## **11. LECTURE ADMINISTRATION**

### **Duties and Function**

- 1) Preparing student attendance for each course.
- 2) Coordinating and monitoring lecture services
- 3) Coordinating and Monitoring Student and Lecturer academic activities.
- 4) Coordinating and preparing academic activities in the Department, both routine and incidental
- 5) Recording student attendance for 80% evaluation
- 6) Recording the lecturers' attendance in class
- 7) Recapping the number of participants for each course for final exam attendance purpose.
- 8) Carrying out other duties related to lecture administration services.
- 9) General administration services
- 10) Distributing letters for lecturers.
- 11) Posting announcements.
- 12) Others

## **12. GENERAL ASSISTANT**

### **Duties and Function:**

#### **1) Lecture Service:**

- a. In charge of opening the doors of at Department of Mathematics, the doors open no later than 6:45 a.m. every day.
- b. In charge of locking the doors at Department of Mathematics, the doors are locked at 17.00 at the earliest every day when on duty

#### **2) Cleaning Service:**

- a. Cleaning all rooms in Department of Mathematics: Head of Department's Room, Lecturer Rooms, Lecture Rooms, Laboratories, etc.
- b. Maintenance of Toilet & Lavatory.
- c. Cleaning the Garden around Mathematics building.
- d. Setting and arranging chairs in lecture rooms.

#### **3) General Administration Service**

- a. Helping distributing letters for lecturers.
- b. Helping posting announcements.
- c. Helping delivering official letters
- d. Others.

## 13. COMPUTER SETTING

### Duties and Function:

- 1) Lecture Service
  - a. Laboratory and Equipment Management Services
  - b. Serving computer repair/install in the laboratory, lecturer room and administration room.
  - c. Making inventory and reporting damaged computer, LCD and others to the Secretary of Department for repair.
  - d. Serving computer network repair in the Department, in case of damage
  - e. Assisting and preparing academic activities for students and lecturers that requires computers.
- 2) Practice Administration Service
  - a. Preparing and recording practical/practice courses for each semester
  - b. Preparing all practice needs every semester
  - c. Preparing all equipment used for the benefit of practice every semester
  - d. Serving registration of practice participants every semester
  - e. Making and preparing practice schedule every semester
  - f. Recording practice assistance from each Head of Laboratory.
  - g. Assisting in making practice certificates for assistants
  - h. Monitoring the implementation of practice by assistants or lecturers and reporting it to each head of the Laboratory.
  - i. Making and submitting laboratory needs proposal to the Head of the Department through the Head of the Lab

### Description:

1. This Main Duties will be evaluated every 6 (six) months.
2. The above duties are only the main duties (responsibilities), so that it is possible to carry out duties outside the main duties (substituting colleague).
3. If at any time unable to carry out the duties, the person in charge must notify the Head of Administrative Affairs, Department of Mathematics

## 14. QUALITY ASSURANCE UNIT

The duties of QAU is to assist the Head of the Department/Study Program in improving the quality through:

- 1) development of IQAS at the Department/SP level,
- 2) controlling IQAS documentation system refers to the IQAS faculties/programs and universities, both on the department page and in hardcopy, so that it meets the requirement certification of ISO 9001: 2008,
- 3) filling out the SP Department Performance Form each semester,
- 4) conducting internal audit in the department/study program for the preparation of Internal Quality Audit (IQA) by Brawijaya University auditors and ISO 9001: 2008 certification,
- 5) continuous improvement of the quality of the department based on the correction formula.



## **15. HEAD OF QAU**

Task Description and Responsibilities:

- 1) Assisting the Head of Department and Head of Study Program in preparing academic quality documents
- 2) Coordinating the operationalization of QAU activities
- 3) Together with the Secretary of QAU, documenting the QAU documents
- 4) Assisting the Head of Department and Head of Study Program in promoting and implementation of QAU documents
- 5) Performing other duties related to QAU

## **16. SECRETARY OF QAU**

Task Description and Responsibilities:

- 1) Together with the Head of QAU, coordinating the operationalization of QAU activities
- 2) Preparing the completeness of QAU mutual academic documents
- 3) Assisting the Head of Department and Head of Study Program in promoting and implementation of QAU documents
- 4) Performing other duties related to QAU

## **17. QAU MEMBER**

**Task Description and Responsibilities:**

- 1) Together with the QAU Team, assisting the administration of academic quality document preparation
- 2) Assisting in preparing the completeness of QAU quality documents
- 3) Making data inventory in relation to the implementation of QAU documents
- 4) Performing other duties related to QAU

### ***4.3. Vision, Mission and Objectives of Department of Mathematics***

#### **Vision of Department of Mathematics**

To become an internationally reputed department in education, research, and community service in the field of mathematics and its application for industrial development and life sciences.

#### **Mission of Department of Mathematics**

1. Organizing quality and continuous education in the field of mathematics and its applications.
2. Organizing research activities in the field of mathematics and its application that are competitive, innovative, and have a positive impact on educational and scientific development.
3. Promoting mathematics and its application through national or international cooperation with industry and education.

## Objectives of Department of Mathematics

1. Improve the ability to learn mathematics independently.
2. Improve simple intellectual abilities and critical thinking skills precisely and with certainty.
3. Fostering communication skills that can support interpersonal skills for further study and community.
4. Organizing international standard education.
5. Producing high quality graduates who are able to apply their knowledge optimally, compete and quickly adapt to the world of work.
6. Produce graduates who are independent and have an entrepreneurial spirit.
7. Produce graduates who are ready to continue their education to a higher level.
8. Produce graduates with noble moral, reason, and character.

### 4.4 Main Process of Quality Management System in Department of Mathematics

#### 4.4.1 Determination and Requirement of Customer/Stakeholder

Customer/Stakeholder of Department of Mathematics are people/institutions that need the services of Department of Mathematics, and people/institutions who give mandate to the Department of Mathematics. The Customers/Stakeholders include students of the Department of Mathematics and other majors in environment of Faculty of Mathematics and Natural Sciences and Brawijaya University, faculty leaders, lecturers apprenticeship/collaboration, institutions outside Brawijaya University that collaborate and use graduates of the Department of Mathematics, Senior High Schools/Vocational Schools/Islamic Senior High Schools that need guidance for the National Science Olympiad, and parents of students.

Department of Mathematics must determine customers and identify the requirements (needs and expectations) of customers. QAU identifies customer requirements according to the main duties and function and excellent service program. Customers and customer requirements are clearly stated in Quality Manual of Department of Mathematics, Faculty of Mathematics and Natural Sciences. Customer requirements in the Department of Mathematics are 4 (four) sections as presented in Table 4.1.

Table 4.1: Service User of Department of Mathematics

No	Service User (customer)	Customer Needs	Product
1	S-1, S-2, S-3 students, education and training participants (Diklat)	Receive education, teaching and training with national standard and obtain competence improvement	Bachelor, Master, Doctorate, improvement of HR competencies according to Education and Training program

No	Service User (customer)	Customer Needs	Product
2	Parents of students or institutions who send trainees	Graduates who can work and benefit to the mankind.	External recognition, appreciation and recommendation
3	Graduate users and partners in research and service activities	Several government and private institutions require accreditation A for Study Program, minimum GPA 2.75, and TOEFL 450. The required human resources are also physically and mentally healthy, communicative, skilled, willing to learn, creative, independent, able to work with teams and under pressure. Timely report, research innovation for science development, produce scientific work publication accepted in scientific forums, patents, textbooks, enrich teaching materials, or used in the community. Affordable costs, clear bureaucracy, accurate results	External recognition, appreciation and recommendation
4	Faculty as direct supervisor or funder	Trustworthy to mandate, compliance with policies and regulations, good quality performance, productive and efficient, transparent, accountable, relevant and competitive	External recognition, appreciation and recommendation

Based on the request of the Head of Department, customer complaints can be submitted to different oral and written media at off line and online ([jurmatub@ub.ac.id](mailto:jurmatub@ub.ac.id)), according to MP for Incompatible Product Control Handling. Customer complaints are used as a measure of customer satisfaction coordinated by the Management Representative of the Department of Mathematics. Every semester, an evaluation of customer satisfaction is carried out to improve the quality of the Department of Mathematics on an ongoing basis according to the MP for Incompatible Product Control Handling (MP **009046002**)

#### 4.4.2 Business Process (Main Process)

The Department of Mathematics in carrying out all business processes of its Quality Management System follows the cycle of the Internal Quality Assurance system of Brawijaya University, i.e. OSDAT which is derived from the management cycle of Plan Do Check Action (PDCA) at <https://pjm.ub.ac.id/layanan/spmi/>, as presented in Figure 4.2

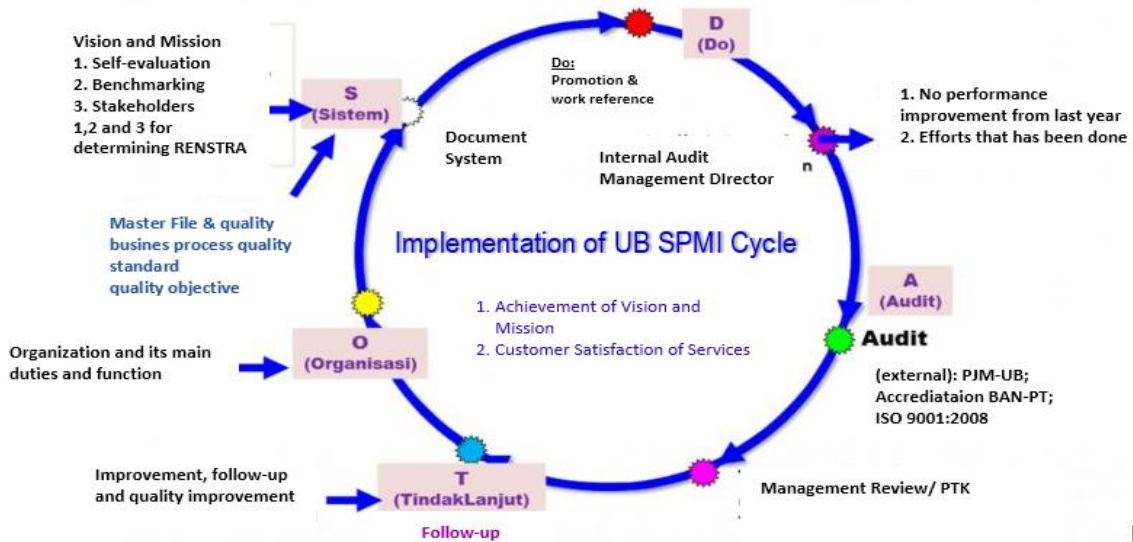


Figure 4.2. Cycle of SPMI-UB

Meanwhile, the main process (business process) in the provision of human resources education services in the field of Mathematics is described in the form of a sequence of activities as follows:

1. Education
2. Research
3. Community Service
4. HR Development etc.
5. Management

which in series and parallel follows a closed cycle flowchart (PDCA cycle/Plan Do Check Action) in Figure 4.3

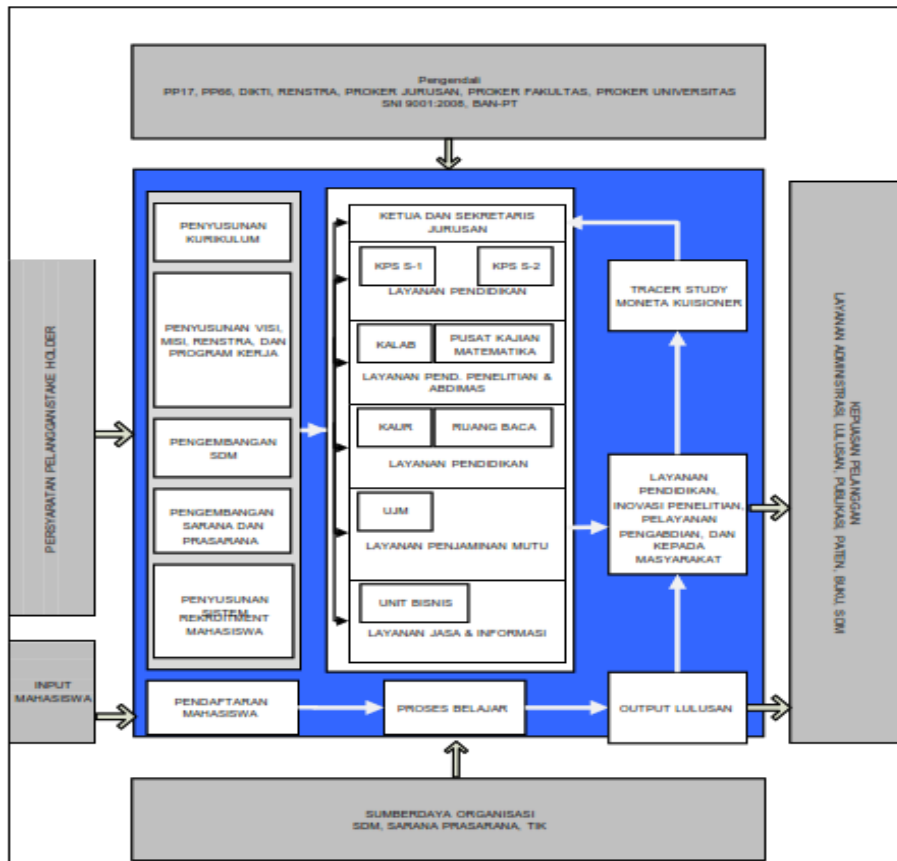


Figure 4.3. Business Process in providing Three Pillars of services in Department of Mathematics. The five activities are explained in detail in the Department Procedure Manual and Work Instruction.

#### 4.5. Document System and Audit

The document system in the Department of Mathematics follows the document system in Brawijaya University, both for the type of document and its codification system, see Quality Manual Brawijaya University code **00000 03000**. As well as the audit system, see audit document code **00000 09000**.

Table 4.1. Document of Department of Mathematics

Level	Document	Code
Department of Mathematics	1. Vision and Mission	<b>0090401000</b>
	2. Strategic Plan (Renstra)	<b>0090402000</b>
	3. Work Program	<b>0090403000</b>
	4. Education Guidelines	<b>0090404000</b>

The code of Quality Manual and List of Standard Operating Procedure (SOP) can be seen in Appendix 1.

## 5. MANAGEMENT RESPONSIBILITIES

### 5.1. Management Commitment

In order to guarantee the quality of educational services in providing human resources in the field of mathematics, the Head of the Department is committed to run the Quality Assurance System seriously by:

1. Appointing the Secretary of the Mathematics Department as a Manager Representative (MR) in carrying out daily quality management. In order to help the MR, management appoints Quality Assurance Unit (QAU) team of Department of Mathematics.
2. Cultivating the quality system within the Department of Mathematics by promoting to lecturers, employees, laboratory assistants, students, and related customers.
3. Coordinating regularly with MR and the QAU team in implementing the Quality Assurance System.
4. Preparing all resources to support the implementation of Quality Assurance System.
5. Conducting internal audits on the implementation of quality assurance system in the Department of Mathematics and complying with the Internal Quality Audit (IQA) conducted by the University through the Quality Assurance Center (QAC).

## **5.2. Customer Satisfaction**

In addition to achieve the vision and mission, the Department of Mathematics provides educational services to students as the main customers with a motto: **Student satisfaction is our priority.**

Student satisfaction is guaranteed with:

- 1) Each student obtains an Academic Advisor (PA)
- 2) In the teaching and learning process, facilities and infrastructure are prepared according to the standards of the National Accreditation Body for Higher Education (BAN-PT).
- 3) At the end of the semester, teaching evaluation instruments are circulated to evaluate the teaching and learning process carried out by the lecturers, and will be improved in the next semester if there are shortages.

Service satisfaction to alumni of the Department of Mathematics is carried out by:

- 1) Preparing tracer study.
- 2) Evaluating alumni performance by distributing evaluation instruments to alumni users majoring in mathematics to get feedback.
- 3) Using input from alumni users as the input for curriculum preparation.

Service satisfaction to community is carried out by:

- 1) Conducting research and community service activities.
- 2) Collaborating with stakeholders.

## **5.3. Quality Policies**

The Department of Mathematics has the following quality policies:

The Department of Mathematics is **committed to run a quality assurance system in all department activities and continuous quality improvement.** For that policy, then the department carries out the teaching and learning process in order to provide human resources in the field of mathematics that can be accepted by users by ensuring the quality of graduates according to the requirements

## **5.4. Work Program and Quality Objectives**

Planning, Work Program and Quality System Objectives is started from the documents of Vision and Mission (0090401000). To achieve the vision and mission, then the following documents are prepared Strategic Plan (Renstra) code: 0090402000, Work Program (Proker) code: 0090403000, Education Guidelines code: 0090404000, Quality Manual code: 0090405000 and Department Quality Standard code: 000004001 and or Quality Objectives, Procedure Manual (MP) and other supporting documents.

Department Quality Objectives are prepared based on the standard of the National Accreditation Body for Higher Education (BAN-PT), with the aim of facilitating the preparation of departments and study programs in accreditation.

Quality Objectives of the Department follow the Quality Objectives set by the University:

1. Ensure that accreditation of study programs under the Department of Mathematics get an A.
2. Ensure that the minimum compliance with each Quality Internal Audit (QIA) is 80%.

### ***5.5. Responsibilities, Authority and Communication***

In accordance with the organizational structure, main duties and function of the Department of Mathematics (see section 4.2), the responsibilities and authorities of each function have been detailed and clearly defined. In addition, in carrying out the quality assurance system at the department level, the Secretary of the Department has been appointed as a Manager Representative (MR) who is responsible to ensure that all QMS requirements are applied and the quality standards that have been determined are met and has the authority to represent the Head of the Department in carrying out daily quality assurance activities assisted by the Quality Assurance Unit (QAU).

Communication between the Head of the Department, the Secretary of the Department (MR), the head of the study program, the QAU team and administrative staff is carried out periodically as needed. Meanwhile, the communication with stakeholders is carried out through announcement boards, letter of invitation or via internet (website), and occasional face-to-face meetings if needed.

### ***5.6. Management Review***

Management review is carried out after the completion of the Quality Internal Audit (QIA) by holding a meeting between the Head of the Department, MR and the QAU team, in order to identify, evaluate QIA results and improve it if there are deficiencies (resources, service improvement) and prevent as well as improve the quality if the QIA results are lacking. The work unit conducts review at least twice a year. In addition, it also discusses the development program of the Department of Mathematics and the new Study Program, feedback from customers, incompatible products and its follow-up, ongoing program/business process performance and product suitability, evaluate predetermined quality objectives, status of preventive and corrective measures, and follow-up from previous management reviews. The results of management reviews will be submitted to all lecturers, academic supporting staff during regular department meetings, as well as to the head of department and faculty.

## **6. RESOURCE MANAGEMENT**

### ***6.1. Resource Provision***

To become lecturers and educational personnel in the Department of Mathematics, they must follow the rules applicable at the Ministry of National Education outlined in the Faculty of Mathematics and Natural Sciences Education Guidelines. The Department of Mathematics, Faculty of Mathematics and Natural Sciences UB is directed to produce strong and professional Human Resources (HR), so that they can compete at the national and international level. In addition, it is also expected to become a center for the development of science and technology, especially in the field of mathematics in Indonesia, particularly in East Java.

Therefore, the Department of Mathematics will ensure the availability of the resources needed to support the mathematics development process according to the needs of stake holders. For this reason, human resources supporting the process of achieving this goals are provided by the department to implement the quality assurance system that can run properly. In the end, the Vision and Mission can be achieved and stakeholder satisfaction can be fulfilled.

### ***6.2. Human Resources***

There are 34 staff at the Department of Mathematics consisting of 29 lecturers and 5 staff with the following details of lecturers:

1. Total of Professor : 3 people
2. Total of lecturers with doctoral degree : 16 people
3. Total of lecturers with master degree : 10 people

The quality improvement of HR is carried out by further studies for bachelor and master degree, training related to Tridharma AA, PEKERTI, Journal writing training, Laboratory Management, workshop, and increasing experience, and working together to form team/networking with other parties, benchmark, external peer review according to job analysis (supporting document number 00904 08000 01). Education personnel have their education upgraded to master degree according to the rector's policy. Moreover, the laboratory assistants are given training according to competence. The performance of lecturers and staff is evaluated at least one semester through BKD, SKP, Monev, etc.

### ***6.3. Facilities and Infrastructure and Work Environment (Campus)***

To support the teaching and learning process, facilities and infrastructure are provided with BAN PT standards which include buildings, lecturer rooms, lecture rooms, computer laboratories, reading rooms, library, gazebos, prayer rooms, parking lots, internet hotspot, LCD, OHP and blackboards. For the convenience and safety of the work environment, all rooms in the department of mathematics are clean and smoke-free.



#### **6.4. Academic Setting**

The interaction between lecturers, students and educational staff runs harmoniously and synergistically. It shows in the thesis proposal seminar, the thesis result seminar which is held openly. The number of student attendance is used as a requirement to take the thesis examination/defense. Research and community service with DPP/SPP funds are carried out jointly between lecturers involving the students of each year. In addition, other activities are also held that involve the academic advisor.

Guidance activities for LKTI, LKTM, PIMNAS, PKM, and others, workshop and break a fast together are coordinated by HMJ (Association of Student Department), software training (Maple, Matlab, Latex, SPSS, and others), and book review activities.

Academic pulpit freedom acts as part of academic freedom that allows the lecturers to freely convey their thoughts according to scientific norms and principles. The department invites experts from outside of Higher Institution to convey opinion in the framework of implementing academic freedom which is directed towards the realization of self-development of the academic community, science and technology which is guided by scientific autonomy. (According to Government Regulation Number 60 of 1999)

### **7. REALIZATION OF EDUCATION SERVICE**

#### **7.1. Planning of Educational Service Program**

Planning of Educational Service Program of the Department of Mathematics is based on the planning of the Faculty of Mathematics and Natural Sciences (FMIPA) Brawijaya University. In detail, it can be seen in the Documents of Academic Guidelines of the Faculty.

#### **7.2. Student-Related Processes**

Process related to students of the Department of Mathematics is based on a process that is fully implemented by the Faculty of Mathematics and Natural Sciences (FMIPA) Brawijaya University. In detail, it can be seen in the Documents of Academic Guidelines of FMIPA.

#### **7.3. Curriculum Design and Development**

Curriculum design and development of the Department of Mathematics is adjusted to the competencies expected by each study program, as well as adjusting to the needs of stakeholders obtained from tracer studies, comparative studies to other regional and international universities, and referring to related scientific association. In 2010, Curriculum Reconstruction activities were carried out in accordance with the scientific development and labor market demands. In detail, the curriculum for the Department of Mathematics can be seen in the Documents of Academic Guidelines of Department of Mathematics.

#### ***7.4. Purchasing***

Procurement of goods and infrastructure in the Department of Mathematics is based on the procurement carried out by the Faculty of Mathematics and Natural Sciences, Brawijaya University.

#### ***7.5. Provision of Educational Service***

Provision of educational service in the Department of Mathematics is fully subordinating to the Faculty of Mathematics and Natural Sciences, Brawijaya University.

#### ***7.6. Control of Monitoring and Evaluation Equipment***

Control of Monitoring and Evaluation Equipment used in the Department of Mathematics has been documented in the Procedure Manual: Control of Educational Services Monitoring and Evaluation Equipment.

### **8. MEASUREMENT, ANALYSIS AND QUALITY IMPROVEMENT**

#### ***8.1. General***

Documents of Measurement, Analysis and Quality Improvement Procedure Manual.

#### ***8.2. Monitoring and Evaluation***

##### **8.2.1. Monitoring and Evaluation of Vision and Mission Achievement**

Meetings are held periodically to monitor and evaluate the stages of Vision and Mission achievement in the Department of Mathematics. The results of the meetings become the input for improving the performance of the Department of Mathematics in order to achieve the Vision and Mission.

##### **8.2.2. Monitoring and Evaluation of Customer Satisfaction**

Monitoring of Customer Satisfaction is measured with the implementation of QIA Procedure Manual and Customer Satisfaction Procedure manual. This monitoring process is facilitated by the University through QAC team.

#### ***8.3. Data Analysis***

Based on the results of 8.2 and presented in regular meeting of department.

#### ***8.4. Improvement***

Based on sustainable improvement according to data analysis results

## 9. APPENDIX 1. QUALITY RECORD LIST FORMS

No	Document Name	Code	Revision	Revision Date	Revision Notes	Description
1.	Quality Manual of Department of Mathematics	0090405000	0	1 November 2010		
2.	Quality Manual of Department of Mathematics	0090405000	1	1 June 2011	Adjustment of organizational structure organization	
3.	Quality Manual of Department of Mathematics	0090405000	2	28 June 2011	Results of Corrective Measure QIA Cycle 8	
4.	Quality Manual of Department	0090405000	3	23 September 2011	Improvement on Business and Competence Diagram	
5.	Quality Manual of Department	0090405000	4	10 April 2013	Results of Corrective Measure QIA Cycle 11 Changes of document preparation team	
6.	Quality Manual of Department	0090405000	5	September 2017	Adjustment of organizational structure, establishment of SP S-3 Mathematics	
7	Quality Manual of Department	UN10/F09/14 /HK.01.02.b	6	September 2018	Adjustment of organizational structure, SP of Statistics into Department of Statistics	
8	Quality Manual of Department	UN10/F09/14 / HK.01.02.b	7	October 2020	Adjustment of organizational structure, establishment of SP S1 Actuarial Science, adjustment of accreditation status and number of Accreditation Certificate, establishment of 7 labs and removal of 4 KBI, changes of vision, mission, objectives of Department, main duties and Function of the Head of Lab	

## 10. APPENDIX 2. QMS CROSS-REFERENCE LIST WITH ISO 9001:2008

Clause No.	Requirement Substance	Requirement Fulfillment Criteria	Fulfillment in QM
<b>1.</b>	<b>Scope</b>		
	General		QM Clause 1.2, page 6
<b>2</b>	<b>Reference</b>		
<b>3</b>	<b>Term and definition</b>		QM Clause 3, page 6
<b>4</b>	<b>Quality Management System</b>		
4.1	General Requirements of Organization	Organizational Structure	QM Clause 4.2.1, page 9
		TUPOKSI	QM Clause 4.2.2, page 9
		Determination and Requirement of Client	QM Clause 4.4.1, page 19
		Organization business process	QM Clause 4.4.2, page 19
		Product (service) of organization	QM Clause 4.4.2, page 19
4.2	Documentation System		
4.2.1	General	Quality Policies	QM Clause 2, page 6
		Quality Objectives	QM Clause 4.1, page 6
		Synchronization between University Strategic Plan, Work Unit Strategic Plan, Quality Policies, Work Program and Quality Objectives	
4.2.2	Quality Manual	Scope of quality management system of work unit	QM Clause 1.1, page 6
4.2.3	Document Control		MP Document and Record Control (0090406001)
4.2.4	Record Control	Records of each activity process (output)	MP Document and Record Control (0090406001)
		List of Master File	Appendix 3
		List of Quality Document (including Manual)	Appendix 3
		Cross-reference list with ISO 9001:2008	Appendix 2

Clause No.	Requirement Substance	Requirement Fulfillment Criteria	Fulfillment in QM
<b>5</b>	<b>Management Responsibility</b>		<b>QM Clause 5, page 23</b>
5.1	Management Commitment		QM Clause 5.1, page 23
5.2	Focus on Client	Methods to meet the client needs and expectation	QM Clause 5.2, page 23
		Legal requirement and regulations to meet Clients' Requirements	QM Clause 5.2, page 23
5.3	Quality Policies		QM Clause 5.3, page 23
5.4	Planning		QM Clause 7.1, page 26
5.4.1	Quality Objectives	Quality Objectives according to Quality Policies and Product Requirements	QM Clause 5.4, page 24
5.4.2	Quality Management System		QM Clause 5.4, page 24
5.5	Responsibility, Authority, and Communication		QM Clause 5.5, page 24
5.5.1	Responsibility and Authority		QM Clause 5.5, page 24
5.5.2	Management Representatives		QM Clause 5.5, page 24
5.5.3	Internal Communication		QM Clause 5.5, page 24
5.6	Management Review		QM Clause 5.6, page 24
<b>6</b>	<b>Resource Management</b>		<b>QM Clause 6, page 25</b>
6.1	Resource Provision	Human Resources (HR) provision according to competence	QM Clause 6.1, page 25
6.2	Human Resources		QM Clause 6.2, page 25
6.2.1	General	HR with suitable competence compatible with education, skills and experience	QM Clause 6.2, page 25
6.2.2	Competence, Training and Awareness	Details of competence development activities	QM Clause 6.2, page 25
		HR Performance Evaluation	
6.3	Infrastructure	Details of Infrastructure and all facilities needed	QM Clause 6.3, page 25

Clause No.	Requirement Substance	Requirement Fulfillment Criteria	Fulfillment in QM
	Work Environment	Determination of work environment or academic setting needed	QM Clause 6.3, page 25
		HR Performance Evaluation	
<b>7</b>	<b>Product Realization</b>		
7.1	Product Planning and Realization	Product Planning	QM Clause 7.1, page 26
		Control of Monitoring and Evaluating Equipment (Monitoring and validation of measuring instrument of each work unit activity process)	
		Control of Monitoring and Evaluating Equipment (Monitoring and validation of measuring instrument of each work unit activity process)	
7.2	Client-Related Process		QM Clause 7.2, page 26
7.2.1	Determination of requirements related to product	Specific terms determined by client output	
		Requirements according to the prevailing laws and regulations or other requirements determined by organization	QM Clause 7.2, page 26 Documents of Education Guidelines of FMIPA
7.2.2	Review of requirement related to product		QM Clause 7.2, page 26
7.2.3	Customer communication		QM Clause 7.5, page 26
7.3	Design and Development		QM Clause 7.3, page 26
7.4.1	Purchasing Process	Selection, evaluation and re-evaluation criteria for supplier	QM Clause 7.4, page 26
<b>8</b>	<b>Measurement, analysis and improvement</b>		<b>QM Clause 8, page 26</b>
8.1	General manual		QM Clause 8.1, page 26
8.2	Monitoring and measuring		QM Clause 8.2.1, page 26

Clause No.	Requirement Substance	Requirement Fulfillment Criteria	Fulfillment in QM
8.2.1	Client Satisfaction		QM Clause 8.2.2, page 26
8.2.2	Internal Audit		MP Internal Audit (0090406004)
8.2.3	Process monitoring and evaluation		QM Clause 8.3, page 27
8.3	Incompatible product control		MP Incompatible product control (0090406004)
8.5.1	Sustainable improvement		QM Clause 8.4, page 27
8.5.2	Corrective measures		MP Corrective and Preventive Measures (0090406003)
8.5.3	Preventive measures		MP Corrective and Preventive Measures (0090406003)

## 11. APPENDIX 3. LIST OF MASTER FILE AND QUALITY DOCUMENT

NO	DOCUMENT NAME	CODE
1	Quality Manual	UN10/F09/14/HK.01.02.b

### LIST OF STANDARD OPERATING PROCEDURE (SOP)

Department of Mathematics

NO	SOP	CODE
1	Lecture	UN10/F09/14/HK.01.02.a/101
2	Short Semester Registration	UN10/F09/14/HK.01.02.a/102
3	Midterm Exam Final Exam	UN10/F09/14/HK.01.02.a/103
4	Quality Assurance of Undergraduate Thesis,	UN10/F09/14/HK.01.02.a/104
5	Planning	UN10/F09/14/HK.01.02.a/105
6	Organizing	UN10/F09/14/HK.01.02.a/106
7	Staff Development	UN10/F09/14/HK.01.02.a/107
8	Monitoring	UN10/F09/14/HK.01.02.a/108
9	Directing	UN10/F09/14/HK.01.02.a/109
10	Representation	UN10/F09/14/HK.01.02.a/110
11	Budgeting	UN10/F09/14/HK.01.02.a/111
12	Document and Record Control	UN10/F09/14/HK.01.02.a/201
13	Incompatible Product Control	UN10/F09/14/HK.01.02.a/202
14	Corrective and Preventive Measures	UN10/F09/14/HK.01.02.a/203
15	Internal Audit	UN10/F09/14/HK.01.02.a/204

Undergraduate Mathematics Study Program

NO	NAMA SOP	KODE
1	Study Plan Completion	UN10/F09/14/11/HK.01.02.a/101
2	Academic Advisor	UN10/F09/14/11/HK.01.02.a/102
3	Field Work Practice (PKL)	UN10/F09/14/11/HK.01.02.a/103
4	Undergraduate Thesis Writing	UN10/F09/14/11/HK.01.02.a/104
5	Determination of Thesis Advisor	UN10/F09/14/11/HK.01.02.a/105
6	Implementation of Seminar and Thesis Defense	UN10/F09/14/11/HK.01.02.a/106
7	Implementation of Seminar and Thesis Defense (online)	UN10/F09/14/11/HK.01.02.a/107
8	Activity Equivalent to PKL	UN10/F09/14/11/HK.01.02.a/108
9	Curriculum Reconstruction	UN10/F09/14/11/HK.01.02.a/109
10	Student Exchange	UN10/F09/14/11/HK.01.02.a/110
11	Certified Student Internship Program	UN10/F09/14/11/HK.01.02.a/111



### Undergraduate actuarial science Study Program

NO	SOP	CODE
1	Study Plan Completion	UN10/F09/14/12/HK.01.02.a/101
2	Academic Advisor	UN10/F09/14/12/HK.01.02.a/102
3	Field Work Practice (PKL)	UN10/F09/14/12/HK.01.02.a/103
4	Undergraduate Thesis Writing	UN10/F09/14/12/HK.01.02.a/104
5	Determination of Thesis Advisor	UN10/F09/14/12/HK.01.02.a/105
6	Implementation of Seminar and Thesis Defense	UN10/F09/14/12/HK.01.02.a/106
7	Curriculum Reconstruction	UN10/F09/14/12/HK.01.02.a/107

### Magister Mathematics Study Program

NO	SOP	CODE
1	Promotion	UN10/F09/14/21/HK.01.02.a/101
2	Implementation of Year Transfer Program (PAT)	UN10/F09/14/21/HK.01.02.a/102
3	Determination of Advisor	UN10/F09/14/21/HK.01.02.a/103
4	Thesis Proposal	UN10/F09/14/21/HK.01.02.a/104
5	Thesis Result Seminar	UN10/F09/14/21/HK.01.02.a/105
6	Thesis Defense	UN10/F09/14/21/HK.01.02.a/106

### Doctor Mathematics Study Program

NO	SOP	CODE
1	Dissertation Supporting Course (MKPD)	UN10/F09/14/31/HK.01.02.a/101
2	Qualification Test	UN10/F09/14/31/HK.01.02.a/102
3	Determination of Advisor Committee	UN10/F09/14/31/HK.01.02.a/103
4	Qualification Test	UN10/F09/14/31/HK.01.02.a/104
5	International Science Seminar	UN10/F09/14/31/HK.01.02.a/105
6	International Scientific Publication	UN10/F09/14/31/HK.01.02.a/106
7	Seminar of Dissertation Research Progress	UN10/F09/14/31/HK.01.02.a/107
8	Dissertation Qualifying Examination	UN10/F09/14/31/HK.01.02.a/108
9	Dissertation Examination	UN10/F09/14/31/HK.01.02.a/109

### Laboratorium

NO	SOP	CODE
1	Use of the Lecture Activity Laboratory	UN10/F09/14/41/HK.01.02.a/001
2	Use of the Student-Lecturer Internal Laboratory	UN10/F09/14/41/HK.01.02.a/002
3	Use of External Service Laboratories	UN10/F09/14/41/HK.01.02.a/003
4	Department Internal Practicum	UN10/F09/14/41/HK.01.02.a/004
5	Faculty Internal Practicum	UN10/F09/14/41/HK.01.02.a/005
6	External Practicum	UN10/F09/14/41/HK.01.02.a/006
7	Use of Research Laboratories	UN10/F09/14/41/HK.01.02.a/007