Samara University
College of Social Sciences and Humanities
Department of Geography and Environmental Studies

A Curriculum for Postgraduate Programme in Disaster Risk Management and Pastoral Development

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Background

In recent years, disasters of varied types and magnitude have been occurring all over the world that has caused significant damage to human life, properties, and the physical environment. Recorded disasters alone from 2001 to 2010 affected, on average, 232 million people per year, killed and 106 million others caused 108 billion dollars in economic loss. Overall losses from world-wide natural catastrophes in 2019 totaled 150 billion dollars, roughly in line with the inflation-adjusted average of the past 30 years and down from 186 billion dollars in 2018. 820 events caused losses in 2019, compared with 850 events in 2018. Insured losses from the 2019 events totaled 52 billion dollars, down from 86 billion dollars in 2018. Natural catastrophes in 2019 caused about 9,000 deaths, compared with 15,000 in 2018. In addition, countless small-scale, unreported disasters put a cumulative strain on the health, lives, and livelihoods of people.

Despite their occurrences in almost every part of the world, the impacts of disasters vary from place to place depending on the nature of the place where they occurred, and the frequency and magnitude of their occurrences. Places with a low level of development, fragile ecosystem, and disaster sensitive economic sectors are always highly vulnerable to the impact of disasters. Add to this the absence of governmental preparedness manifested in lack of appropriate preventive policies, the problem becomes very much compounded. Africa as a whole and Ethiopia in particular are among the most disaster vulnerable parts of the world. Most of Ethiopia is ecologically arid and sensitive to various types of disasters. Moreover, it is economically underdeveloped and dependent on agriculture and pastoralism, which are highly sensitive to the impacts of disasters. The country has been repeatedly hard hit by various impacts like drought and flooding. One of the rational responses to such calamities is education; and curriculum is its heart.

The curriculum, with varying definitions, is said to be a plan of the teaching-learning process that students of an academic program are required to undergo to achieve some specific objectives. It includes aims, goals, objectives and learning outcomes, scheme of studies, course contents, teaching methodologies, and assessment/evaluation methods. Since knowledge in all disciplines and fields is

expanding at a faster pace and new disciplines are also emerging; curricula must be developed and revised accordingly.

Besides, there is also a huge gap in terms of focus, where the programs in Bahir Dar and Jigjiga Universities are focused on sustainable development and environmental disaster. Hence, it is imperative to launch a program with a focus on pastoralism and dryland environments, which is in line with the mission of Samara University.

Rationales of the Programme

Higher education institutions are established to produce knowledgeable, skilled, and attitudinally mature graduates in numbers with the demand-based proportional balance of fields and disciplines so that the country shall become internationally competitive; promote and enhance research focusing on knowledge and technology transfer consistent with the country's priority needs; design and provide community and consultancy services that shall cater to the developmental needs of the country. In line with these objectives, Samara University is working to realize its vision of being one of the ten universities in east Africa in pastoral and agro-pastoral development since pastoralism makes a significant contribution to the national income, employment, agricultural production and food demand of the people in Ethiopia.

We have come to know those pastoral areas in Ethiopia are characterized by frequent disasters risks with high livestock mortality which often results in threatening viability of pastoral livelihood. Disasters in pastoral areas are the main impediments for the development of pastoralism. Thus, there is a need for professional experts who have comprehensive knowledge and skills in disaster risk studies especially in pastoral areas and as a result, Samara University took an initiative to launch the Master's Degree Program in "Disaster Risk Management and Pastoral Development".

Program Aims

This postgraduate program aims to train and produce competent professionals specializing in 'Disaster Risk Management and Pastoral Development'; who are be able to contribute to the efforts of disaster risk prevention and reduction thereby ensuring sustainable pastoral development.

Program Goals

- Equip students with advanced knowledge of disaster risks that hinder development by comprehensively addressing the underlying causes of recurrent disasters.
- Develop in students the required skills and techniques in saving lives and protecting livelihoods and ensuring the recovery and rehabilitation of all disaster-affected populations.
- Enable students to have affection to undertake problem-solving and policy enhancing researches focusing on combating the risk posed by different types of disasters to create a resilient society.

Professional and Graduate Profile

Professional profile

The graduates of this program are expected to have the following professional profiles:

- Engaging in teaching in higher education
- Researching at national, regional research & development organizations
- Designing and implementing disaster-resilient policy strategies
- Consulting organizations on policy issues in disaster management
- Working as a self-employed disaster risk management consultants
- Solving problems related to climate and environmental hazards
- Consulting on livelihood and food security strategic issue
- Constructing and interpreting maps, aerial photos and satellite imageries for disaster management
- Interpreting the links between environment, development and population dynamics
- Providing consultancy services in solving resource-based and boundary conflicts

Stakeholder Cooperation

Some of the main offices with career opportunities to the Graduates of DRMPD include:

- National and Regional disaster risk reduction and protection offices

- Ministry of forest and environmental protection
- Federal and Regional Research Institutes,
- Public and private universities and colleges
- Regional and local pastoralist and rural development offices
- Regional Bureau of Agriculture and Natural Resources, Rural Development
- Private and public consultant enterprises and companies
- Institutions working on the areas of development, relief, and community support

Graduate profile

The present curriculum of the program is designed in a way that graduates who complete their study shall be able to:

- Demonstrate knowledge and understanding of the nature, type, and impact of different disasters and ways of predicting, reducing and mitigating them
- Identify, collect and compile information through archives, field survey; aerial photographs and remotely sensed data to successfully manage problems associated with disasters
- Care for ethical values, and provide leadership role models in national, regional and local development with a clear understanding of the values and needs of the country
- Generate, organize, and analyze Geo-data for Spatial Decision Support system in disaster risk management
- Highly committed to self-development through the continuous acquisition of knowledge and experience and ability to survive in an environment of continuous change in a rapidly evolving society;
- Appreciate the natural environment, work on resources and environmental degradation, pollution and population explosion, which are global issues of today,
- Have a basic understanding of fundamental national issues and sustainable development.
- Respect and protect local positive values, traditions, and wisdom as well as encourage the involvement of local people in the decision-making process

- Save lives and protect livelihoods in the event of disasters and ensure the recovery and rehabilitation of disaster-affected populations
- Work with various stakeholders in mobilizing and training the society to mitigate both humanmade and natural disasters to ensure the resilience of the society
- Adapt different models of DRM in preparing plans for disaster mitigation, preparedness, response and rehabilitation activities
- Distinguish the economic and social impacts of different disasters and institutional requirements to be effective in DRM
- Provide consulting services in DRM and Pastoral Development

Program Profile

Admission Requirement

The program is multidisciplinary and transdisciplinary by its nature and therefore applicants are required to have BA or BSc degree from an accredited university with a Cumulative Grade Point Average (CGPA) equivalent to 2.00 and above in the Social Sciences (Geography, Sociology, Psychology, Economics, Management, Demography, Development Studies,), agricultural sciences (Rural Development, Agro-Forestry, Natural Resource Management, Hydrology and Meteorology, Agricultural Extension, Plant Science, Animal Science), health sciences (Environmental Health Science, Health Officer, Public Health), or natural sciences (Biology, Geology) and related.

- The candidate must pass the entrance examination in the field of study set by the Department.
- The candidate should be supported by recommendation letter(s) preferably from their undergraduate instructors, employers, and/or professional associations.
- The candidate must meet all other admission requirements of the School of Graduate Studies (SGS) of Samara University.

Duration of the Study

The regular program will last in two years with two semesters (first and second) of intensive course works. In the third semester, students will undertake their thesis

proposal work and related courses. And in the final semester candidates will only focus on their research work.

For students in the extension division, the program will last in two and a half years with four terms/semesters (including summer) intensive course work. In the fifth, sixth, and seventh term/semester students will only focus on their thesis work.

Graduate requirement

A candidate should be able to satisfy the criterion stated below to be granted a Master Degree of Science in Disaster Risk Management and Pastoral development:

- Completion of 32 credit hours of course works and 6 credit hours in M.Sc. thesis related works.
- Scoring a cumulative GPA of 3.00 and above with only one grade "C".
- Students are expected to produce M.Sc. thesis of the accepted standard at the end of the program
- Successfully defend his/her thesis in public and score a minimum of 'satisfactory' grade
- The graduation requirements will be further bounded by the Legislation of Samara University

Degree Nomenclature

After the successful completion of the program, graduates will be awarded the **Master of Science Degree in Disaster Risk Management and Pastoral Development** or in Amharic **"የሳይንስ ማስተርስ ዲግሪ በአደጋ ስጋት ሥራ አመራር እና አርብቶ አደር ልማት".**

Medium of Instruction

The medium of instruction for the program in the **English language**.

Methods of Teaching

In teaching each course in the program, different active learning methods will be employed. More emphasis will be given to the student center approach depending on the nature of course as stated below:

- Lecture
- Group discussion
- Class presentation and group work
- Lab works

- Independent work
- Field visit
- Demonstration
- Term paper and Seminar Writing

Assessment and Evaluation Mechanisms

- Individual and group assignment
- Field and Project work reports,
- Term/Reaction Paper Submission and Presentation
- Seminar Submission and presentation
- Final examination

Grading System

As stated in the Senate legislation of Samara University. That is:

Raw Mark	Letter Grade	Grade Points
[90, 100)	A^+	4.00
[85, 90)	A	4.00
[80, 85)	A^-	3.75
[75, 80)	B+	3.50
[70, 75)	B	3.00
[65, 70)	B^-	2.75
[58, 65)	C+	2.50
[50, 58)	C	2.00
[40, 50)	D	1.00
< 40	F	0.00

Thesis rating

Raw Mark	Grade Scale / rank	Letter Grade
≥ 85	Excellent	A
[75, 85)	Very Good	B+
[60, 75)	Good	B
[50, 60)	Satsifactory	B-
<50	Fail	C

Quality Assurance Mechanism

To achieve the objectives of the curriculum of the program, regular follow up of all concerned bodies is mandatory. Evaluation of the modular curriculum on the teaching-learning process, instructor's availability and motivation, how the curriculum is implemented, the appropriateness of teaching methodology, students behavior to meet the expected competence, the appropriateness of the type of assessments, availability of learning resources, laboratory rooms and equipment and how the minimum performance standards achieved will be checked periodically and continuously. These will help us to distinguish whether the curriculum has succeeded or failed, whether the stated objectives are achieved or not. The evaluation will be made at different levels, such as at the levels of AVP, QA director, Registrar, faculty, department, and quality assurance committee of the department. The evaluation can be done at the course, module, and program levels. Generally, the reserved efforts of all stakeholders of the University can bring changes for quality education.

Graduate impact monitoring and evaluation

The monitoring and performance evaluation of students could be undertaken through follow up of its graduates after graduation with the application of tracer studies and other methods.

7. Existing Resources and facilities

7.1 Staff Profile

Currently, the following staffs are available to run the program

S.N⁰	Full Name	Quali	Specialization	Academic position	Remark
1	Nahusenay Abate	PhD	Soil Science	Asso. Professor	
2	Nasih Awol	MA	Env't & Dev't	Lecturer	
3	Ahmed Musa	MSc	GIS & RS	Lecturer	
4	Amanuel Mekonnen	MA	Env't & Dev't	Lecturer	
5	Anwar Ebrahim	MA	Urban Geo	Lecturer	
6	Habtamu Wondemagegnehu	MSc	CC & Dev't	Lecturer	
7	Hassen Ali	MA	Env't & NRM	Lecturer	
8	Mesud Shahid	MA	Env't & Dev't	Lecturer	
9	Yonas Mulu	MSc	Watershed Dev't	Lecturer	

10	Yosief Gashye	MA	Human Geo	Lecturer	
11	Zinabu Alena	MA	Human Geo	Lecturer	
12	Seid Muha	MSc	GIS & RS	Lecturer	
13	Sahle Zewdu	MA	Urban Geo	Lecturer	Study leave
14	Ayalew Bekele	MA	Env'tal Studies	Lecturer	Study leave
15	Mohamed Detona	MA	Env't & Dev't	Lecturer	Study leave
16	Molla Tassew	MA	Sustainable NRM	Lecturer	Study leave
17	Shine Negusse	BA	GeES	G-II	Study leave
18	Hikma Birhanu Tirfe	BA	GeES	G-III	Study leave

Afflated staffs

S.N^{o}.	Full Name	Quali	Academic position	Specialization	Remark
1	Messay Mulugeta	Ph.D	Asso. Professor	Food security	AAU
2	Desalegne Yayeh	Ph.D	Assi. Professor	Geography	AAU
3	Temesgen Tilahun	Ph.D	Assi. Professor	Dev't Economics & DRM	AAU
4	Habtamu Admas	Ph.D	Assi. Professor	Soil Sciences	SU (CDA)
5	Selishi Abbi	Ph.D	Assi. Professor	Soil Sciences	SU (CDA)
6	Tibebu Kochari	Ph.D	Assi. Professor	Animal Production Studies	SU (CDA)
7	Brehanu Terefe	P.hD	Assi. Professor	Climate Change	HU

7.2 Facilities

The Remote Sensing and GIS Laboratory supports a range of Multidisciplinary and geospatial research projects in the Institute. We will soon have a dedicated cluster available for advanced image processing and GIS applications and shall be used for accessing and making use of the online data resources. In their stay at the University, students will get lab and field practices and excursion, all the necessities are ready for the action. We will also establish in-campus and outside campus collaboration to success, the likes of the Department of Natural Resource management to make use of the university's facilities at our best disposal.

Furthermore, the program will have more partners in the future; given the International and Regional focus that Ethiopia to be a Climate and Disaster research and training center. Moreover, to commence this program the Department has got

sufficient learning materials, study guides for the course as well as the research works. The research and educational facilities lab will continually be improved and upgraded as the need arises.

7.3 Existing physical resources and infrastructure

- **Internet access:** The University is networked with an internet connection and has its web site.
- **Classroom and office**: The program has classrooms and offices at the College of Social Sciences and Humanities.
- **Library:** The program shares library with other programs in the College.

Module Name and Assignment of Course Codes

The program has 4 modules and 12 courses. The course code will have five alphabets and three-digit numbers. The fiver alphabets code indicates the name of the program, i.e. all courses designed for the **program** are coded as '**DRMPD**' for Disaster Risk Management and Pastoral development. The three-digit numbers indicate the level of the course. Accordingly, the first number indicates the year ('5' for 1st year and '6' for 2nd year), the second number refers to module order and the third number indicates the order of the course within the module.

Module Name	Module code	Course title	Cr.Hr
Integrated Risk Management	M01	Fundamentals of Disaster Risk Management	3
		Climate Change, Adaptation and Mitigation Strategies	3
		Environmental Management and Restoration	3
		Early Warning System and Emergency Response Management	3
Pastoral livelihood and cross-cutting issues	M02	Policies, Strategies & Institutions In Disaster Risk Management	2
		Livelihoods and Food Security	3
		Pastoralism and Pastoral Development	3
Natural and Anthropogenic Hazards	M03	Earth System and Natural Hazards	3
		Peace and Conflict Management	3
Spatial data analysis and research methodology	M04	GIS and Remote Sensing for Disaster Risk Management	3
		Advanced Research Methodology In Disaster Risk Management	3
		Thesis	6

Course Name and Distribution for regular students

year	Semester	Course code	Course title	Cr.Hr
1	1	DRMPD 511	Fundanentals of Disaster Risk Management	3
		DRMPD 531	Earth System and Natural Hazards	3
		DRMPD 532	Peace and Conflict Management	3
		DRMPD 512	Climate Change, Adaptation and Mitigation Strategies	3
	Semester Total			12
	2	DRMPD 521	Policies, Strategies & Institutions in Disaster Risk Management	2
		DRMPD 542	Advanced Research Methodology in Disaster Risk Management	3
		DRMPD 513	Environmental Management and Restoration	3
		DRMPD 522	Livelihoods and Food Security	3
	Semester Total			11
Year Total				23
2	1	DRMPD 641	GIS and Remote Sensing for Disaster Risk Management	3
		DRMPD 623	Pastoralism and Pastoral Development	3
		DRMPD 614	Early Warning System and Emergency Response Management	3
		DRMPD 643	MSc Thesis proposal	0
	Semester Total			9
	2	DRMPD 643	MSc Thesis	6
	Semester Total			6
Year Total				15
Program total credit hours				38

Course Name and Distribution for Students in the Extension Division

Year	Semester / Term	Course code	Course title	Cr.Hr
1	1	DRMPD 511	Fundanental of Disaster Risk Management	3
		DRMPD 531	Earth System and Natural Hazards	3
		DRMPD 532	Peace and Conflict Management	3
	Semester Total			9
	2	DRMPD 512	Climate Change, Adaptation and Mitigation Strategies	3
		DRMPD 521	Policies, Strategies & Institutions in Disaster Risk Management	2
		DRMPD 522	Livelihoods and Food Security	3
	Semester Total			8
	3	DRMPD 631	GIS and Remote Sensing for Disaster Risk Management	3
		DRMPD 614	Early Warning System and Emergency Response Management	3
	Semester Total			6
2	1	DRMPD 513	Environmental Management and Restoration	3
		DRMPD 532	Advanced Research Methodology in Disaster Risk Management	3
		DRMPD 623	Pastoralism and Pastoral Development	3
	Semester Total			9
	2	DRMPD 643	MSc Thesis Proposal	0
	3	DRMPD 643	MSc Thesis	6
3	1			
Program total credit hours				38

Samara University College of Social Sciences and Humanities Department of Geography and Environmental Studies M.Sc. in Disaster Risk Management and Pastoral Development	
Module Name:	**Integrated Risk Management**
Module code	M01
Module Objectives	The objectives of the module are to enable students to: • Identify the basic concepts and theories in Disaster Risk Management • Explain the dynamics of disaster risk • Critique the nature and application of DRM theories and models • Understand climate basics • Appraise climate change debates • Understand climate change adaptation and mitigation strategies • Examine climate change and variability induced hazards • Describe the concepts and types of Early Warning Systems • Investigate the nexus between EWS and Governance • Identify EW indicators • Demonstrate drought and flood early warning system • Analyze ecosystem components, processes, and factors that control them • Differentiate the need for conservation and sustainable use of environmental resources vis-à-vis the loss of biological diversity and its effects
Module Description	Integrated Risk Management (IRM) is a holistic approach towards risk and resilience, combining elements from disaster risk reduction, climate change adaptation, and ecosystem management and restoration.

	Strengthening collaboration among Civil Society Organizations (CSOs) and communities in their knowledge and capacities to pursue lobby and advocacy in the form of targeted constructive dialogues which requires a sound evidence base knowledge & learning, and improved capabilities to argue for IRM. Hence learners will become familiar with specific approaches to embarking on specific dialogue trajectories on IRM at local, national, regional, and global levels, focusing on three interrelated domains i.e. on policy, investment, and practice. Specifically, contemporary concepts, principles, and practices of the Integrated Risk Management (IRM) approach mainly Disaster Risk Management (DRM), Climate Change Adaptation (CCA), and Ecosystem Management and Restoration (EMR). This enables to train of students concerning the current needs of regional and national governmental and non-government organizations (NGOs) working on disaster management and pastoral development.

Courses in the Module		
Course Code	**Course Title**	**Cr. Hrs**
DRMPD 511	Fundamentals of Disaster Risk Management	3
DRMPD 512	Climate Change, Adaptation and Mitigation Strategies	3
DRMPD 513	Environmental Management and Restoration	3
DRMPD 614	Early Warning System and Emergency response Management	3
Total cr. hrs		12

Samara University

College of Social Sciences and Humanity

Department of Geography and Environmental Studies

M.Sc. in Disaster Risk Management and Pastoral Development

Course Title: Fundamentals of Disaster Risk Management

Course Code: DRMPD 511

Credit hours: 3

Prerequisite: No

Course Description: This course sets conceptual foundations in disaster risk management, which enables students to master the fundamentals of the course. While the first chapter will introduce students to disaster risk management discipline (sector) through its concepts, elements, terminologies (including but not limited to Hazards/Socks, Vulnerability, Risks, Disasters, Resilience) and trends, the second chapter will expose students to divergent disaster risk theories. The third chapter explores various Disaster Risk Models and management systems, and the fourth chapter is an introduction to Disaster Risk knowledge management systems. The last fifth is about introduction to hazards and shocks in, which accommodates five main ways to describe and measure hazards/shocks; and procedures Disaster risk analysis. Each of the chapters lays the foundation upon which the master's students will build their knowledge and skillset towards a career in Disaster Risk management with research and/or institutional applications in the field. Briefly, the course will expose students to a host of innovative concepts that require them not only to demonstrate their understandings but also to analyze the core concepts of disaster risk management and analyze with applications.

Objectives of the Course

The confined objectives of the course are:

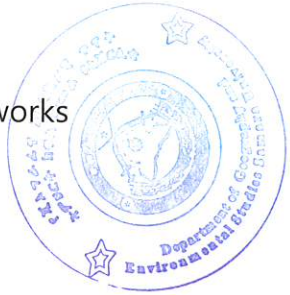
- Distinguish between Disaster Risk Science (DRS) and Disaster Risk Management (DRM)
- Describe how both DRS and DRM fit within major transversal global frameworks
- Demonstrate the conceptual components of Disaster Risk management and Terminologies

- Understand the importance and role of theory in Disaster risk management and DRS
- Describe the set of Disaster Risk Theories
- Critique: Identify strengths, weaknesses, and applications of major DRS/M theories
- Identify and understand multiple models of disaster risk management (DRM)
- Define common management stages
- Critique the DRM models and defend those preferred ones
- Justify the differences between data, information, and knowledge
- Understand notions of ignorance, power, accuracy and the roles they play
- Explain major principles of disaster risk knowledge management and communication
- Weigh the three components of Risk and Disaster Knowledge Management Systems and their sub-components
- Explain the importance of the all-shock or all-hazard approach
- Distinguish the main typologies used to describe and measure shocks
- Cite the various types of hazards/shocks by standard CRED category
- Explain the general global hazard/shock spatial and temporal trends.

Course Content

1. **Introduction to Disaster Risk Management**
   - 1.1. Terminology: Hazard, Shock, Frequency, Probability, Exposure, Exogenous, Predictability
   - 1.2. Principles and Contrasts: All-Shock Approach, Primary/Secondary/Tertiary
   - 1.3. P-CIST Typology: five main ways to describe and measure hazards/shocks
     - 1.3.1. Predictability
     - 1.3.2. Cause/ determinant: Geophysical, Hydro-meteorological, Biological, Technologic, and Socio-economic hazards
     - 1.3.3. Impact / consequence (includes aspects of intensity/severity):
     - 1.3.4. Spatial/scale, Aspects and Magnitude (Global, Africa, Horn, Ethiopia)
     - 1.3.5. Temporal: Onset, Duration, and Frequency
   - 1.4. Global hazards and shocks: an introduction
     - 1.4.1. World Bank Hotspots
     - 1.4.2. CRED EM-DAT

2. **Theories of Hazards, Disaster, and Risk**
   - 2.1. Theories relating to Risk Exposure
     - 2.1.1. Chaos Theory
     - 2.1.2. Normal Accident Theory
     - 2.1.3. Economic (Risk Theory and Risk Aversion)
     - 2.1.4. Disaster Theory
   - 2.2. Theories relating to Risk Perception
     - 2.2.1. Cultural Theory of Risk
     - 2.2.2. Psychometrics
   - 2.3. Theories relating to Disaster Response
     - 2.3.1. Adaptation Theory
     - 2.3.2. Resilience Theory
     - 2.3.3. Vertical/Horizontal Integration
     - 2.3.4. Self-organization Theory
     - 2.3.5. Escalation Theory
     - 2.3.6. Arena Theory
3. **Disaster Risk Management Models**
   - 3.1. Continuum Models
   - 3.2. On/Off Models
   - 3.3. The New Dis-continuum Model (Moriniere)
4. **Disaster Risk Management-Specific Frameworks or Movements**
   - 4.1. Disaster Risk Management-Specific Movements
     - 4.1.1. Environmentalist
     - 4.1.2. Urbanization
     - 4.1.3. Human Rights
     - 4.1.4. Sustainable Development
     - 4.1.5. Globalization
     - 4.1.6. Climate Change
     - 4.1.7. Poverty Alleviation/MDGs
   - 4.2. Disaster Risk Management-Specific Frameworks
     - 4.2.1. IDNDR / ISDR
     - 4.2.2. Yokohama



4.2.3. Hyogo Framework

4.2.4. Seinday Framework

4.2.5. Concepts and Terminologies in Disaster Risk Management

4.2.6. Hazard/Shock/Trigger

4.2.7. Vulnerability, Risks, Disaster/Crisis/

4.2.8. Emergency/Responses

Mode of delivery: The mode of the delivery of the course combines lectures, laboratory practical activities, discussion, questioning and answering, readings, assignments, individual and/or group works and presentation

Mode of Evaluation:

- Project Assignment and Presentation 30%
- Term paper 20%
- Final Exam 50%

References

- Coppola, D. P. (2007). Chapter 1. Introduction to International Disaster Management. Butterworth-Heinemann. 28pp.
- NEWDarcy, J. (2008). MDGs and the Humanitarian-Development Divide. ODI. 2 pp. 13
- ASTU, Department of Geography & Environmental Management, EDRM MA Program MA in Geo/ EDRM
- NEWHumanitarian Futures Group. Dimensions of Crisis Impacts: Humanitarian Needs by 2015. Read-only Executive Summary, pp. 1-6.
- NEWHolloway, A. (2009). Crafting Disaster Risk Science: Environmental and geographical science sans frontiers. Gateways, Capetown: International Journal of Community Research and Engagement, Vol 2: 98–118.
- Wisner, B. (2003). "Sustainable Suffering? Reflections on Development and Disaster Vulnerability in the Post-Johannesburg World." Regional Development Dialogue 24(1): 135–148.
- World Conference on Disaster Reduction (ISDR, 18-22 January 2005). Hyogo Framework for Action 2005-2015: International Strategy for Disaster Reduction. 22pp.

Samara University

College of Social Sciences and Humanity

Department of Geography and Environmental Studies

M.Sc. in Disaster Risk Management and Pastoral Development

Course Title: Climate Change, Adaptation and Mitigation Strategies

Course No: DRMPD 512

Credit Hrs: 3

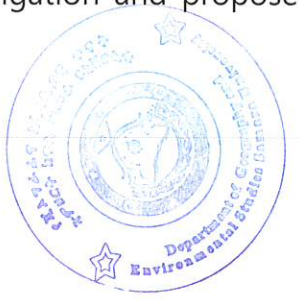
Prerequisite: None

Course description: This course will include a study on climate change concepts, facts, international conventions, Mitigation and adaptation strategies; and the harmonization of climate change adaptation and disaster risk reduction. This will equip students with knowledge and skills to identify the link between climate change and disaster risks. This will also enable students to understand the formulation and application of appropriate CCA and DRR policy frameworks by integrating disaster risk reduction, and climate change adaptation.

Course objective:

At the end of the course, students should be able to:

- Explain the fundamentals of climate change science.
- Differentiate the basics of climate change, variability, and climate extremes.
- Formulate the actual and projected impacts of climate change.
- Criticize climate change debates (with the perspectives of the pros and cons)
- Realize concerns of sharing responsibilities and policy responses on mitigation of climate change
- Understand the nexus between gender, climate change adaptation, and DRR.
- Describe the expected consequences of climate change and the role of adaptation.
- Provide a rationale for climate change mitigation and propose actions in key sectors.



- Identify the main streams of climate change finance.
- Outline basic elements of planning processes to deliver climate change action.
- Analyze principal challenges and opportunities for climate change action.

Course outline

1. **Basics of Climate Change**
   - 1.1. Introduction to climate change science
   - 1.2. Radiation balance and earth system feedbacks
   - 1.3. Drivers of Climate Change (Natural and Anthropogenic)
   - 1.4. Observed, current and Projected trends and impacts of climate change
2. **Climate Change in Developing countries**
   - 2.1. Basics of climate change in developing countries
   - 2.2. ENSO variability
   - 2.3. Watershed management and delta hydrology: the case of low lands
   - 2.4. Sources of global scientific data
   - 2.5. Disseminating climate change information for development projects, stakeholders and sectors
3. **Climate Change Adaptation**
   - 3.1. Concepts of climate change adaptation
   - 3.2. Conducting a vulnerability assessment
   - 3.3. Identifying and selecting adaptation options
   - 3.4. Linking adaptation and development planning
   - 3.5. International initiatives to support climate change adaptation
   - 3.6. General adaptation principles, flood and drought plans
   - 3.7. Gender dynamics around adaptation and disaster risk reduction
4. **Climate Change Mitigation**
   - 4.1. Concepts of Climate Change Mitigation and Low Carbon Development
   - 4.2. Strategic Frameworks and Policy Approaches for Mitigation and Low Carbon Development
   - 4.3. Carbon sequestration to Mitigate Climate change (The four systems)
   - 4.4. Sectors with High Mitigation Potential
   - 4.5. International Initiatives to Support Climate Change Mitigation

5. **Climate Change Finance**
    5.1. Concepts of Climate Change Finance
    5.2. National Climate Change Finance
    5.3. International Climate Change Finance
    5.4. Carbon trading
6. **Global Policy Frameworks, Conventions, and protocols to Address Climate Change**
    6.1. Climate change policy frameworks
    6.2. Adaptation policies
    6.3. United Nations Framework Convention on Climate Change
    6.4. Montreal conference
    6.5. Kyoto protocol (Top-down Approach)
    6.6. Copenhagen and Cancun (Bottom-Up Approach)
    6.7. Bali Conference
    6.8. Main issues and negotiation streams
    6.9. The Paris agreement and a Post-2020 Regime
7. **An overview of changing climate adaptation strategies in Ethiopia**
    7.1. Policies, laws, and regulations
    7.2. International obligation
    7.3. National priorities
    7.4. Mainstreaming climate change in the development projects
    7.5. Governance, enforcement, and implementation
    7.6. Capacity constraints

Mode of delivery: The mode of the delivery of the course combines lectures, discussion, questioning and answering, readings, assignments, individual and/or group works and presentation

Mode of Evaluation:

- Project Assignment and Presentation 30%
- Term paper 20%
- Final Exam 50%

References

- Cambridge University (2013). Climate Change: Action, Trends, and Implications for Business.
- FAO (2009). Food Security and Agricultural Mitigation in Developing Countries: Options for Capturing Synergies. http://www.fao.org/docrep/012/i1318e/i1318e00.pdf
- FAO (2011). Climate-Smart Agriculture: A Synthesis of Empirical Evidence of Food Security and Mitigation Benefits from Improved Cropland Management. MICCA Series 3, FAO. http://www.fao.org/docrep/015/i2574e/i2574e00.pdf
- FAO (2011). Climate-Smart Agriculture: Managing ecosystems for sustainable livelihoods. http://www.fao.org/docrep/015/an177e/an177e00.pdf
- FAO (2011). Climate-Smart Agriculture: Smallholder Adoption and Implications for Climate Change Adaptation and Mitigation. MICCA Series 4. FAO. http://www.fao.org/docrep/015/i2575e/i2575e00.pdf
- FAO/University of Freiburg (2010): E-Learning Tool. Planning Community-based adaptation in agriculture. http://www.fao.org/climatechange/67624/en/
- http://unpan1.un.org/intradoc/groups/public/documents/icap/unpan037602.pdf
- IISD, UNITAR & UNEP (2009). IEA Training Material: Vulnerability and Climate Change Impact Assessment for Adaptation.
- "IPCC - SREX". *archive.ipcc.ch*. Retrieved 2020-01-27.
- OECD (2009): Guidance on Integrating Climate Change Adaptation into Development Co-operation.
- UNEP & UNDP (2011). Mainstreaming Climate Change Adaptation into Development Planning: A Guide for Practitioners.
- UNFCCC (2006). UNFCCC Handbook.
- UNFCCC (2006). Technologies for adaptation to climate change. http://unfccc.int/resource/docs/publications/tech_for_adaptation_06.pdf
- UNFCCC (2008). Compendium on Methods and Tools to Evaluate Impacts of, and Vulnerability and Adaptation to, Climate Change.
- World Bank Report (2012). Turn Down the Heat.
- World Meteorological Organization (2012). Greenhouse Gas Bulletins.

Samara University

College of Social Sciences and Humanity

Department of Geography and Environmental Studies

M.Sc. in Disaster Risk Management and Pastoral Development

Course Title: Environmental Management and Restoration

Course Code: DRMPD 513

Credit Hours: 3

Prerequisite: None

Course Description: The course is designed to provide fundamental knowledge in human-environment interaction and its impacts on habitats, flora and fauna, key ecological functions, and vital ecosystem goods and services. The course enables the students to understand the ecological processes controlling the dynamics of populations, communities, and ecosystems at the same time the complex interactions of the biotic and abiotic components in the environment. The course also enables students to understand the types, diversity and scales, processes, and material cycles in ecosystems. and aquatic ecosystems, rangeland ecosystems, and forest ecosystems because of disaster risk management. The concept and theory of landscape ecology will be dealt with as a tool of analysis for studying habitat fragmentation, land use land cover dynamics by scrutinizing the major landscape features such as structure, dynamics, and heterogeneity mosaics. Mathematical and conceptual models will be used to understand and predict ecological behaviors because of disaster risks. An overarching (all-embracing) knowledge on diagnostic analysis of healthy and damaged ecosystems, the associated indicators, and restoration management principles will be dealt with in the course. How to apply ecological principles in environmental problem analysis, various methodological issues, tools, and techniques of analysis are blended in the theory and practical applications treated in the components. In doing so, the course enables the students to acquire basic knowledge in ecological-induced disasters and the techniques in environmental disaster risk management.

Learning Objectives

At the end of the course, the students should be able to:

- describe environmental resources and explain the interactions and dynamics of these resources because of disaster risk management
- able to explain ecological and ecosystem processes and their resultant effects
- analyze ecosystem components, processes, and factors that control them
- demonstrate the need for conservation and sustainable use of environmental resources vis-à-vis the loss of biological diversity and its effects on disaster risk
- increase the awareness of human-induced global changes and how they are affecting
  ecosystem processes and the occurrence of environmental disasters
- acquire a basic understanding of the EIA process and its importance in environmental and ecological restoration and management

Course Content

1. **Introduction**
   - 1.1 Definition of Terms
   - 1.2 Environment and ecology
   - 1.3 Resources and resource degradation
   - 1.4 Biodiversity
   - 1.5 Sustainable development
   - 1.6 Environment and Ecology because of Disaster Risk Management
2. **Ecological Principles and Methods**
   - 2.1 Ecological Concepts and Principles
   - 2.2 Ecosystem components
   - 2.3 Application of Ecological Concepts and Principles in Disaster Risk Management
   - 2.4 Ecological Methods in Disaster Risk Management
   - 2.5 Population Ecology, Characteristics and population limiting factors
   - 2.6 Ecosystem Functions and Services
   - 2.7 Nutrient Cycling in Ecosystem

2.8 Ecosystem Management

2.9 Future Directions and Challenges in Ecosystem Management

3. **Environmental Degradation and pollution**

3.1 Environmental Degradation

3.1.1 Land Degradation

3.1.2 Deforestation

3.1.3 Desertification

3.1.4 Loss of Biodiversity

3.1.5 Impacts of land degradation

3.2 Environmental Pollution

3.2.1 Water pollution

3.2.2 Air pollution

3.2.3 Soil pollution

3.2.4 Noise pollution

3.2.5 Impacts of environmental pollution

3.2.6 Environmental waste

4. **Environmental Management and Restoration**

4.1 Principles in environmental/ecological Restoration and rehabilitation

4.2 Soil and water conservation

4.3 Biodiversity conservation

4.4 Rehabilitation of wetlands

4.5 Pollution control

4.6 Forest resource conservation and management

4.7 Waste management

4.8 Invasive Species and its Control

5. **Integration of ecosystem management into policies and strategies**

5.1 Environmental mainstreaming to plans, policies, and programs

5.2 Tools and mechanisms for environmental mainstreaming

5.3 Environmental Impact Assessment and ecosystem management

Modes of Teaching:

- Classroom teaching 40%,

- independent learning 40%
- fieldwork 20%

Mode of Evaluation:

- Final exam 40 %,
- Term-paper/s 30 %,
- Fieldwork reports 30%

References

- Begon, M., J. L. Harper and C. R. Townsend. (1996). Ecology: Individuals, Populations and Communities. 3rd edition. Blackwell Science
- Chapin, F.S., III, P.A. Matson, and H.A. Mooney. (2002). Principles of Terrestrial Ecosystem Ecology. Springer-Verlag, New York.
- Chapman, J.L. and M.J .Reiss. (2004) Ecology: Principles and Applications. Cambridge University Press.
- Cox, G.W. (2001).General Ecology Laboratory Manual. 8 Editions. McGraw-Hill.
- Craig, J.R., Vaughan, D.J. and Skinner, B.J. (2001). Resources of the Earth. Prentice Hall, New Jersey.
- Molles, M.C. (2008). Ecology: Concepts and Applications. MacGraw-Hill Companies, Inc. New York.
- Odum, E.P. (1969). Fundamentals of Ecology. Saunders Co., Philadelphia and London.
- Ricklefs, R.E. and G.L. Miller (2000). Ecology. 4th Edition, W. H. Freeman Co.
- Smith, T.M and Smith, R.L. (2006). Elements of Ecology. Pearson Education Inc., Sanfransisco, USA.
- Stiling, P. (2001). Ecology: Theories and Applications. 4th Edition. Prentice Hall.

Samara University

College of Social Sciences and Humanity

Department of Geography and Environmental Studies

M.Sc. in Disaster Risk Management and Pastoral Development

Course Title: Early Warning Systems and Emergency response management

Course Code: DRMPD 614

Credit Hours: 3

Prerequisite: None

Course description: This course focuses on a holistic approach to reducing risks, responding to, and recovering from disasters. The course provides an in-depth orientation on disaster risk reduction concepts and guidance, including the different Framework for Action, as well as understanding the key aspects and activities of response and recovery. The course builds upon learners' existing knowledge base so they can relate disaster risk reduction issues in practical terms to their day-to-day work responsibilities. The course will also allow learners to apply the practice to a case study culminating in a group project at the end of the course.

Course objective:

At the end of the course, students should be able to:

- Establish a common understanding of the tenets on which lie the foundations of disaster risk reduction (DRR).
- Develop a better understanding of preparedness, response, and recovery as integral to disaster risk reduction.
- Illustrate the role of different stakeholders in DRR, the integrated nature between the sectors in DRR, and the importance of coordination between stakeholders.
- Introduce and discuss the already put in place mechanisms for reducing disaster losses and risk management, focused on the region of South-Eastern Europe.

- Present and discuss the concepts and guidance of different Framework for Action as well as the implementation and follow-up to the strategic goals and priorities for action 2005-2015.
- Introduce and examine the International Strategy for Disaster Reduction (UN-ISDR) system and its relevance to practice in areas of DRR.

Course outline

1. **Risk Analysis Steps**
   - 1.1. Hazard or Shock Identification/Inventory
   - 1.2. Hazard or Shock Profiling
   - 1.3. Hazard or Shock Evaluation
   - 1.4. Vulnerability Analysis
   - 1.5. Overlay of Shock and Vulnerability
2. **Disaster Risk Reduction Interventions**
   - 2.1. Disaster Risk Reduction Concepts
   - 2.2. The Rationale for Disaster Risk Reduction Interventions
   - 2.3. Linking Disaster Risk Reduction with Emergency Interventions
3. **Disaster Prevention, Mitigation, and Preparedness**
   - 3.1. Disaster Risk Management
   - 3.2. Disaster Prevention
   - 3.3. Disaster Mitigation
   - 3.4. Disaster Preparedness
4. **Mainstreaming Disaster Risk Reduction in Development Efforts**
   - 4.1. Disaster Risk Reduction and Development
   - 4.2. Levels of Mainstreaming
   - 4.3. Legal and Institutional Framework for DRR Mainstreaming in Ethiopia
   - 4.4. Mainstreaming DRR into the Development Planning Process
5. **Participatory Stakeholder Engagement**
   - 5.1. Defining Stakeholder Participation
   - 5.2. Basic Steps in Participatory Stakeholder Engagement
   - 5.3. Methods and Tools for Participatory Stakeholder Engagement
6. **Disaster Risk Knowledge Management System**

6.1. Principles

6.2. Data, information, knowledge, action contrasts:

6.2.1. Analysis versus Assessment

6.2.2. Database versus System

6.2.3. Timely versus Accurate

6.2.4. Collected versus Used

6.2.5. High Tech versus Low Tech

6.3. Risk and Disaster Knowledge Management Systems (R-DKMS)

6.3.1. Pre Event Baseline Analysis or Assessment

6.3.2. Hazard / Shock Analysis

6.3.3. Vulnerability and Capacity Analysis

6.3.4. Risk Analysis

6.3.5. Monitoring (Hazard, Vulnerability, Risk, Spot Checking and Alert Systems)

6.3.6. Post Event (Post-Shock) Information Management

7. Disaster Communication

7.1. Basic Steps in Communication

7.2. Importance of Communication in Disaster Risk Reducing

7.3. Steps to Effective Communication

7.4. Barriers to Effective Communication

7.5. Disaster Risk Communication

7.6. Effective Disaster Communication

7.7. Stages of Disasters and Disaster Communication

8. Common Disaster Types/Areas of Development Usually Affected by Disasters in Ethiopia

8.1. Types of Disaster in Ethiopia

8.2. Common Disasters in Ethiopia and their Causes

8.3. Disasters and National Development of Ethiopia

8.4. Progress on Disaster Management in Ethiopia

9. Disaster Response and Relief

9.1. Disaster Response

9.2. Relief

9.2.1. Recovery from emergency (Declaration of disaster, Health intervention)

9.2.2. Phases of disaster (pre-disaster & inter-disaster and Post-disaster)

9.2.3. Protective measures (Initial rapid assessment and Management of mass casualties and acute illnesses)

9.2.4. Post-disaster surveillance

9.2.5. Monitoring and evaluation of recovery and rehabilitation

Mode of delivery: The mode of the delivery of the course combines lectures, laboratory practical activities, discussion, questioning and answering, readings, assignments, individual and/or group works and presentation

Mode of Evaluation:

- Project Assignment and Presentation 30%
- Term paper 20%
- Final Exam 50%

References

- Wisner B et al. 2004, At Risk: Natural hazards, people's vulnerability and disasters (London: Routledge)
- UN ISDR 2004, Living with Risk: A global review of disaster reduction initiatives (Geneva: UN International Strategy for Disaster Reduction)
- "Natural catastrophes and man-made disasters in 2018: "secondary" perils on the frontline". *Swiss Re Institute SIGMA. 2019.*
- Virginie Le Masson and Lara Langston, Overseas Development Institute, March 2014, How Should the new international disaster risk framework address gender equality. http://cdkn.org/wp-content/uploads/2014/03/CDKN_Gender_DRR_PolicyBrief_Final_WEB.pdf
- "Post-2015 Framework for Disaster Risk Reduction".
- Dynes RR 1994, 'Community Emergency Planning: False Assumptions and Inappropriate Analogies'. International Journal of Mass Emergencies and Disasters 12(2): 141–158.
- *Sanyal, Saswata; Routray, Jayant Kumar (2016).* "Social capital for disaster risk reduction and management with empirical evidence from Sundarbans of India". *International Journal of Disaster Risk Reduction. 19: 101–111.*

- Accenture. 2011. Risk management as a source of competitive advantage and high performance. Report on the Accenture 2011 Global Risk Management Study.
- Adelekan, I. 2012. Private Sector Investment Decisions in Building and Construction: Increasing, managing, and transferring risks. Case study of Lagos, Nigeria. Case study prepared for the 2013 Global Assessment Report on Disaster Risk Reduction. Geneva, Switzerland: UNISDR. http://www.preventionweb.net/gar
- Balamir, M. 2012. Obstacles in the Adoption of International DRR Policies: The Case of Turkey. Background Paper prepared for the 2013 Global Assessment Report on Disaster Risk Reduction. Geneva, Switzerland: UNISDR. http://www.preventionweb.net/gar
- Carpenter, A. 2013. Resilience in the Social and Physical Realms: Lessons from the Gulf Coast. Background Paper prepared for the 2013 Global Assessment Report on Disaster Risk Reduction. Geneva, Switzerland: UNISDR. http://www.preventionweb.net/gar

Samara University College of Social Sciences and Humanity Department of Geography and Environmental Studies M.Sc. in Disaster Risk Management and Pastoral Development	
Module Name: Pastoral Livelihoods and Cross-Cutting issues	
Module code	**M02**
Module Objectives	After completing this module students will be able to: • Understand theories, concepts, and principles guiding the development and implementation of DRM policies and strategies • Explain policies, strategies, and institutions involved in DRM and their roles, funding sources, and mechanism • Criticize various DRM policies, strategies, and institutions local and international levels • Explore the key pillars of pastoralism as a livelihood system in the context of disaster risk management • Acquire the skills of assessing the Vulnerability of pastoralists in relevance to DRM • Understand human vulnerability to various forms of insecurity particularly livelihoods and food insecurity • Develop skills to conduct food security measures and metrics in the wider context of DRM
Module Description	This module revolves around livelihood systems and factors that affect its sustainability. There are different livelihood systems and each is affected by various socio-economic, physical, social, and political factors. It contains three interdependent courses. The first course is regarding policies, strategies, and institutions of DRM that are legal, legislative, and policy frameworks directly or indirectly affecting livelihood systems and DRM practices. The second-course Livelihood and food security which focuses on various forms of livelihood systems and the factors that determine their suitability to various

	disasters and measuring the food security status of a given community. The third course focuses on pastoralism and pastoral and DRM as a particular livelihood system peculiar to dryland areas.

Courses in the Module		
Course Code	**Course Title**	**Cr. Hrs**
DRMPD 521	Policies, Strategies & Institutions in DRM	2
DRMPD 522	Livelihood and Food Security	3
DRMPD 623	Pastoralism And Disaster Risk Management	3
Total cr. Hrs		8

Samara University

College of Social Sciences and Humanity

Department of Geography and Environmental Studies

M.Sc. in Disaster Risk Management and Pastoral Development

Course Title: Policies, Strategies & Institutions in DRM

Course code: DRMPD 521

Credit hours: 2

Prerequisite: None

Course Description: This course lays the foundation for students on an understanding of policy, strategies, and institutions in the DRM and humanitarian arena. It includes concepts and theories, types, statements, policy practices, humanitarian actors involved in DRM, funding sources, and mechanisms. The course will also elucidate the historical perspectives of Ethiopian DRM policies, strategies, and institutions. It emphasizes global policies, strategies, standards, and institutions. The course includes the concepts and definitions of policy, strategy and institutions; type of policies, strategies, and institutions in DRM, policy statements and instruments that influence Humanitarian Sectors.

Course objectives:

The objective of the course is therefore to equip students with the breadth and depth knowledge of policies, strategies, and institutions involved in DRM and their roles, funding sources, and mechanisms.

At the end of the course, students should be able to;

- Understand concepts and theories of policies and strategies
- Identify institutions and understand their roles in DRM
- Criticize DRM policies and strategies
- Appreciate the role of institutions in DRM

Contents:

1. The Concept of policy

1.1. Concepts and Definitions of Policy and Strategy
1.2. Type of Policies and Strategies in DRM
1.3. Process of Policy Making Policy Statements
1.4. Policy Instruments

2. **Theories and Approaches to Policy**
   2.1. Political System Theory
   2.2. Group Theory
   2.3. Policy Synthesis
3. **Principles, Ethics, and Standards**
   3.1. Humanitarian Principles, Ethics, and Standards
   3.2. Standards and Neutral Principles and Processes
   3.3. Standards Applied and Proposed in DRM
4. **Institutional Frameworks**
   4.1. Institutions in DRM
   4.2. Classification of Institutions in DRM
   4.3. Role of Institutions, the Opportunities, and Constraints in Collaboration
   4.4. Institutional Gaps in DRM Actors
5. **Humanitarian Giants**
   5.1. Role of the United Nations and NGOs
   5.2. Role of the UN and NGOs in Ethiopia
   5.3. Interaction between the UN and NGOs
6. **Humanitarian Funding**
   6.1. Major Funding Institutions
   6.2. Bilateral Donors and Their Roles
   6.3. Multilateral Donors and Their Roles
   6.4. Funding Sources in DRM Funding Mechanisms in DRM

Mode of delivery

The mode of the delivery of the course combines lectures, laboratory practical activities, discussion, questioning and answering, readings, assignments, individual and/or group works, and presentation.

Assessment Methods

- Project Assignment and Presentation 30%
- Term paper 20%
- Final Exam 50%

References

- Birkmann, J. (2006) Measuring Vulnerability to Natural Hazards: Towards Disaster Resilient Societies. Tokyo, United Nations University Press.
- Burton, I.; Kates, R.W. and White, G.F. (1993) The Environment as Hazard, The Guildford Press, London, UK.
- Collins, A.E. (2009) Disaster and Development, Routledge, London, UK.
- Crouhy, Michel; Galai, Dan and Mark, Robert (2005) The Essentials of Risk Management. The McGraw Hill Co., New York, US.
- Damon, P. C. (2006) International Disaster Management. Butterworth-Heinemann.
- Damon, P. C. (2006) Introduction to International Disaster Management. Butterworth-Heinemann, UK.
- Hewitt, K. (1997) Regions of Risk: A Geographical Introduction to Disaster. Harlow, Longman, New York, US.
- Khan A.N. (2016) Introduction to Hazards and Disasters. Al-Azhar Environmental planning and management, Peshawar
- RahmanA. (2010). Disaster Risk Management: Flood Perspective. VDM Verlag Publishing Co. Ltd Germany, ISBN 978-3-639-29891-8, 192 Pages.
- Rahman A., Khan AN., Shaw R. (2015) Disaster Risk Reduction Approaches in Pakistan. Springer Tokyo.
- Shaw R, Rahman A, Surjan A, ParvinGA. 2016. Urban Disasters and Resilience in Asia. Elsevier, New York.

Samara University

College of Social Sciences and Humanity

Department of Geography and Environmental Studies

M.Sc. in Disaster Risk Management and Pastoral Development

Course Title: Livelihood and Food Security

Course No: DRMPD 522

Credit Hrs: 3

Prerequisite: None

Course Description: The objective of this course is to provide students with an understanding of human vulnerability to various forms of insecurity particularly livelihoods and food insecurity. The course covers topics that include the definitions and concepts of livelihoods, food security/insecurity, and human vulnerability to various forms of environmental disaster risks. Emphasis will be given to livelihood assets and coping strategies of poor households in developing countries and the influence on the state of different facets of livelihoods and food insecurity. The course focuses on the causes of resource scarcity, degradation, and mismanagement of resources at different levels to explain the intensity and patterns of food insecurity over space and time. Different livelihood frameworks and up-to-date techniques of food security analysis & management will be covered in this course. Course presentation shall be in the form of lecture, reading assignments, and producing/presenting term papers (optional) on issues related to food security and livelihoods.

Course Objective

At the end of the course, students will be able to:

- Comprehend the concepts of livelihoods and coping strategies.
- Appreciate the different mechanisms of livelihood diversifications.
- Identify the interdependence between rural and urban livelihoods
- Conceptualize the nexus between livelihoods and food security.
- Integrate the various livelihood indicators and food security measurements

Course Content

1. **Definitions and basic concepts**
   1.1. Livelihoods: origin, definition, and concept
   1.2. Food security: origin, definition, concept, and forms of food insecurity
2. **The Sustainable livelihoods framework and strategies**
   2.1. The framework
   2.2. Sustainable livelihoods approach
   2.3. The asset-building blocks of livelihood
   2.4. Livelihoods frameworks compared
   2.5. Livelihood assets: the asset pentagon
   2.6. Livelihood strategies & outcomes
3. **SLF linkage for development approaches**
   3.1. Rights-based approaches
   3.2. Participatory development
   3.3. Sector-wide approaches
   3.4. Integrated rural development
   3.5. Developmental state model
   3.6. Trickle-down theory
4. **Vulnerability to livelihoods/food insecurity**
   4.1. The concept of vulnerability and resilience
   4.2. Factors exerting influence on livelihoods
   4.3. Livelihoods and food security situations in Ethiopia: a glimpse
5. **Causes of poor livelihoods and food insecurity**
   5.1. Ecological/Agro-climatic (moisture stress, aridity, the variability of rainfall, ...)
   5.2. Environmental (soil degradation, vegetation, and water resource depletion,...)
   5.3. Disaster risks (natural disasters, Anthropogenic causes)
   5.4. Causes of livelihoods and food insecurity in Ethiopia
6. **A glance at livelihood and food security strategies with coping mechanisms**
   6.1. Poverty indicators and categories of the poor
   6.2. Institutional strategies
   6.3. Indigenous/community-based strategies
7. **Livelihoods and food security/insecurity analysis techniques**

7.1. Indicators of livelihoods and food security

7.2. Techniques of food in/security analysis

7.2.1. Household Food Balance Model (HFBM)

7.2.2. Household Food Insecurity Access Scale (HFIAS)

7.2.3. Household Food Consumption Score (FCS)

7.2.4. Household Dietary Diversity Score (HDDS)

7.2.5. Coping Strategy Index (CSI)

7.2.6. Household Hunger Scale (HHS)

8. Livelihood and food security policies/strategies

9. Famine, famine history and food security trends in Ethiopia

10. Food Security Programming in Ethiopia

10.1. Historical Perspectives of Food Security Program in Ethiopia

10.2. Productive Safety Net Program (PSNP)

10.3. Household Asset Building Program (HABP)

10.4. Resettlement Program

Methods of Teaching: Lecture, and group work, exercises & assignments

Evaluation technique:

- Term papers to be presented and submitted
- Final-exam

References

- Degefa Tolossa (2002). Household Seasonal Food Insecurity: Causes. Social Science Research Report Series No. 26. Addis Ababa: OSREA
- Degefa Tolossa (2003). Issues of Land Tenure and Food Security: The Case of Three Communities of Munessa Woreda, South Central Ethiopia. In Norwegian Journal of Geography Vol. 57, pp. 9-19. Taylor & Francis Group
- Scoones, I. (1998). Sustainable rural livelihoods: a framework for analysis. *Working Paper-Institute of Development Studies, University of Sussex (United Kingdom)*
- Scoones, I. (2009). Livelihoods perspectives and rural development. *Journal of Peasant Studies* 36(1), 171-196.

- Smit, B. & Wandel, J. (2006). Adaptation, adaptive capacity and vulnerability. *Global Environmental Change* 16(3), 282-292.
- Solesbury, W. (2003). Sustainable Livelihoods: A Case Study of the Evolution of DFID Policy. London: Overseas Development Institute.
- Swift, J. & Hamilton, K. (2001). Household food and livelihood security. In: Devereux, S., *et al.* (Eds.) *Food Security in sub-Saharan Africa.* London.: ITGD Publishing
- Woldemariam, M. (1984). *Rural Vulnerability to Famine in Ethiopia, 1958-77.*
- Devereux, S. (2006). *Vulnerable Livelihoods in Somali Region, Ethiopia.* Institute of Development Studies.
- Devereux, S. & Maxwell, S. (2001). *Food security in sub-Saharan Africa.* Intermediate Technology.
- DFID (2002). Better livelihoods for poor people: The Role of Land Policy, discussion paper.
- Dilley, M. & Boudreau, T.E. (2001). Coming to terms with vulnerability: a critique of the food security definition. *Food Policy* 26(3), 229-247.
- Devereux, S. (2000). Food insecurity in Ethiopia: A Discussion Paper for DFID IDS Sussex.
- Devereux, S. (2001). Livelihood Insecurity and Social Protection: A Re-emerging Issue in Rural Development. *Development Policy Review* 19(4), 507-519.

Haidar, M. (2009). Sustainable Livelihood Approaches: The Framework, Lessons Learnt from practice and Policy Recommendations. Expert Group Meeting on Adopting the Sustainable Livelihoods Approach for Promoting Rural Development in the ESCWA Region. December 21-22, 2009. Beirut.

Samara University

College of Social Sciences and Humanity

Department of Geography and Environmental Studies

M.Sc. in Disaster Risk Management and Pastoral Development

Course Title: Pastoralism and Disaster Risk Management

Course code: DRMPD 623

Credit Hrs: 3

Prerequisite: None

Course description: This course will deal with the topics of principles for sustainable livestock farming, Strategies for Pastoral development, and challenges in Pastoral development with gender-sensitive livestock farming, the pastoral communities are vulnerable to biophysical hazards both the livestock and pastoralists themselves understanding such issues are in disaster risk management. This course also deals with the skills in relevance to analyzing vulnerability and disaster management in pastoralist context is a key for DRM to deal the issues of migration, changing herd composition, predation and theft, drought and the management of climatic change, early warning systems, security in pastoral zones are the key issues to address the problem to find a solution. Further, this course discusses climate change is the major threat to the pastoral communities in the Horn of Africa, hence the course also analyzes the nexus of climate change and vulnerability, climate change and pastoral conflicts, management strategies in adapting climate change in pastoral communities and coping methods. Finally, this course deals with Risk reduction strategies in pastoral communities such as recovery, structural features, land tenure, restocking livestock and economic diversification in pastoral regions could be discussed.

Course Objectives:

At the end of the course student able to

- Understand the basic concept of Pastoralism concerning DRM.
- Natural resources and livelihood dependence in pastoral communities

- Explore the role of biophysical hazards in DRM regarding Pastoral communities.
- Acquire the skills of assessing the Vulnerability of pastoralists in relevance to DRM
- Acquire the skills to maintain equilibrium among climate change adaptation, Pastoralism, and DRM for sustainable development.
- Develop a DRM strategy/policy for sustainable pastoral activities.

Course Outline:

1. **Introduction**
   - 1.1. Concepts of Pastoralism and related terms
   - 1.2. Origin and history of Pastoralism
   - 1.3. Common characteristics of Worldwide Pastoral system
   - 1.4. Pastoralism in Ethiopia
     - 1.4.1 Geography of pastoralists
     - 1.4.2 Resources and vulnerabilities
     - 1.4.3 DRR strategies in pastoral communities
   - 1.5. The three pillars of Pastoralism
2. **Natural Resources in** pastoral areas
   - 5.1. Natural pasture/grazing lands and factors affecting
   - 5.2. Water resource (availability, access, conflicts)
   - 5.3. Land resource and its tenure
   - 5.4. Biodiversity (wildlife, herds)
   - 5.5. The relationship between natural pasture and water
   - 5.6. Natural resource utilization and management
3. **Livestock in Pastoral Area**
   - 3.1. Livestock herd
   - 3.2. Livestock production system
   - 3.3. Livestock composition and management
   - 3.4. Ownership and the right to use

3.5. The economic and social value of livestock

3.6. Constraints of livestock production

4. Pastoral Society and Institution

4.1. Pastoral family and Labor management

4.2. Gender roles in pastoral societies

4.3. Social capital and mutual assistance system

4.4. Local governance

4.4.1. Customary law and decision making on resources

4.4.2. Conflict resolution mechanism in a pastoral society

4.4.3. Conventional versus customary laws in a pastoral society

5. The Role of Pastoralism

5.1. Assumptions & generalizations about Pastoralism

5.2. Economic contribution

5.3. Environmental contribution

5.4. Cultural stock, identity and attraction inventory

6. Pastoralism and Development

6.1. Land Tenure System in the pastoral area

6.2. Pastoral land administration and land use policy

6.3. Developmental interventions in pastoral areas

6.4. Pastoral development policy and strategy

6.5. Livelihood analysis and diversification

6.6. Infrastructure and service provision to Pastoralism

6.7. Challenges and opportunities of Pastoralism

Methods of Teaching:

- Lecture,
- Group work and exercises, and fieldworks

Evaluation technique:

- Term-papers to be presented and submitted (40%) &
- Final-exam (60%)

References:

- Carol Kerveti (Eds) (2003) Prospects for Pastoralism in Kazakstan and Turkmenistan, Roudedge Curzo, New York.
- Federal Democratic Republic of Ethiopia Ministry of Agriculture and Rural Development(2008),National Guidelines for Livestock Relief Interventions in Pastoralist Areas of Ethiopia,Addis Ababa.
- Keith Smith and David N. Petley (1991), ENVIRONMENTAL HAZARDS :Assessing risk and reducing disaster FIFTH EDITION , Routledge, New York.
- Magda Nassef with Mulugeta Belayhun (2012),Water Development in Ethiopia's Pastoral Areas: A synthesis of existing knowledge and experience, Save the Children USA and Overseas Development Institute
- Mohamed Salih, Ton Dietz, Abdel Ghaffar Mohamed Ahmed (Eds) (2001) African Pastoralism: Conflict, Institutions and Government, Pluto Press, London.
- Mulugeta Gebrehiwot Berhe and Jean-Bosco Butera (Eds)(2012) Institute for Peace and Security Studies and University for Peace, ,Addis Ababa, Ethiopia.
- Nancy McCarthy, Brent Swallow, Michael Kirk, and Peter Hazell (Eds) (1999) Property Rights, Risk, and Livestock Development in Africa. International Food Policy Research Institute
- The World Bank (2006) Hazards of Nature, Risks to Development: An IEG Evaluation of World Bank Assistance for Natural Disasters, Washington, D.C. Independent Evaluation Group.

Samara University College of Social Sciences and Humanity Department of Geography and Environmental Studies M.Sc. in Disaster Risk Management and Pastoral Development	
Module Name: Natural and Anthropogenic Hazards	
Module Code	**M03**
Module Objectives	After completing this module students will be able to: • Identify the major types of natural and anthropogenic hazards and disasters • Examine the nature and characteristics of the different natural and anthropogenic hazards and disasters • Analyze the socio-economic, livelihood, political and environmental impacts of natural and anthropogenic hazards and disasters • Understand the management strategies of different natural and anthropogenic hazards and disasters • Develop geo-informatic technical and conceptual skill relevant to identify, measure and analyses natural and anthropogenic hazards and disasters
Module Description	Disasters are commonly categorized into two broad types as natural and anthropogenic disasters. Each category has various types and calcification in it. Understanding the types, cause, and management strategies natural and anthropogenic hazards are one of the core aspects of this postgraduate program. Hence, this module consists of two courses that are intended to cover relevant hazards and disasters. These are the Earth system and natural hazards and Peace and Conflict Management. The first course deals with the major natural hazards such as the relationship between plate tectonics and earthquakes, volcanoes, tsunamis, floods, and other natural hazards. The second course addresses manmade conflicts

	especially conflict and peace-related anthropogenic hazards. The module provides a detailed account of the type, nature, characteristics of each hazard along with their management strategies.

Courses in the Module		
Course Code	**Course Title**	**Cr. Hrs**
DRMPD 531	Earth system and natural hazards	3
DRMPD 532	Peace and Conflict Management	3
Total cr. Hrs		6

Samara University

College of Social Sciences and Humanity

Department of Geography and Environmental Studies

M.Sc. in Disaster Risk Management and Pastoral Development

Course Title: Earth System and Natural Hazards

Course code: DRMPD 531

Credit hours: 3

Prerequisite: No

Course Description: The course is designed to develop an understanding of the interaction of dynamic Earth processes (both endogenous and exogenous processes), the main geo-hazard types, causes, consequences, and management, as well as the human population. Topics include dynamic earth processes, natural resources, geologic processes and hazards (geo-hazards), plate tectonics, earth formation materials, and geological time scales issues. Geologic hazards and disasters (earthquakes, volcanoes, tsunami, floods, meteorite and comet impacts, flooding, and severe weather) are important processes in shaping the earth and human livelihoods. This course will acquaint students with the scientific principles governing these processes and their effects on society

Course objectives:

At the end of this course students will be expected to:

- Explain the universe and solar systems of the earth with natural disasters;
- Describe the origin of the earth, the geological history of the earth and geomorphic processes;
- Describe the structural formation of the earth with related to the endogenous vs exogenous forces;
- Analyze the impact of plate tectonic movements and continental drifts on earth shapes, people and infrastructure;
- Describe how hazardous geologic processes occur and affect human beings;

- Explain the impacts of natural hazards of geological (earthquakes, volcanoes, and tsunamis), atmospheric (drought, thunder, lightning) and other hazards on people and the environment;
- Construct the mitigation strategies applied to minimize the impact of the global distribution of natural geo-hazards and disasters;
- Express the interaction between man and natural systems and the impact of one on the other (industrialization and new technologies) and their adverse impacts as causes of disasters;
- Relate how emerging technologies alter natural systems and the consequences therein on human-made and natural systems;
- Execute modeling preparation and Geomorphological mapping

Course Content

1 **Introduction**

2 **Earth system**

2.1 Geo-sphere and Earth structural composition

2.2 Endogenous vs exogenous forces

2.3 Plate Tectonic and Plate Boundaries

2.4 Plate Tectonics and Continental Drift

2.5 Global Distribution of Geo-hazards

2.6 Folding, Faulting and Fault Lines

3 **Natural Hazards (Types, Causes, Consequences, and Management)**

3.1 Geological hazards

3.1.1 Earthquakes

3.1.2 Volcanic Eruptions

3.1.3 Tsunami/Geo-hazard Floods

3.1.4 Landslide/Mass wasting

3.1.5 Subsidence

3.1.6 Glacial Lake Outburst Floods (GLOFs)

3.1.7 Fire and explosions

3.2 Hydrometeorological hazards

3.2.1 Floods

3.2.2 Hurricanes, cyclone/typhoons, Tropical storm, Lightening

3.2.3 Droughts

3.3 Biological hazards

3.3.1 Invasive plant species

3.3.2 Peste infestation

3.3.3 Epidemics

4 Anthropogenic Hazards

4.1 Technological Hazards (radon, mercury, asbestos fibers, and coal dust)

4.2 Other hazards through human interactions:

4.2.1 Contamination of the atmosphere or surface waters with harmful substances,

4.2.2 Ozone layer destruction

4.2.3 Potential global warming

4.2.4 The occurrence of acid rain

5 Lab work, Field Survey, and Practical works

5.1 A field study of various geomorphological processes

5.2 A field study of landforms and its relationship with human activities

5.3 Labs and practical exercises on models preparation

5.4 Geomorphological mapping

Mode of delivery: The mode of the delivery of the course combines lectures, laboratory practical activities, discussion, questioning and answering, readings, assignments, individual and/or group works and presentation

Mode of Evaluation:

- Field Report 20%
- Term paper 30%
- Final Exam 50%

References

- Australian Geomechanics Society, 2002. Landslide risk management concepts and guidelines.Australian Geomechanics Society sub-committee on landslide risk management, 51–70.
- Brooks, S., 2011. Geomorphological processes. University of London International Programmes. Website: www.londoninternational.ac.uk

- Cloues, P., 2001. Geohazards and risk: rock mechanics and assessment. Geologic resources division 2001 report.
- Dávid, Á., 2013. Engineering and Environmental Geology
- DepED, 2008. Disaster Risk Reduction Resource Manual (Safer Schools Resource Manual). Published by the Department of Education (DepED) Philippines in partnership and with the support of the United Nations Children's Fund (UNICEF) Philippines
- Eileen Van der Flier-Keller and William J. McMillan, 1987. The Identification of Common Rocks. Mineral Resources Division Geological Survey Branch

Samara University

College of Social Sciences and Humanity

Department of Geography and Environmental Studies

M.Sc. in Disaster Risk Management and Pastoral Development

Course Title: Peace and Conflict Management

Course No: DRMPD 532

Credit Hrs: 3

Prerequisite: None

Course Description: Conflicts at all levels are inevitable and not preventable in most of the cases. What is important is not to prevent all conflicts at their foundation, but to prevent the transformation of such conflicts into violent conflicts. The purpose of conflict resolution is, therefore, to remove or mitigate the negative results and destruction of conflict, while preserving its beneficial, life-giving qualities. This course has been designed to introduce contemporary conceptual and theoretical issues in conflict and conflict management. It in detail explores the meaning and nature of conflicts, their causes and consequences. It deals with the various attempts to create a taxonomy of conflicts worldwide with special attention on causes and sources of conflict in Ethiopia. It also introduces learners to important theoretical perspectives on sources of conflict. The contents of the course cover different aspects including conflict stages, conflict analysis and conflict dynamics.

Learning Objectives

After studying this chapter, you would be able to:

- Define conflict and peace
- Appreciate the importance of peace for sustainable development
- Describe different perspectives on conflict
- Know different types of conflict
- Identify sources of conflict
- Outline the general stages(process) of conflict
- Explain and analyze the consequences of conflict

- Explain how to manage and resolve conflict
- Describe the peacebuilding process
- Understand the Ethiopian state and conflict associated with it
- Plan and execute a conflict-sensitive development project

Course content

1. **Conflict and Peace**
   - 1.1. Meaning and Nature of Conflict
   - 1.2. Source (causes) of conflict
   - 1.3. Types and levels (micro, meso, and macro) of conflict
   - 1.4. Meaning and types of peace
   - 1.5. Importance of peace for sustainable development
2. **The Conflict Process**
   - 2.1. Potential opposition or incompatibility
   - 2.2. Cognitions and personalization
   - 2.3. Intentions
   - 2.4. Behavior
   - 2.5. Outcomes
3. **Theories of conflict**
   - 3.1. Basic human needs theories
   - 3.2. Relative deprivation theories
   - 3.3. Social learning theories
   - 3.4. Frustration aggression theories
   - 3.5. Relational theory
   - 3.6. Conflict transformation theory
4. **Conflict Analysis**
   - 4.1. Definition and aims of conflict analysis
   - 4.2. Conflict analysis and conflict management
   - 4.3. Tools of conflict analysis (Stage of Conflict tool, Timelines tool, Conflict Mapping, The ABC Triangle, The Force Field Analysis, The Pillars tool, The Conflict Tree, The Onion tool, The 3P tool etc.
5. **Conflict management and resolution**

5.1. Conflict management, prevention, settlement, containment, resolution and transformation

5.2. Modes of Management

5.2.1. Competing

5.2.2. Avoiding

5.2.3. Compromising

5.2.4. Accommodating

5.2.5. Collaborating

5.3. Conflict resolution techniques

5.3.1. Litigation

5.3.2. Alternative dispute resolution mechanism (Negotiation, Mediation, Arbitration and Reconciliation)

6. Peace building

6.1. Definition and concepts of peace building

6.2. Peace building and Human security

6.3. Pillars of peace building

6.4. Preconditions for peace building

6.5. Approaches to peace building

7. Conflict and Conflict resolution in Ethiopia

7.1. The Ethiopia state

7.2. Cause of interpersonal and intergroup conflict in Ethiopia

7.3. Conflict management structure under the FDRE constitution

7.3.1. Conflict management structure under the FDRE constitution

7.3.2. Federal intervention under the FDRE constitution

7.4. Indigenous conflict resolution mechanism

8. Conflict Sensitive Development Planning and Management

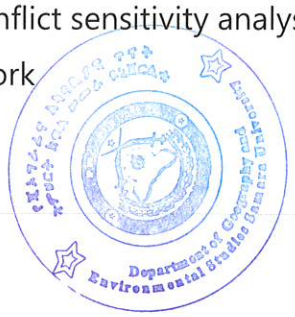
8.1. Definition and concepts of Conflict Sensitivity

8.2. Development in conflict prone areas

8.3. Introduction to development planning and management

8.4. Project Management cycle and conflict sensitivity analysis

8.5. The DO NO HARM (DNH) framework



Mode of delivery: The mode of the delivery of the course combines lectures, laboratory practical activities, discussion, questioning and answering, readings, assignments, individual and/or group works and presentation

Mode of Evaluation:

- Project Assignment and Presentation 30%
- Term paper 20%
- Final Exam 50%

References:

- Stephen R. Robins, Organizational Behavior, Concepts, Controversies and applications, 7th Edition, 1996.
- Plunkett and Attner, Management 6th Edition.
- KoonertyWethrich, Management, 9th edition.
- Georger Terry, Principles of Management, 5th Edition.
- Other relevant books to Organizational behavior, management, Psychology, etc
- Ahmed, Abdel Ghafar M. (2008) Multiple Complexity & Prospects for Reconciliation & Unity: The Sudan Conundrum in Nhema and Zeleza(eds) The roots of African ConflictsPP 71- 87
- Barash,David and P.Webel, Charles (2002) Peace andConflict Studies. London: Sage Publications
- Barash, David (ed) (2000) Approaches to Peace: A Reader in Peace Studies : Oxford : Oxford University Press
- Bruchhaus,Maria Et al (Eds) (2008) Hot Spot Horn ofAfrica Revised: Approaches to make Sense of Conflict. Berlin: Lit Verlag
- De Waal Alex and Stanton, Gregory H. "Should President Omar al-Bashir of Sudan Be Charged and Arrested by the International Criminal Court? An Exchange of Views" in Genocide Studies and Prevention, Volume 4, Number 3, Winter2009, pp. 329-353
- Dagne, Theodore (2000). The Horn of Africa: AnotherHumanitarian Crisis? in Mediterranean Quarterly,Volume 11, Number 3, pp. 116-128 Published by Duke University Press

- Institute Hassen, IdrisSalim El 2008 pp106-117 Managing the process of Conflict Resolution in the Sudan in Nhema and Zeleza(eds) the roots of African Conflicts
- Jaye, Thomas (2008) Liberia in Allan Brayden(Ed) challenge of Security Sector Governance pp 169-184. Geneva: Center for democratic control of Armed forces
- Mahmoud, Mahgoub El-Tigani " Inside Darfur: EthnicGenocide by a Governance Crisis" inComparative Studies of South Asia, Africa and the Middle East, Volume 24, Number 2, 2004, pp. 3-17
- Mazuri, Ali. (2008) Conflict in Africa an Overview in Nhema and Zeleza (eds) the roots of African Conflicts, James Curry: Oxford PP 36-50
- MeddhaneTadesse (2003) Turing Conflict to Cooperation: Towards an Energy-led integration in the Horn of Africa, Addis Ababa: FredrichEbertStiftungPP 64- 68
- Miall, Hugh (2004) 'Conflict Transformation: A Multi-Dimensional Task', Berghof Research Center for Constructive Conflict Management- (article) Cage Bansika, pp 172-200, Boca Raton, Florida
- Ramsbotham, Oliver et al (2007) Contemporary Conflict Resolution: the prevention ,Management and Transformation of Deadly Conflicts:Second Edition : Fully Revised and Expanded. Cambridge: Polity Press
- Sabala, KizitoEtal (Eds) 2008 'The Somali peace process from Arta to Eldoret to Mbagathi: Opportunities and Challenges' in Nhema and Zeleza (eds) the roots of African Conflictspp134-158
- Won, Jeong- Ho (2000) Peace and Conflict Studies: An Introduction.Aldershot: Ash gate publishing.
- Zistel, Susanne (2008). Conflict Transformation andSocial Change in UgandaPalgrave Macmillan: Hound mills, Basingstoke, Hampshire, New York pp 13-29

Samara University College of Social Sciences and Humanity Department of Geography and Environmental Studies M.Sc. in Disaster Risk Management and Pastoral Development	
Module Name :	**Spatial data analysis and Research methodology**
Module code	**M04**
Module Objectives	**The objectives of the module are to:** After completing this module students will be able to: • Investigate the different types and approaches to research in the field of DRMPD • Develop skill on how to identify a working research problem and design a research proposal • Assemble data on the field based on the proposed methodology • Analyze data based on the proposed methodology • Develop a scientific research report based on the allayed data • Apply GIS and remote sensing technologies to research DRMPD • Utilize GIS and remote sensing technologies for disaster risk management
Module Description	Acquiring robust research skills is an indispensable part of disaster management practitioners. This module comprises three courses intended to build the required research skills in the area of disaster risk management and pastoral development. The two courses advanced research methods in DRM and GIS and RS in DRM provides students with theoretical and practical aspects of conducting research and application of GIS and RS in disaster management. The third course is a master's thesis work in which students will develop

	a research problem, research proposal, collect data, and write scientific research as partial fulfillment of their graduate study. The concepts and techniques in the first two courses are instrumental and crucial to the successful completion of the thesis work.

Courses in the Module		
Course Code	**Course Title**	**Cr. Hrs**
DRMPD 641	GIS and Remote sensing in Disaster Risk Management	3+2
DRMPD 542	Advanced Research Methodology in DRM	3+2
DRMPD 643	Thesis	6
Total cr. Hrs		12

Samara University

College of Social Sciences and Humanity

Department of Geography and Environmental Studies

M.Sc. in Disaster Risk Management and Pastoral Development

Course Title: GIS and Remote sensing in Disaster Risk Management

Course Code: DRMPD 641

Credit Hrs: 3

Lab Hours: 2 hrs/week

Prerequisite: None

Course description: The course builds up confidence in students by providing advanced methodologies of GIS/RS followed by steps from introduction to remote sensing, geospatial data acquisition, digital image processing, feature extraction, and change detection, geo-spatial data management and updating, spatial analysis and visualization, and the examples of different disaster monitoring and management. Analysis of land-use/land-cover dynamics, environmental hydrology, identifying different hazards, vulnerable areas, and disaster events as well as the location of acceptable sites are among the focus areas in the use of GIS/RS in this course.

Course objective:

At the end of this course, the students will be able to:

- define the basic concepts of GIS and remote sensing;
- digitize the geo-spatial data acquisition and image processing,
- analysis the feature extraction and change detection, and the examples of different disaster monitoring and management;
- apply the geo-spatial data management and updating, spatial analysis, and visualization;
- detect biodiversity hotspots for enhanced care and protection.
- detect the land-use/land-cover dynamics, environmental hydrology with the examples of different disaster monitoring and management;

Course content

1. **Basics of Remote Sensing**
   - 1.1 Definition and concepts of remote sensing
   - 1.2 Electromagnetic energy
     - 1.2.1 Wave and particle theory
     - 1.2.2 Electromagnetic spectrum
     - 1.2.3 Energy interaction with the atmosphere
     - 1.2.4 Energy interaction with the earth surface
   - 1.3 Sensor and platforms
   - 1.4 Digital Image Processing
   - 1.5 Global Positioning System (GPS)
   - 1.6 Google Maps and Google Earth
2. **Basics of GIS**
   - 2.1 GIS and its components
   - 2.2 GIS data types
   - 2.3 Spatial database management system
   - 2.4 Geographic coordinate system
3. **GIS and Remote Sensing for Disaster Risk Reduction and Management**
   - 3.1 Overview of GIS and RS approaches for DRM
     - 3.1.1 Mapping Flood hazard vulnerable area
     - 3.1.2 Mapping landslide hazard vulnerable area
     - 3.1.3 Mapping Seismic hazard vulnerable area
     - 3.1.4 Mapping Drought and other hazards
   - 3.2 Multi-hazard observation
   - 3.3 GIS online for DRR application: general information and useful web links
   - 3.4 Future developments
4. **A case study of Geospatial application in Disaster Prevention and Preparedness**
   - 4.1 Global Disaster Alert and Coordination System
   - 4.2 Flood Mapping in Support of Humanitarian Organizations
   - 4.3 Detection and Monitoring of Wildfires by a Constellation of Small Satellites with Infrared Sensor Systems

4.4 Spatial Data to Complement the Use of Space-based Information for Disaster Management

4.5 Earthquake Damage Assessment Using Remote Sensing Imagery

4.6 Monitoring Refugee/IDP Camps to Support International Relief Action

4.7 Volcanic Risk Management

4.8 GIS for Emergency Management

Delivery Methods

- Lecture
- Intensive lab exercise
- Fieldwork supported by GPS

Evaluation

1. Lab. Exercise: 40%
2. Assignment: 20%
3. Final Exam: 40%

References

- Orhan A., Robert B., Piero B., Sisi Z.2010. Joint Board of Geospatial Information Societies (JB GIS). Geo-information for Disaster and Risk Management
- Burrough, P. (1986), Principles of Geographical Information Systems for Land Resources Assessment, Oxford Science Publications
- Longley, P. and et.al. (1999), Geographical Information Systems (Vol.I /II), John Wiley & Sons, Inc.
- Morain, S. and Baaros, S. (1996), Raster Imagery in Geographical Information Systems, ONWORD Press,
- Murai, S. (1996), Remote Sensing Note, Japan Association on Remote Sensing
- United Nations Initiative towards Earthquake Safe Cities, Risk Assessment Tool for Diagnosis of Urban Areas against Seismic Disasters, CD-ROM, http://www.unisdr.org.
- Albert K.W. Yeung, 2002. Concepts and Techniques of Geographic Information Systems. 9. Cooke, R , 1990. Getting started with geographic information systems, 2nd ed.

- Jones, C, 1997. Geographical information systems and computer cartography, Kang-tsung Chang, 2008. Introduction to Geographic Information Systems 5th ed
- Paola R., Steffen F., Alexandre C.2010. User Manual on Use of Geographic Information Systems for Disaster Risk Reduction Programmes in Africa

Samara University

College of Social Sciences and Humanity

Department of Geography and Environmental Studies

M.Sc. in Disaster Risk Management and Pastoral Development

Course Title: Advanced Research Methodology in DRM

Course code: DRMPD 542

Credit Hrs: 3

Lab Hours: 2 hrs/week

Prerequisite: None

Course Description: The course consists of five parts: (i) basic concept of research design: Theories, paradigm shift, ethics in data collection, and validity and reliability of data, (ii) research design: Quantitative, Qualitative and Mixed, and (iii) proposal writing in DRM. Thus, the course aims to enable students to develop practical skills to design DRM research projects, collect, analyze, and interpret spatial data, and write a research report. To this effect, the course exposes students to the nature and role of geographic research and provides a foundation of basic skills in research. It executes, in particular, why and how scientific research is conducted, the process of conducting research, and the techniques with a focus on quantitative, qualitative, and mixed research approach.

Course Objectives

At the end of this course, the students will be able to:

- recognize the concept and nature of scientific research and its processes
- describe and apply different research designs and methods
- develop a scientific research proposal
- identify and apply appropriate sampling techniques and tools to process and analyze spatial data
- conduct rigorous scientific research endeavors

- write a scientific research report

Course content

1. Basic concepts of scientific research
   - 1.1. Theories and conceptual framework
   - 1.2. Paradigm/shift in DRM Researches
   - 1.3. Participatory Research Development
     - 1.3.1. Parts of Participatory Research
     - 1.3.2. Stages of Research Innovation
     - 1.3.3. Participatory Rapid Appraisal (PRA)
     - 1.3.4. Rapid Rural Appraisal (RRA)
   - 1.4. Types of research in DRM
     - 1.4.1. Based on the goal of the research
     - 1.4.2. Based on specific objectives of the research
     - 1.4.3. Based on approaches of the research
     - 1.4.4. Based on the research design
     - 1.4.5. Based on the types of data used
2. Research methodology
   - 2.1. Research design
   - 2.2. Qualitative Research Methods in RDM
     - 2.2.1. Types of Qualitative Research
     - 2.2.2. Data collection techniques in qualitative research
   - 2.3. Quantitative Research Methods
     - 2.3.1. Meaning of Quantitative Data
     - 2.3.2. Types of Quantitative Data
     - 2.3.3. Dimensions in Quantitative Data
     - 2.3.4. Sampling Theory
     - 2.3.5. Reasons and Types of Sampling
     - 2.3.6. Sampling Size Determination
     - 2.3.7. Measures of Shapes of Distribution
     - 2.3.8. Tabular Methods
3. Data presentation, analysis, and interpretation

3.1. Descriptive Data interpretation

3.1.1. Meaning of Descriptive Statistics

3.1.2. Descriptive Data Analyses Techniques

3.1.3. Graphical Techniques

3.1.4. Quantitative Techniques

3.1.5. Analysis of Variance

3.1.6. Measures of Location/ Central Tendency and Distribution

3.1.7. Measures of Scale/Spread/Variation

3.2. Quantitative Data Analysis

3.2.1. Data Set Creation and Software Packages

3.2.2. Correlation Analysis/Matrix

3.2.3. Simple Linear Regression

3.2.4. Multiple Regression Model

3.2.5. Logistic Regression Model

3.2.6. Test of Significance Level

3.2.7. Interpretation and Reporting Results

4. Planning the research processes

4.1. Process in conducting research

4.2. Components of a research proposal

4.3. Codes and policies for research ethics

4.4. Reporting research findings

4.4.1. Writing a scientific report

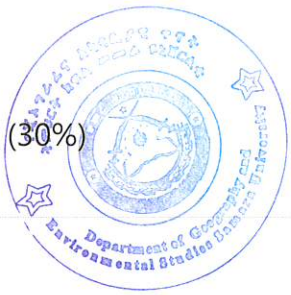
4.4.2. Oral presentation

Methods of delivery

- Lectures
- Group and individual presentations
- Course paper (Proposal writing)
- Assignments and individual readings

Methods of Assessment/Evaluation

- Term-paper and proposal development (30%)



- Assignment (20%)
- Final exam (50%)

References

- Armitage P, Berry, G. (1994). Statistical Methods in Medical Research, 3rd Edition. Oxford: Blackwell Scientific Publications.
- Blalock, Hubert M. (1981). Social Statistics 2ndEdition. London: McGraw-Hill
- Brown RA, Swanson-Beck J. (1993). Medical Statistics on Personal Computers, 2nd ed.London: BMJ Publishing Group.
- Cresswell, J. (2003/09). Research Design: Qualitative, Quantitative and Mixed Methods Approaches.2nd Edition. London: SAGE Publications.
- Gurumani, N. (2007). Research Methodology for Biological Sciences. Chennai: MJP Publications.
- Gupta, P.K and Mohan, M. (1989). Operations Research and Statistical Analysis, Sultan New Delhi: Chand & Sons.

Samara University

College of Social Sciences and Humanity

Department of Geography and Environmental Studies

M.Sc. in Disaster Risk Management and Pastoral Development

Course Title: Thesis

Course code: DRMPD 643

Credit Hrs: 6

Prerequisite: Advanced Research Methodology in DRM

Course Description: This course will be spent on preparing the overall thesis work activities like data collection, analysis, report writing, and final defense. Students are expected to work in collaboration with their respective advisers and co-advisers until the accomplishment of the thesis work.

Course objectives

At the end of this course, the student will be able to:

- Understand the methods and tools of researching DRM
- Produce scientific papers

Mode of Delivery: Individual student proposal write up and presentation, research work, report writing, presentation, and discussions.

Assessment Methods: M.Sc. Thesis open defense and the board examiners evaluate the performance of the student in line with the University standard.

Grading: As per the university"s regulation

Grading: As per the university"s regulation

Course Policy: All students are expected to abide by the code of conduct of students of Samara University Senate Legislation throughout this course. Academic dishonesty, including cheating, fabrication, and plagiarism will not be tolerated and will be reported to concerned bodies for action.