SOKOINE UNIVERSITY OF AGRICULTURE

COLLEGE OF AGRICULTURE

DEPARTMENT OF ANIMAL, AQUACULTURE AND RANGE SCIENCES

FIELD PRACTICAL TRAINING (FPT) GUIDELINES FOR B. SC.RANGE MANAGEMENT DEGREE PROGRAMME

2016

1. IMPORTANCE OF FIELD PACTICAL TRAINING

1.1. Introduction

The current contribution of livestock to the national economy is just 6.1 % of the GDP, despite Tanzania being a country with immense livestock resource. Over 65 % of the country is classified as rangeland holding some 21.3 million cattle, 15.2 million goats and 6.4 million sheep (Ministry of Livestock and Fisheries Development, 2013). This poor performance of the sector is partly due to lack of properly trained manpower, specialized in the field of Range Management. It is imperative that efforts are directed at training competent range scientists who shall facilitate utilization and conservation of the rangeland resources without upsetting the environmental equilibrium.

When one looks at the distribution of livestock, particularly the large and small ruminants, they are mainly found in eight (Arusha, Shinyanga, Dodoma, Mwanza, Mbeya, Morogoro, Singida and Tabora) out of over 20 regions of Tanzania mainland (Mdoe, 2011). These regions are mainly found in semiarid and arid regions. These areas are very fragile and highly vulnerable to land degradation due to poor range management skills.

The B.Sc. Range Management degree programme therefore, aims at building a pool of experts in range management related disciplines to act as consultants, researchers and extension workers and build competence for ranch property developers. These experts will provide advisory, consultancy and extension services on the proper and sustainable use of range natural resources to the community. It is envisaged that such a pool of experts shall catalyze an increase in production and productivity of rangelands to enhance the contribution of the livestock sector to the national economy and help to create employment in both public and private sector.

In addition to passing examinations in the above mentioned areas of specialization, another requirement for this degree programme is the Field Practical Training shall be an essential requirement of the Range Management degree programme and shall be conducted effective at the end of the **fourth** and the **sixth** semester for **eight** weeks each. The assessment of the field training shall be made by a special committee comprising of field practical supervisors from the Department of Animal, Aquaculture and Range Sciences (DAARS). Special emphasis shall be paid to attitude and commitment to perform range management and practices. A pass in the field practical training shall be required before a candidate is allowed to proceed to the next semester of the study or graduate in the case of a final year student.

1.2 Objectives of FPT

1.2.1. General objective

The overall objective of the FPT is to enable the students to get hands on skills to complement theoretical and practical instructions offered at the campus.

1.2.2 Specific objectives

The specific objectives are to:

(i) Demonstrate competence in application of concepts and theories from a range of disciplines and relate them to range management.

(ii) Propose and execute innovative strategies for sustainable rangeland utilization and increased livestock productivity

(iii) Integrate harmoniously commercial livestock production with indigenous Patroralism

(iv) Plan direct and work with Community Based Organization (CBO's), private ranches and government institutions related to utilization and conservation of rangeland resources, teaching, research and outreach activities

(v) Design specific range management experiments, investigantions, surveys or other means for testing hypothesis or proposition

(vi) Critically analyse information and synthesis outcomes.

2. SCOPE OF THE FPT GUIDELINES

These guidelines give detailed information on:

- The kind of reports which are expected to be produced by the students at various levels of training
- Procedures to be used by both local supervisors at FPT stations and the academic supervisor from SUA in assessing and grading the FPT performance of students.

These guidelines are, therefore, intended to be a resource book for students, training officers and supervisors.

3. PREPARATION OF FIELD PRACTICAL TRAINING

The FPT in the Department (DAARS) shall be conducted effective at the end of the **fourth** and the **sixth** semester for **eight** weeks each. DAARS is solely responsible for allocating FPT places to all students. However, students may be allowed to propose FPT factory/institution/centres of their own **at least eight weeks before** commencement of the FPT. All proposed FPT centres need to be approved by the Department before commencement of the FPT. **Training at a centre**

not approved and not allocated by the Department before the start of training will not be recognized.

4. PROCEDURE TO BE FOLLOWED DURING FPT

4.1. The "arrival" note form prepared and issued by the Department to each student will be filled and returned to the department by the student within the first week of FPT (Appendix 1).

4.2. The training officer (On-station Supervisor) will ensure that the training program is set up and shared with the FPT coordinator/SUA supervisor before the end of the first week of FPT. This program will form the basis for supervision and assessment when SUAsupervisor visits the station.

4.3. Each student will be visited at least once during each FPT period by SUAsupervisor.

4.4. The student is responsible for bringing the "on station assessment form" (Appendix 2) duly completed in a sealed, confidential envelope together with his/her report to the Department FPT Coordinator.

5. TRAINING LEVELS

Students at different levels of learning possess different skills and abilities and the tasks they are expected to perform during FPT should differ accordingly. Therefore, each FPT session is intended to impart technical competence to students according to level of training achieved as follows:

5.1. FPT 1 for students in semester 4 B.Sc. Range Managementalready possess basic knowledge in Range Management and should be given an opportunity to familiarize themselves with the requirements of the professional practice in the capacity of skilled worker-Assistant Range Officer. There FPT shall therefore include the following:

WEEK 1: Introduction to Range Management and the Basic Principles of Land Use Planning

Objective: To enable the students to classify rangelands using physical and other rangeland descriptors, describe range vegetation types and structure and recognize rangeland ecosystem processes, services and goods, relate existing land use plans and policies with conflicts on land use.

Practical activities:

- Classify and characterize different rangelands using various rangeland descriptors
- Identify problems related to range management in the tropics
- Identify different succession stage s of rangelands and their importance in designing range management plan
- Recognize relationship among ecological components and recognize rangeland ecosystem process, services and goods
- Description of range vegetation types and structure
- Collection and process data for land use assessment
- Apply land use planning techniques for range development
- Identify symptoms of unsustainable land management

WEEK 2: Range Plant Eco-physiology

Objective: To enable the students to understand physiological and structural responses of plants to different environmental conditions, and principles and practices of ethnobotany

Practical activities:

- Quantify physiological responses of plants to different environmental conditions

- Asses the potential of improved grassland as a terrestrial sink for sequestering carbon as thus mitigate effects of climate change
- Asses economic importance of different range plants
- Collection and preservation of the plant specimens for identification and herbarium
- Conduct an ethnobotany expedition to one of the villages around the field practical station.

WEEK 3: Animal Grazing Behaviour and Management

Objective: To enable the students to use animal grazing behavior to set grazing management plans in given range site

Practical activities:

- Identify key-plants and key-area in grazing lands
- Understand group dynamics and mechanisms of grazing behavior on rangelands
- Calculate correct stocking rate matching range site resources to animal requirements
- Asses grazing intensity on different range sites
- Plan grazing strategies that optimize use of rangeland resources

WEEK 4: Ecology and Control of Vectors and Parasites

Objective: To enable students to understand the ecology and control of diseases

Practical activities:

- Study the structure and development stages of invertebrate vectors and agents of diseases
- Use available keys to identify the principal vectors of diseases of domestic animals
- Conduct vector surveys and asses vector population trends and their ecological habitats
- Design environmentally friendly vectors and diseases control measures

WEEK 5: Rangeland Biodiversity, Utilization and Conservation

Objective: To enable the students to understand rangeland biodiversity conservation and sustainable use of fire for range management

Practical activities:

- Apply indigenous knowledge for conserving rangeland biodiversity
- Use various techniques in assessing rangeland biodiversity
- Develop strategies for programmed burning and control of fires
- Asses ability for plant regeneration after defoliation and bush fires

WEEK 6: Game Farming

Objective: To enable students to understand how to plan and initiate game ranching for sustainable game utilization

Practical activities:

- Conduct surveys to identify optimum vegetation structure for different game species
- Carry out visits to game – livestock interface areas and learn their characteristics
- Learn various operations on designing a game ranch, game capture and transportation, game cropping, processing and marketing of game products

WEEK 7: Animal Feeds, Processing and Conservation

Objective: To enable the students to understand how to conserve forages, formulate balanced ratios for different ruminant livestock classes and improve the nutritive value of low quality roughages

Practical activities:

- Physical evaluation of feed ingredients
- Feed formulation and compounding exercises for various classes of ruminant livestock

- Carryout hay making, evaluation, bailing and storage techniques
- Carryout silage making and evaluation techniques
- Carryout conservation techniques of the crop residues and multipurpose trees leaf meals
- Carry out feed budgeting activities
- Treatment of low quality roughages before feeding
- Plan for dry season feeding strategy of range ruminants

WEEK 8: PASTURE ESTABLISHMENT AND MANAGEMENT

Objective: To enable students to identify common pasture species, establish and manage them for grazing and seed production

Practical activities:

- Identify and describe important pasture species for establishment
- Collection and evaluation of pasture germplasm
- Perform different pasture establishment and management practices (seed bed preparation, planting and sowing of pasture seeds, weeding, fertilization, harvesting of forages)
- Perform pasture seed harvesting, processing, and quality evaluation and storage
- Estimate biomass yield of pastures and develop grazing management plans

5.2 FPT 2 for students in semester 6 B.Sc. Range Managementalready possess substantial knowledge in range management discipline and should be given an opportunity to familiarize themselves with the requirements of the professional practice in the capacity of Range Officer. There FPT shall therefore include the following:

WEEK 1: Range inventory and Monitoring

Objective: To enable the students to plan, conduct range resources inventory and monitoring and produce a range health report.

Practical activities:

- Planning range resources inventories activities
- Quantify canopy cover, biomass yield, species abundances and frequencies
- Conduct surveys for determination of range health and trends
- Asses impact of various developmental interventions on range condition
- Documentation of range resources inventory and monitoring activity

WEEK 2: Human-Environment Interaction and Indigenous Knowledge

Objective: To enable students to use human-environmental interaction and indigenous knowledge to analyze sustainability and impact of pastoralism and diffusion of conflicts among pastoral and non-pastoral communities

Practical activity:

- Asses the principal features of pastoral mode of livestock production
- Learn the possibilities of maintaining pastoral mode of production under land use pressure
- Evaluate any development interventions (e.g. ranching, education activities, water development etc) that are in harmony with pastoralism
- Learn different ways how to diffuse conflicts among pastoral non-pastoral communities
- Learn how to manage rangeland resources in ways that avoid conflicts.

WEEK 3 Rang Research Methodology

Objective: To enable students to plan and carryout range related research projects, collect data, summarize, analyze and interpretation.

Practical activities:

- Plan and conduct rangeland research activities
- Perform practical measurements of different vegetation attributes
- Learn different ways of analysing data collected from rangeland research activities
- Learn how to present results from rangeland research in standard and acceptable for scientific publications

WEEK 4-5 Meat Production from Rangelands

Objective: To enable the students to raise range ruminants for meat production and organize market chains for ruminant livestock products

Practical activities:

- Learn how to raise meat animals under range conditions
- Manage slaughtering and primary processing of meat and other slaughtering house by products
- Organize marketing chains and transportation of live meat animals and livestock products to internal and foreign markets
- Plan and carryout profitable efficiently feedlots of cattle, goat and sheep for meat production

WEEK 6: Ranch planning and Management

Objectives: To enable the students to carryout technical feasibility study to initiate a ruminant ranching business in a given rangeland site and also to plan and mange ranching operations

Practical activities:

- Carryout technical feasibility study to initiate a ruminant ranching business
- Plan and manage ranching operations for profitable production

- Make short, medium and long-term projections of ranching development and operation
- Plan for drought management to sustain ranch profit
- Supervise construction of basic structures in ranches

WEEK 7-8 Range Improvement

Objective: To enable the students to plan and execute effectively range improvement programmes

Practical activities:

- Plan and execute programmes to rehabilitate denuded rangelands; reseeding, bush control, soil and water conservation.
- Plan, initiate and supervise range water development, reticulation and quality evaluation
- Develop strategies for minimizing proliferation of invasive plants in rangelands
- Plan and supervise construction of rangeland structures including fencing and animal handling structures
- Plan and use fire as a range management tool
- Develop and management of fire breaks
- Management of range trails and roads

6. FIELD PRACTICAL TRAINING REPORTS

For each of the FPT sessions (FPT1, FPT2), each student will be required to write and submit a technical report which will be assessed by the Department.

6.1 The report

The report is to be compiled in accordance with the guidelines given below. It may be hand-written or typed on A4 size paper and should be brief and clear. The completed report has to be

signed by the student and countersigned by the On-Station Supervisor of the farm/ranch/institution/company to which the student was attached before submission to DAARS for assessment. **FPT reports must be submitted to the Department FPT Coordinator by the end of the second week after the FPT training period; otherwise one would be deemed to have failedFPT.**

6.2. Objectives of the FPT report

The objectives of FPT report are to reflect:

(i) The student's understanding and appreciation of rangeland management practices

(ii) The student's appreciation of what might be his/her responsibilities as a Range Scientist and of the people he/she will have to cooperate with, and

(iii)The student's ability to communicate technical information effectively

6.3. Specific guidelines for preparation of FPT reports

6.3.1. FPT1 report

The Department will provide each student with a logbook for report writing.

The report should consist of two parts:

(i) Weekly report, which consists of the summary of tasks performed throughout the week, including description of one main job performed that week.

(ii) Final report, technically describing a particular food manufacturing or quality control process. The technical process may consist of an aspect such as:

- Operational skills needed for sustainable rangeland development
- Concepts and theories studied to a work-related context
- Pasture establishment, management and utilization
- Forage conservation and rations formulation

- Use principles of land use to resolve conflicts over land use
- Asses rangeland biodiversity and conservation

Description of these problems should consider as many range science details as possible, such as:

- Management of rangelands at the FPT station
- Deficiencies in daily and routine activities
- Technologies used in managing rangelands
- Skills required by the farm or project operators etc.

The description may include various illustrations including sketches, drawings or photos and should be presented on standard A4 size sheet (Appendix 3)

6.3.2. FPT2 report

The report should consist of two parts:

i) Daily activity report and weekly summary including description of one main job performed in that week

ii) Technical report, describing a particular technical problem in the field of management of rangelands such as:

- Operational skills needed for sustainable rangeland development
- Concepts and theories studied to a work-related context
- Range degradation
- Conservation of rangelands
- Lack of water

Description of these problems should consider as many rangeland science details as possible, such as:

- Management of rangelands at the FPT station
- Deficiencies in daily and routine activities
- Technologies used in managing rangelands
- Skills required by farms or project operators etc.

The description may include various illustrations including sketches or photos and should be presented on a standard A4 size sheet (Appendix 3)

7. SUPERVISION OF FPT

Organization of FPT supervision for B.Sc. Range Managementstudents will be undertaken by DAARS in consultation with the office of the Principal of the College of Agriculture. FPT reports will be marked at DAARS by the academic staff that carried out the supervision and the results will be subject to consideration by the Department Examiners Board and the College Board.

The day-to–day supervision during FPT will be the responsibility of the On-Station Supervisor where the student is undertaking the FPT. The On-Station Supervisor should be senior technical personnel, e.g. Range Officer, Farm Manager, Ranch Manager, Livestock Production Officer etc.

7.1 . Duties of the On-Station Supervisor

The duties of the On-Station Supervisor are to**:**

- Prepare a suitable training program for the students, preferably in collaboration with Department FPT coordinator/supervisors,where possible.
- Assist the student in carrying out the proposed training program
- Examine and sign student's reports and logbooks once a week, and

- Fill an assessment form prepared by DFST for each student (Appendix 2).

Since the On-Station Supervisor has other responsibilities, he/she should to treat the student just like any other worker who is responsible to him/her in terms of productivity, efficiency and discipline.

7.1 . Duties of the On-Station Supervisor

The duties of the On-Station Supervisor are to**:**

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- Fill an assessment form prepared by DAARS for each student (Appendix 2).

Since the On-Station Supervisor has other responsibilities, he/she should to treat the student just like any other worker who is responsible to him/her in terms of productivity, efficiency and discipline.

8. ASSESSMENT OF FPT REPORTS

8.1. The assessment of FPT covers two consecutive years. The maximum marks for each particular FPT are subdivided into:

- Continuous assessment during FPT by the On-Station Supervisor (Training assessment form – Appendix 2): 30%
- Weekly report and final report assessed by the academic supervisor: 70%

The criterion for final report assessment is as detailed in Table 1 below.The emphasis on report content is as indicated by assessment weights and which change according to the year of study.

8.2. Each student will be required to pass FPT before proceeding to the following academic year and in the final year before graduation.

8.3. Not completing a FPT without genuine reasons means abscondmentfrom that FPT and shall be discontinued from studies.

8.4. A student failing to complete FPT with genuine reasons shall be required to complete the remaining part of the FPT during the vacation.

8.5. A student failing FPT will be required to supplement the FPT.

8.6. A student who fails after supplementing FPT shall be discontinued.

8.7. A student who fails to report to the allocatedFPTstation without permission from FPT coordinator shall be deemed to have absconded from the FPT and shall, as a result, be discontinued from studies.

Table 1. Criteria for final report assessment

Final Report	**FPT 1**	**FPT 2**
Training Officer	**30**	**30**
Report Content:		
General part	15	10
Technical part		
• Description and analysis	10	10
• Problem identification, definition, and major assumptions	5	10
• Discussion	10	15
• Recommendations for implementation	5	10
•Neatness of report and illustrations	5	5
Subtotal	**50**	**60**
Log Book:		
• • Adherence of report to guidelines	15	5
• Neatness of report and drawings	5	5
Subtotal	**20**	**10**
Total FPT marks	**100**	**100**

APPENDIX 1

FPT STATION ARRIVAL NOTE

PART A (To be filled by student)

Name of student……

Year of study…….. FPT No……..……..

I declare that I have started working with

Company/organization ……

Address: P.O. Box…….

E-mail…….

Location.....

Tel. No……

Date of starting FPT ……..

Student's mobile phone No.....

Student's email address.....

Signature of student.....Date:.....

PART B (To be filled by On-Station Supervisor)

Name of On-Station Training Supervisor…….

Position ……

(e.g. Farm Manager, Ranch Manager, Range officer, Livestock Production officer, etc)

……..……

Mobile phone.....

Email address.....

On-Station Supervisor's signature and stamp…….. Date.....

To be sent immediately by post or email after arrival to:

FPT Coordinator
Department of Animal, Aquaculture and Range Sciences
Sokoine University of Agriculture
P.O. Box 3004, SUA,Morogoro
Email.....

Appendix 2

PRACTICAL TRAINING ASSESSMENT FORM

This is to certify that Mr. /Ms.……

has completed a period of practical training with our farm/ranch/institution/firm from

…… to ……

Name of the farm/ranch/institution/firm

…….....

The trainee has worked atAssistant Range officer/Range officer level.....

The duties assigned to the trainee were …….....

……

Name of On-Station Supervisor …….....Position .....…….

Please assign a grade between 0 and 6 to each one of the items 1 to 5 below according to the following grading scale:

5.1 – 6.0: Excellent

4.1 – 5.0: Very good

3.1 – 4.0: Good

2.1 – 3.0: Satisfactory

< 2.1: Fail

Place the grade in dotted lines for each item.

1. Skills obtained …….
2. Attitude towork ……
3. Initiative and Independence ……
4. Reliability ……
5. Adherence to working time… ……..

Number of days the trainee was absent……

Reasons for absence.....…….....

Was the logbook submitted to you weekly for your comments and signature?(Yes/No).....

REMARKS …….....

Training Officers name …….....Position ……

Signature …….

Date and Place .....**Official rubber stamp**

Appendix 3.A sample of blank sheet (Weekly summary)

<table>
<tr><td colspan="2">Practical Training (PT) 20……</td><td colspan="2">PT (1, 2, 3)</td><td>Report</td><td>Week No</td><td></td></tr>
<tr><td colspan="5"></td><td>Page No</td><td></td></tr>
<tr><td colspan="3">Weekly Summary</td><td colspan="4">Week from: to</td></tr>
<tr><td colspan="7"></td></tr>
<tr><td></td><td>Date</td><td></td><td colspan="2" rowspan="2">Checked by On-station Supervisor</td><td>Date</td><td></td></tr>
<tr><td></td><td>Name</td><td></td><td>Name</td><td></td></tr>
</table>

Appendix 4. Sample of Logbook Daily Record

FPT [ ] DATE:	Name:	
Weekly Report No.	Week from: To:	
	Brief description of work performed	Hours
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		

Total hours per week	
Signature of On-station Supervisor Date	