Course Information

<table>
<thead>
<tr>
<th>Course Code</th>
<th>ECON 3071</th>
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<tr>
<td>Course Title</td>
<td>Economics of Disaster Management and Climate Change Adaptation</td>
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<tr>
<td>Course Discipline/ Department</td>
<td>Economics</td>
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<td>Units of Credit</td>
<td>Three (3)</td>
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<td>Pre-, Co-requisites</td>
<td>ECON 3034 – Resource and Environmental Economics; and ECON 2020 – Caribbean Economy</td>
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<td>Level and Semester of Offering</td>
<td>Level III, Semester II</td>
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<tr>
<td>Lecture/Tutorial times</td>
<td>Tuesdays 1-3pm; 3-4pm</td>
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<tr>
<td>Course Coordinator &amp; Lecturer</td>
<td>Dr. Marlene Attzs (<a href="mailto:Marlene.Attzs@sta.uwi.edu">Marlene.Attzs@sta.uwi.edu</a>)</td>
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<td>Lecturer office hours</td>
<td>Tuesdays 11am-12pm; Wednesdays 1-3pm</td>
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Course Description

This course is meant to enlighten students to the economic impacts of two major environmental threats facing Caribbean SIDS: Natural disasters and Climate Change. These threats unless fully assessed and managed, could affect the overall sustainable development of the region. This course intends to establish the specific relevance of Natural disasters and climate change to the region and highlights the links between the two.

From an economic perspective, this course surveys current Natural disaster Management issues—primarily methods that can be utilized to better manage and reduce the impacts of natural disasters in the region. The main topics explored are: economic vulnerability assessment, risk reduction, improving disaster preparedness and post-disaster recovery as well as the institutional frameworks necessary for the aforementioned.

An in-depth survey of the Economics of Climate Change issues is presented. Focus is placed on two (2) main sub-issues of Climate Change: the predicted socio-economic impacts of Climate Change particularly on SIDS and the various costs associated with mitigating carbon emissions and adapting to Climate change.

It satisfies the University’s and Department’s need to increase the consciousness of students to current issues that impact on the Caribbean, and that has paved and will continue to pave to a large extent the developmental path of Caribbean Economies. This course will explore an area that may be interpreted as outside the scope of Social Sciences and establish a link with such “Natural” processes with Economic and Social implications.

Specific case studies and examples of past Natural disasters that have occurred across the region will be referenced and analyzed throughout the course.
Organization

This course is structured into 4 main parts as follows:

1. Introduction: Disasters their socio economic impact and the climate change link and how these may impact on Sustainable Economic Development
2. Economics of Climate change; Adaptation and Mitigation
3. Risk management and Mitigation of Natural disasters
4. Conclusion

Aim of Course

This course considers a number of facts including:

1. Increasing occurrence of natural disasters in the region a trend which is likely to be exacerbated given the projected impacts of climate change;
2. The large economic costs associated with these disasters with respect to key sectors of the economy: Tourism, Agriculture and Infrastructure;
3. The large predicted economic impacts of Climate change on the region both from the perspective of Adaptation costs as well as the costs of Mitigation;
4. The links between CO₂ emissions and anthropogenic activity; and
5. The importance building resilience and reducing risk of disadvantaged communities in the region for dealing with the above issues to ensure sustainable development

This course is designed for students interested in the economic impacts of Climate Change and Natural disasters as well as the use of economic policy instruments and sustainable development initiatives to reduce the future impacts of these environmental issues. This course aims to enable students to view these environmental issues through an economic lens by equipping students with the knowledge and tools presented by modern environmental economics adapted for the long term threat of Climate Change and the current worsening threat of Natural disasters especially in a Caribbean Context. Students will be exposed to various pieces of literature as well as important documents that have informed policy decisions on the subject matter of Natural Disasters and Climate change such that they themselves can make valued judgments on current issues and effectively participate in discourses and debates on the subject matter.
Content of Course

1. Introduction
   A. Introduction to Hazards, Disasters and Vulnerability
      (i) What are Natural Hazards, Natural disasters and Vulnerability: why Hazards do not = Disaster
      (ii) Vulnerability frameworks
      (iii) Disaster, Economic development and Sustainable Development
   B. Economic aspects of key issues in disaster risk reduction
      (i) Sectoral impacts – tourism, agriculture, infrastructure
      (ii) Vulnerability and capacity of different social groups – poverty as an exacerbating factor
      (iii) Health - Psycho social Impacts of disaster
      (iv) Actions and strategies related to disaster stages
   C. Macro and Micro economic impacts of disasters on Caribbean Islands
      (i) The direct one off costs of disasters
      (ii) The indirect and long term costs

2. Climate change Adaptation and Mitigation
   A. Expected impacts of Climate change on the Region
      (i) Physical impacts (sea-level rise etc)
      (ii) Economic Estimations and methods
   B. Mitigation and its associated difficulties
      (i) What is mitigation and why is it important? 1.5°C vs. 2°C in temp
      (ii) Past efforts to curb emissions (Kyoto protocol), and their failings
      (i) Current efforts and the role of the developing regions in mitigation
      (ii) Introduction to the Kaya identity and the difficulty of reducing emissions.
   C. Adaptation
      (i) Current adaptation science and practices
      (ii) Using Vulnerability and risk science to Guide adaptation

3. Managing Natural disasters
   A. The importance of Risk management + Disaster Preparedness
      (i) Economic Policy Instruments for Disaster Risk Management
      (ii) Cost benefit of Risk management vs. Disaster response
   B. Mitigating the effect of Natural disasters
      (iii) Economic and Social vulnerability indices and their use for risk management
   C. The Economics of Mitigating Natural disasters + risk management
      (iv) Cost Benefit analysis for disaster risk mitigation prioritisation
      (v) GIS and Land Use planning for disaster risk reduction
   E. The Social and Political dimensions of natural disasters
      (i) Gender and Disasters in the Caribbean context - an economic perspective
      (ii) Institutional factors for disaster risk reduction - SIDS focus and Case studies

4. Conclusion
   A. Adapting Natural disaster management tools for Climate Change
      (i) Successful risk reduction and disaster mitigation strategies. Case studies
General Objectives

1. To familiarize students with the concepts of disaster risk reduction and response and the essential events, critical issues and major discussions relating to the concept.
2. To explore a range of interpretations of disaster management in the context of the global environment, first and third worlds.
3. To review institutions, stakeholders and processes at various levels and evaluate the role of intergovernmental, governmental and non-governmental organizations with reference to disaster risk reduction and response.
4. To critically examine the principles, practice and policy of disaster risk reduction and disaster management at various levels.
5. Investigate through case studies and the application of conceptual frameworks the circumstances that give rise to disaster risk or disaster resilience.
6. To recognize good practice in interventions for disaster management and sustainable development.

Learning Outcomes

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

1. Define, using examples, the key concepts underlying: Natural Hazards, Natural Disasters, Vulnerability and Climate Change.
2. Discuss the critical elements in determining the socio-economic impact of disasters at the micro and macro levels.
3. Critically evaluate the ideological interpretations, principles and practice of disaster risk reduction and response, from the local to the global levels.
4. Identify and explain the characteristics of institutions involved in disaster risk reduction and the response and policies for achieving disaster resilience.
5. Distinguish and economically justify the costs and benefits of adaptation vs mitigation strategies in climate change.
6. Appraise, using examples, good practice in interventions for disaster risk reduction and response to climate change.

Teaching Strategies

- Teaching will primarily take place through descriptive face to face lecture sessions and class discussions.
- There will be at least three (3) guest lecturers from disaster risk management practitioners and/or researchers. Lectures will be conducted on Tuesdays from 1-3pm. Lectures are complimented by one (1) hour of tutorials from 3-4pm on Tuesdays. Tutorial Sessions will facilitate discussions outside of the lectures, guided by a tutorial sheet.
- Make-up or additional lectures will be arranged in consultation with students.
Course Assessment

1. In-course assessment of 35%
   a. A 30% research paper on issues related to disaster risk management and climate change adaptation in the context of Caribbean SIDS and a 5% presentation of results from research paper
   b. This Assessment will test the students’ knowledge of disaster risk management methods and will require analysis and appraisal of case study response mechanisms while also suggesting policy implications and/or recommendations based on climate change scenarios.

2. A 65% final exam (2 Hours)

Resources

Journals:

- Disasters;
- Journal of Environmental Management
- Climate Change
- Environmental Hazards
- Climate Policy

Core Texts and Readings:

2. Davis I., Bender, S., Krimgold F., and F. McDonald (2011): Reducing Disaster Risks Progress and Challenges in the Caribbean Region. Environmental Hazards Series, ISBN 9781849713573
5. Stern, Nicholas et al. 2006. The Economics of Climate Change.

Supplementary texts and readings:


### Readings

1. **Introduction**

   A. *Introduction to Hazards, Disasters and Vulnerability*

   (i). **What are Hazards, disasters and Vulnerability. why Hazards do not = Disaster:**


   (ii) **Vulnerability frameworks**

      Proceedings of the National Academy of Sciences **July 8, 2003** vol. 100 no. 148074-8079
   2. Anderson, Mary B. Vulnerability to disaster and sustainable development : A general Framework for assessing Vulnerability
   3. World Disasters Report - various years

   B. **Key issues in disaster risk reduction**

   (i) Health - Psycho social Impacts of disaster
   (ii) Vulnerability and capacity of different social groups

   C. **Macro and Micro economic impacts of disasters on Caribbean Islands.**

   (i) **The direct one off costs of disasters**:


(ii) The indirect and long term costs:
   1. Economics of Disaster risk Mitigation in the Caribbean , World Disasters Report.

(ii) Disasters and Economic development:
   2. UNDP-Reducing disaster risk a challenge for development (section 1)

2. Climate change Adaptation and Mitigation

A. Introduction and Expected impacts of Climate change on the Region

(i). Physical Impacts

(ii). Economic Estimation and methods
   1. Climate Change, The Physical Science Basis, I PCC. Available at: http://ipcc-wg1.ucar.edu/wg1/
   2. ECLAC (2010): Economics of Climate Change in Latin America and the Caribbean. Summary 2010. UNECLAC.

B. Mitigation and its associated difficulties
   (i). What is mitigation and why is it important? 1.5 vs 2C in temp

C. Adaptation
(i). Current adaptation science and practices
(ii) Using Vulnerability and risk science to Guide adaptation

3. Managing Natural disasters
A. The importance of Risk management + Disaster Preparedness
   (i). Cost benefit of Risk management vs Disaster response
   1. Report on Economics of Disaster risk Mitigation in the Caribbean (section 4).

B. Mitigating the effect of Natural disasters
   (ii). Vulnerability indices, and their use for risk management
   Joern Birkmann ( ): Risk and vulnerability indicators at different scales: Applicability,
   1. Usefulness and policy implications.

C. The Economics of Mitigating Natural disasters + risk management
   (i). Cost Benefit analysis for disaster risk mitigation prioritization.
   (ii). Economic development and Risk reduction.
   (iv). GIS and mitigation?

D. The Social aspect of natural disasters
   (i). Gender and Disasters in the Caribbean context, an economic perspective
   (ii). Institutional factors for disaster risk reduction, SIDS focus + Case studies
   2. Attzs, Marlene (2008): Natural disasters and Remittances; Exploring the Linkages between Poverty, Gender and Diaster Vulnerablility in Caribbean SIDS.

4. Conclusion
   (i) Successful risk reduction and disaster mitigation strategies: Case studies.