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Institute for Environment
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UNIVERSITEIT VAN DIE
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UFS
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SYLLABUS

Vulnerability and Disaster Risk Reduction

UNU-EHS and UFS-DiMTEC Block course

COURSE PRESENTED JOINTLY BY UNITED NATIONS UNIVERSITY- INSTITUTE FOR ENVIRONMENTAL AND HUMAN SECURITY AND UNIVERSITY OF FREE STATE – DISASTER MANAGEMENT TRAINING AND EDUCATION CENTER FOR AFRICA

Deadline for applications 12 January 2015

Basic Course Information

Timeframe: 2 February - 13 February 2015

Location: Moses Mabhida Stadium, Ethekwini Metropolitan Disaster Management Centre, Ethekwini(Durban), South Africa

Website: <http://natagri.ufs.ac.za/content.aspx?id=629>

Coordinators: Mev. G. Van Coppenhagen
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Background on UNU-EHS

The Institute for Environment and Human Security of the United Nations University (UNU-EHS), in Bonn, Germany assesses the vulnerability and coping capacity of communities facing natural and human-induced hazards in a changing environment. It aims to improve the understanding of cause and effect relationships to offer options to help reduce risks and vulnerabilities and increase resilience. The Institute supports policy and decision-makers with authoritative research and information.

UNU-EHS and its work programme reflect the overall mission of UNU *Advancing Knowledge for Human Security and Development*. The Institute leads UNU's research and capacity building activities in the broad interdisciplinary field of *risk and vulnerability*. It explores the threats that environmental degradation, unsustainable land use practices, and natural and man-made hazards pose to human security. UNU-EHS works to anticipate the impact of 'creeping' environmental change - including climate variability, land degradation, population pressure and migration, and changing resource availability and quality - on risk and vulnerability.

Subtle shifting conditions imperil communities gradually, usually in a hidden way. This undetected increase of social vulnerability can manifest itself suddenly and dangerously in the presence of extreme events of natural or human-induced origin. UNU-EHS research work is devoted to developing capacity and giving advice to strategy and decision-makers. An integral part of UNU-EHS is the inclusion of young scientists within its research throughout one of the major educational activity - the UNU-EHS PhD Block Course.

Background on UFS-DiMTEC

The Disaster Management Training and Education Centre for Africa (DiMTEC) at the University of the Free State, South Africa, is committed to effective and sustainable disaster management. By means of a PhD, Master's degree, Post Graduate Diploma and short courses and need-tailored research and projects, DiMTEC holistically addresses the dire need for increased community resilience in Africa.

Backed by research and expertise in various fields, thorough risk assessments are done. In doing so, vulnerabilities, capacities and hazards are unpacked to determine the most appropriate actions towards increased resilience. DiMTEC's sound scientific outputs already captured international attention resulting in the signing of MOU for collaborations with UN systems NGO's, government and other tertiary institutions. Combining natural, social and human sciences, allows for cross field solutions that not only ensure environmental protection and sustainability, but also promote social and economic resilience and progress.

Through education and by narrowing the theory-practice gap, DiMTEC plays an important part in raising the bar of disaster risk reduction with development practises. Development is inevitable, but the ever so often detrimental side effects thereof, needn't be. Hazard mitigation is key to both natural and unnatural events. Managing our cohabitation with and reaction to both natural and technological phenomena is within reach – provided that knowledge sharing continues at all levels of society.

Goal and Objectives of the Block Course

The growing frequency and magnitude of extreme environmental events (such as floods and, droughts etc) and human-induced hazards, have intensified research interest in these events, in particular regarding the level of risk they pose in different locations, the vulnerability of communities and their

response capabilities. The concept of human security focuses on threats that endanger the lives and livelihoods of individuals and communities. Safeguarding it requires a new approach, and a better understanding of many interrelated variables – social, political, economic, technological and environmental - factors that determine the impact of extreme events when they occur.

The overall goal of the Block Course is to highlight the complexity and importance of vulnerability and resilience in the field of disaster management, development and risk reduction. The Block Course is based on key research questions, and covers the following major themes:

- Environmental, physical, social, and economical dimensions of vulnerability.
- Processes and conditions that have an impact on vulnerability and determine vulnerability patterns.
- Methods and models to assess risk, including vulnerability and resilience.
- Measures and activities which enable shifting from vulnerability to resilience policy recommendations.

After completing the Block Course, students will:

- Be aware of the multi-dimensional nature of vulnerability and the necessity for an interdisciplinary approach.
- Be able to critically evaluate and understand different concepts and frameworks of vulnerability.
- Be able to analyse the role of vulnerability and resilience in disaster risk management and development planning.
- Be able to understand and implement models and methods for risk assessment.
- Be able to implement measures and activities which enable shifting from vulnerability to resilience.
- Be able to understand vulnerability’s role and importance of resilience in disaster risk management
- Be able to understand some information systems and tools for risk and vulnerability mapping

Block Course Outline

The Block Course, entitled “Vulnerability and Disaster Risk Reduction”, is offered by the UNU-EHS and the University of the Free State Disaster Risk Management and Training Education Centre (UFS-DiMTEC), and takes place on annual basis.

The Block Course time span is 10 days. It has been structured in teaching modules as follows:

Theme	Topics	Assignments
Terminology	Disaster risk management (DRM) terminology	•Comparative analysis of a risk management terminology
Hazards	<ul style="list-style-type: none"> •Hazard types •Weather related hazards •Historical spatial and temporal hazard distribution •Assessing hazards •Measuring hazards’ impact 	<ul style="list-style-type: none"> •Mapping historical hazards •Hazard frequency-magnitude-damage analysis

Theme	Topics	Assignments
Dimensions	<ul style="list-style-type: none"> •Definition of a system •Infrastructure •Economical •Environmental •Social •Coupling two or more dimensions 	<ul style="list-style-type: none"> •Analysis of the basic elements of particular system •Practical exercise on describing applied systems
Vulnerability and resilience	<ul style="list-style-type: none"> •Basic principles •Theoretical basis •Conceptual frameworks •Vulnerability and sustainable development 	<ul style="list-style-type: none"> •Discussion of the applicability different frameworks •Improved understanding of the different conceptual and theoretical approaches
	<ul style="list-style-type: none"> •Assessing vulnerability •Indicator and indices •Qualitative versus quantitative assessment •Input data collection methods 	<ul style="list-style-type: none"> •Perform data collection •Examples of qualitative analysis •Examples of quantitative analysis •Exercises using indicators and indices
	<ul style="list-style-type: none"> •Vulnerability models •Progression of vulnerability •Root causes •Dynamic pressure •Unsafe conditions 	<ul style="list-style-type: none"> •Assessing vulnerability using selected models •Analysing root causes for different vulnerability patterns - context specific
Vulnerability --- ----> Resilience	<ul style="list-style-type: none"> •On theory of resilience •Progression of resilience •Achieving safe conditions •Reducing hazard impact •Development of safety culture 	<ul style="list-style-type: none"> •Assessing progression of resilience •Achieving safe conditions for selected hazard •Steps towards a culture of resilience •Linking vulnerability assessment and adaptation strategies
Risk assessment	<ul style="list-style-type: none"> •Conceptual frameworks •Major structure for assessment •Methodology of assessment •Role in DRM 	<ul style="list-style-type: none"> •Assessing risk using selected models •Analysing root causes - context specific •Validation and analysis of results •Practical exercise
Disaster Risk Management	<ul style="list-style-type: none"> •Theoretical concept/cycles •Main clusters •Importance of vulnerability and resilience in DRM 	<ul style="list-style-type: none"> •Understanding of DRM cycles •Analysis of available scenarios of DRM
Information systems and GIS	<ul style="list-style-type: none"> • Information systems • Basic GIS 	<ul style="list-style-type: none"> •Plotting and mapping of risk and vulnerability

Course materials will be provided by UNU-EHS and UFS- DiMTEC in class. A Block Course has been set up at:

<http://www.ehs.unu.edu/elearning>, where participants can also find reading material, to be read before the Block Course starts, participate in preparation forums and access all related materials.

Block Course Organisation

The Block Course consists of lectures by experts, students' practical work, discussions, and group work and students final presentations. Upon completion of the course, participants will be given a certificate of completion by the UNU-EHS and the University of the Free State. Course participants will be invited to become members of the UNU-EHS Alumni Network.

Experts

Dr. A. Jordaan, Director, Disaster Risk Management and Training Education Centre (DiMTEC), University of the Free State (UFS)

Dr. Fabrice Renaud, Head of Section (EVES), Academic Officer, UNU-EHS

Dr. D. Sakulski, Associate Professor, University of the Free State (UFS)

Dr. Jörg Szarzynski, Head of Section (EGECHS), Educational Officer, UNU-EHS

Ms A. Ncube, Lecturer, University of Free State- Disaster Management Training and Education Center for Africa (UFS-DiMTEC)

Other invited experts

Prerequisites

All accepted participants are assumed to satisfy the following prerequisites:

- Basic experience in vulnerability, risk and/or disaster management.
- Fluency in English.
- Postgraduate candidate in the early stages of PhD research or about to start their Ph.D. studies.
- Advanced Master's degree students.
- Basic computer user knowledge.

Admission

The Block Course is announced on the website of the University of the Free State (<http://www.ufs.ac.za/dimtec>). Interested candidates are welcome to apply. For further information please contact Ms A. Ncube (ncubea@ufs.ac.za +27514012721/9701).

Financial information

Inquiries regarding the course fees should be addressed to Ms A. Ncube at the University of Free State (ncubea@ufs.ac.za or 0027 51 401 2721/9701). The United Nations University Institute for Environment and Human Security (UNU-EHS) or University of the Free State, Disaster Management Education and Training Centre for Africa (UFS- DiMTEC) **WILL NOT** cover any travel, local transport or accommodation costs of students accepted. Accepted participants will have to organize their own accommodation while attending the Block Course.